BnF Gallica

Notes on matters affecting the health, efficiency and hospital administration of the British army... by Florence [...]

Source gallica.bnf.fr / Bibliothèque nationale de France

{BnF Gallica

Nightingale, Florence (1820-1910). Notes on matters affecting the health, efficiency and hospital administration of the British army... by Florence Nightingale.... 1858.

1/ Les contenus accessibles sur le site Gallica sont pour la plupart des reproductions numériques d'oeuvres tombées dans le domaine public provenant des collections de la BnF. Leur réutilisation s'inscrit dans le cadre de la loi n°78-753 du 17 juillet 1978 :
- La réutilisation non commerciale de ces contenus est libre et gratuite dans le respect de la législation en vigueur et notamment du maintien de la mention de source.
- La réutilisation commerciale de ces contenus est payante et fait l'objet d'une licence. Est entendue par réutilisation commerciale la revente de contenus sous forme de produits élaborés ou de fourniture de service.

CLIQUER ICI POUR ACCÉDER AUX TARIFS ET À LA LICENCE

2/ Les contenus de Gallica sont la propriété de la BnF au sens de l'article L.2112-1 du code général de la propriété des personnes publiques.

3/ Quelques contenus sont soumis à un régime de réutilisation particulier. Il s'agit :

- des reproductions de documents protégés par un droit d'auteur appartenant à un tiers. Ces documents ne peuvent être réutilisés, sauf dans le cadre de la copie privée, sans l'autorisation préalable du titulaire des droits.
- des reproductions de documents conservés dans les bibliothèques ou autres institutions partenaires. Ceux-ci sont signalés par la mention Source gallica.BnF.fr / Bibliothèque municipale de ... (ou autre partenaire). L'utilisateur est invité à s'informer auprès de ces bibliothèques de leurs conditions de réutilisation.

4/ Gallica constitue une base de données, dont la BnF est le producteur, protégée au sens des articles L341-1 et suivants du code de la propriété intellectuelle.

5/ Les présentes conditions d'utilisation des contenus de Gallica sont régies par la loi française. En cas de réutilisation prévue dans un autre pays, il appartient à chaque utilisateur de vérifier la conformité de son projet avec le droit de ce pays.

6/ L'utilisateur s'engage à respecter les présentes conditions d'utilisation ainsi que la législation en vigueur, notamment en matière de propriété intellectuelle. En cas de non respect de ces dispositions, il est notamment passible d'une amende prévue par la loi du 17 juillet 1978.

7/ Pour obtenir un document de Gallica en haute définition, contacter
utilisationcommerciale@bnf.fr.

Source gallica.bnf.fr / Bibliothèque nationale de France

Mj
329

NOTES ON MATTERS

AFFECTING THE

HEALTH, EFFICIENCY, AND HOSPITAL ADMINISTRATION

OF THE

BRITISH ARMY,

FOUNDED CHIEFLY ON THE EXPERIENCE OF THE LATE WAR.

BY

FLORENCE NIGHTINGALE.

1461
7713
VII 1875

Presented by request to the Secretary of State for War.

LONDON:
PRINTED BY HARRISON AND SONS, ST. MARTIN'S LANE, W.C.
1858.

CONTENTS.

	PAGES.
Instructions from Secretary of State	
Digest	v—xix
General Preface	1—12
Introductory	1, 2
Preface to Section I	i—xxx
Abstract of the Proceedings of the Director-General	
I.—Notes on the Sufferings and Privations of the Army, from April, 1854, to the beginning of 1855	3—96
Appendix I to Section I	i—xxx
Abstract of the Correspondence of the Principal Medical Officer	
Appendix II to Section I	xxxi—xlvii
Abstract of the Correspondence of the Divisional and other Medical Officers	
Preface to Section II	i—iv
Mortality of Sick on Board the Sick Transport Ships	

PALAIS-COMPIÈGNE

PAGES.

II.—Notes on the Deficiencies of Sick Transport ... 67—80

Preface to Section III ... ... I—XXXIV

Abstract of the Sanitary Recommendations made by the Medical Authorities regarding the Hospitals at Scutari ... ... 1—8

Addenda on the subject of the need of Sanitary Reforms at Scutari ... ... XI—XXXIV

III.—Notes on the causes of Disaster at Scutari ... ... 81—139

IV.—Résumé of the Evidence as to (1) the Crimea (2) the Sick Transport (3) the Scutari Hospitals in the Winter of 1854-5 ... ... 140—151

V.—Further Hospital History.—Notice of the first Employment of Female Nurses, of the Employment of a Corps of Male Nurses, and of the Arrival of the Sanitary Commission ... ... 152—163

VI.—Some General Conclusions from the Hospital History of 1854-55-56 ... ... 164—176

Note on the Administration of Medicines

VII.—Detached Memoranda on the Operation of the Regimental System of Hospital Treatment ... 177—199

VIII.—Notes on the existing Organization for General Hospitals ... ... 200—217

IX.—Propositions as to General Hospitals ... ... 218—234

PAGES.

Preface to Section X. ... I—XLIV

Part I.—Authorities for the Statistics used in the Section, with an Inquiry as to their Sufficiency ... I—XXXIII

Part II.—Abstract of Sanitary Recommendations made by the Medical Authorities, regarding the Camp in the Crimea ... XXXIV—XLIV

X.—Notes on the necessity of Special Sanitary Functionaries, in connection with Military Hospitals and with the Army in General, both abroad and at home ... 235—267

XI.—Notes on the Inaccuracy of Hospital Statistics and the necessity of a Statistical Department ... 268—332

Appendix I to Section XI ... I—XI

Actual and Proposed Forms for Medical Statistics in the Army

Appendix II. ... XII—XVII

Sources of the Statistics used in the Section

Note to p.p. 315, 316. ... XVIII—XXVII

The Amount of the Soldier's Duties as a Cause of the Mortality in the Crimea ... XVIII—XXII

Further Remarks on the greater Mortality in certain Corps, with Statistics of the number constantly Sick ... XXIII—XXVII

XII.—Education, Employment, and Promotion of Medical Officers ... 333—396

XIII.—Notes as to Pay and Stoppages ... 397—401

XIV.—Notes on the Dieting and Cooking of the Army ... 402—425

PAGES.

XV.—Notes on the Functions of the Commissariat in connection with the Supply of Food for the Army 426—448

XVI.—On Washing and Canteens 448—476

XVII.—Soldiers' Wives 477—476

XVIII.—Construction of Hospitals, especially for the Army 477—491

Concluding Remarks on the Mortality of Armies in Peace and in War 492—520

Summary of Defects and Suggestions 521—546

Walcheren Expedition 547—556

Appendix to Section XIV i—xliii

Scheme of Rations for Soldiers i—viii

Dr. Christison's Observations thereon viii—x

Dr. Christison on the Soldier's Ration xi—xvii

Dietary of Emigrant Ships xviii

Notes on "Extra" Hospital Diets xix—xx

Five Examples of Hospital Diets xx—xxxviii

Receipts for Cooking in Military Hospitals xxxix—xliii

Sanitary Notes on Encampments 557—563

Postscript on Sanitary Matters in India 565—567

LIST OF ILLUSTRATIONS.

Plan of Scutari ..... to face p. ix Preface to Section III, p. 60

Diagram shewing the Mortality in the Hospitals at Scutari and Koulali
p. xxvii, Preface to Section III, p. 60

Diagram of the Causes of Mortality in the Army in the East ..... p. 313

Diagram of the Mortality in the Army in the East ..... p. 329

Camp Kitchens ..... p. 402

Plan of the Lariboisière Hospital at Paris ..... p. 479

War Office, Pall Mall, S.W.,
18th February, 1857.

Madam,

Knowing, as I do, how anxiously you devoted yourself to improve the condition of our soldiers, especially with reference to their treatment in Hospital, I make no apology for asking your further assistance and advice, with the same object. Your personal experience and observation, during the late War, must have furnished you with much important information relating not only to the medical care and treatment of the sick and wounded, but also to the sanatory requirements of the Army generally, and the communication of your opinions upon these subjects cannot fail to prove very valuable.

It is with this view that I now have the honour to ask you to favour me with the results of that experience, on matters of so much importance to Her Majesty's Army. I need hardly add that, should you do so, they will meet with the most attentive consideration, and that I shall endeavour to further, so far as it lies in my power, the large and generous views which you entertain on this important subject.

I have the honour to be,

Madam,

Your obedient Servant,

(Signed) Panmure.

PREFACE.

While the proof sheets of the following "Notes" were passing through the press, I received Appendix LXXIX to the Report of the Royal Commission on the Sanitary State of the Army, containing a mass of correspondence on the care of the Sick and Wounded, and on the Sanitary state of the Army in the East, which had passed between the Director-General, the Principal Medical Officer of the Army in the East, and Medical Officers of Divisions, &c.

The whole of these letters have been carefully gone over, and they appear to me to throw so much new light on the administrative defects inherent in the present system of the Army Medical Department, and on the causes of the calamities which befel the Army, during the late War, that I have prefixed to several Sections a classified abstract of the principal documents, not only as confirmatory of the statements I have made in the text but as indicating the administrative changes necessary for preventing similar calamities in future, as far as human foresight can do so.

In making use of these documents, it is taken for granted that they include all the correspondence of any consequence bearing on the several subjects referred to, and that none has been kept back.

DIGEST.

	PAGES
LETTER OF INSTRUCTIONS FROM THE SECRETARY OF STATE ...	
PREFACE	
GENERAL PREFACE	1-12
History of the health of British armies	1
Walcheren Expedition	2
Peninsular War	2-5
Number of constantly sick in the Peninsular War compared with the same in the Crimea	5-7
Mortality compared	8, 9
General Hospitals compared	9, 10
Need of General Hospitals in time of peace	11, 12
INTRODUCTORY	1, 2
PREFACE TO SECTION I.	i-xxx
ABSTRACT OF THE PROCEEDINGS OF THE DIRECTOR-GENERAL:	
Commission sent to Turkey	ii
State of things at Gallipoli	iii
Director-General's recommendations as to clothing rejected	iv, v
Sanitary Report set aside as to the Hospital at Varna	vi, vii
Want of vegetables, &c., in the Crimea in October, 1854	viii, ix
Sanitary correspondence in November, 1854 ...	x, xi
Anticipations of scurvy, it being already rife	xii, xiii
Dr. Hall's Report in January, 1855	xiv, xv
Clothing Store at Scutari	xvi
Arrival of lime juice	xvii
Dr. Hall on Burials, and on representing evils ...	xviii, xix
Dr. Smith on Vermin	xx
Dr. Hall on Scutari	xxi
Dr. Smith preparing for the Sebastopol Committee ...	xxii, xxiii

PAGE

Dr. Hall congratulates Dr. Smith on the state of the Army .. .. xxiv, xxv
Sanitary awakening at Scutari xxvi
Conclusions: 1. Sanitary xxvii
2. As to Supply xxviii
Corrections xxix
Observations xxx

I. NOTES ON THE SUFFERINGS AND PRIVATIONS OF THE ARMY FROM APRIL, 1854, TO THE BEGINNING OF 1855 3-66

Lord Raglan's Orders of May 4
Neglect of the Orders of May 5-7
Principal Medical Officer's position 8, 9
Evidence as to the Army's sufferings 10
Lord Cardigan's evidence 11, 12
Evidence of Medical Officers 13-15
What was the supposed ample supply of medical comforts 16, 17
Actual supply up to December, 1854 18-22
Evidence as to the privations of the Army 23-32
Zymotic preventible disease in the Army 33, 34
Evidence of Medical Officers 35-37
Evidence of Commanding Officers 38-42
System of Requisitions 43, 44
Evidence of Commanding Officers 45, 46
Evidence of Purveyor 47-49
Evidence of Commanding Officers 50
State of things at Scutari 51
Official views as to the Hospitals at Scutari 52-55
Actual supply of stores at Scutari, November, 1854 .. .. 56, 57
Ditto ditto January, 1855 .. .. 58, 59
Conclusions from the foregoing evidence 60-66

APPENDIX I. TO SECTION I. 1-xlii

CLASSIFIED ABSTRACT OF THE CORRESPONDENCE OF THE PRINCIPAL MEDICAL OFFICER

1. Diet in the Crimea during winter 1854-1855 .. .. .. i-iv
2. Clothing v
3. Construction and repairs of Hospitals in Crimea .. .. .. v, vi
4. Hospital supplies, &c., Bulgaria and the Crimea .. .. .. vi-xii
5. Scutari .. .. xiii-xv
6. Camp sanitary arrangements .. .. xv-xviii

PAGES

Review of the Principal Medical Officer's correspondence as to its practical bearing .. .. .. xviii-xxi
Province of the Principal Medical Officer .. .. xxi, xxii
General defects of procedure in reference to sanitary advice .. .. xxii-xxiv
Methods of consultation followed in public departments .. .. xxiv-xxvi
Proposed rules for taking sanitary advice .. xxvi, xxvii
Ditto on field service .. .. xxviii-xxx

APPENDIX II. TO SECTION I. .. .. xxxi-xlvii

ABSTRACT OF THE CORRESPONDENCE OF THE DEPARTMENTAL AND OTHER MEDICAL OFFICERS

Cholera shows itself in Bulgaria, and is written against .. .. xxxii-xxxv
Scurvy appears in the Crimea, and is written against xxxv
Want of blankets, cooking places, and fuel represented .. .. xxxvi-xxxix
Want of medical comforts and transport to Balaklava represented .. .. xl, xli
Green coffee, deficient rations .. .. .. xlii, xliii
Board of Health recommended in March, 1855 .. xliv, xlv
Concluding remarks .. .. xlvi, xlvii

PREFACE TO SECTION II. .. .. i-iv

Mortality on board sick transport ships .. ..

II. NOTES ON THE DEFICIENCIES OF SICK TRANSPORT .. 67-80
Want of combination 68-70
Evidence as to the state of the sick transports .. 71-80

PREFACE TO SECTION III.

ABSTRACT OF THE SANITARY RECOMMENDATIONS MADE BY THE MEDICAL AUTHORITIES REGARDING THE HOSPITALS AT SCUTARI .. .. i-xxxiv

As to the General and Barrack Hospitals .. .. ii, iii
Preparations made up to December, 1854 .. .. iv, v
Correspondence up to February, 1855 .. .. vi, vii

PAGES

Review of the Recommendations .. .. .. vii, viii
Comparison of the actual evils with the recommendations .. .. ix, x

Addenda on the subject of the Need of Sanitary Reforms at Scutari .. .. xi-xxxiv
Report made by Lord W. Paulet .. .. .. xi, xii
Dr. Cumming's Correspondence and Reports to the Director-General, April, 1855 .. .. .. xiii-xxi
Remarks on the Preceding Correspondence .. .. xxi-xxxiv
Sanitary defects discovered by the Sanitary Commission .. .. xxi, xxii
Remedies applied by the same .. .. .. xxii, xxiii
Understatement of mortality in Scutari Hospitals .. xxiii, xxiv
Mortality on board sick transports and at Scutari compared xxv
At Balaklava and at Scutari compared .. .. xxvi, xxvii
Correct statement of mortality in Scutari Hospitals xxviii
Comparison with rate of mortality in London Hospitals xxix
Curious methods of calculating mortality in use .. xxx, xxxi
Note as to Commandant's statements about ladies and nurses xxxii
Note as to Dr. Dumbreck's ditto .. .. xxxiii, xxxiv
Return of provisions supplied by Purveyor for extra diet kitchen, and nurses xxxv

NOTES ON THE CAUSES OF DISASTER AT SCUTARI .. 81-120

Five causes of mortality in Scutari Hospitals. 82
1. Overcrowding 83-86
2. Bad ventilation 87-89
3. Bad drainage 89-97
4. Dirt 97-110
As to deficiency of washing 97-108
As to floors and walls 108
As to personal cleanliness 109, 110
5. Want of Hospital comforts 111-121
As to bad cookery 111-115
As to shirts and utensils 115-121
Vicious system of requisitions. 121-123
Want of means for receiving and issuing stores .. 123-126
Dr. Smith's representation of the Scutari case .. 126-132
Mortality among operations consequent upon the condition of the Hospitals 132, 133

PAGES

Dr. Menzies' view of the case ... 133-135
Representations made by the Hospital Commissioners 135-139

IV. Resumé of the evidence as to (1) the Crimea, (2) the Sick Transport, (3) the Scutari Hospitals, in the winter of 1854-1855 ... 140-151

Note as to methods of computing mortality ... 142-144
Decrease of mortality after sanitary improvements ... 144-146
Note as to Hospital Kit ... 146-151
The soldiers came to Scutari with nothing 148
Private supply essential ... 149
Pack store at Scutari ... 151

V. Further Hospital history: Notice of the First Employment of Female Nurses, of the Employment of a Corps of Male Nurses, and of the arrival of the Sanitary Commission ... 152-163

Duties and employments of the first female nurses ... 155-161
Soldiers' wives ... 162
Employment of Medical Staff Corps ... 163
Arrival of Sanitary Commission ... 163

VI. Some general Conclusions from the Hospital history of 1854, 1855, 1856 ... 164-176

Six evils to be noticed in the Hospital history ... 164, 165
Five deficiencies in the provisions made by the Army Medical Department ... 166
Four expedients adopted during the Crimean War ... 167
Confusion between Medical and Purveying departments ... 168, 169
Want of discipline in Military Hospitals ... 170
Want of responsibility in the Apothecary's department 171, 172
Want of training of Medical Staff Corps ... 172
Want of specialities in the Purveyor's department ... 173-175
Want of Economy in dispensing ... 176
Note on the administration of medicines ...

VII. Detached Memoranda on the Operation of the Regimental System or Hospital Treatment 177-199

Exclusively regimental character of our whole Hospital system ... 177-179
Three defects of the system ... 179-182
Nine defects in regimental Hospitals 182
Three desiderata for the Army Medical Department 184
Five obstacles to obviating the same under the present system ... 185

	Pages
Permanent Divisional Hospitals desirable	156, 157
Duties of the Hospital-Serjeant	158
Organization required to perform those duties ..	159
Organization of General Hospitals necessary in time of peace	190, 191
Two arguments urged in favour of Regimental Hospitals refuted..	192
Absence of all system of attendance (not medical) in Army Hospitals	193, 195
Sketch of the Hospital Service—	
Of the French and Sardinians	195, 196
Of the English	197, 198
Of the Russians	199
VIII. Notes on the existing Organization for General Hospitals	200–217
Nine Departments at present concerned in the management; their duties, and deficiencies—	
1. Medical	200
2. Commissariat	201, 202
3. Purveyor's	203–209
4. Engineer's	209–212
5. Adjutant-General's	213
6. Quartermaster-General's	213
7. Contractor's	214
8. Paymaster's	214
9. Commandant's	215, 216
Note as to nine necessary conditions in organizing an Army Hospital System	216, 217
IX. Provisions as to General Hospitals	218–234
Twelve regulations proposed as to organization ..	218, 219
Five departments proposed—their duties—	
1. Governor's	220
2. Medical	221
3. Steward	222, 223
4. Captain of Orderlies	224, 225
5. Treasurer	226
Necessity of the sanitary element	227–230
Necessity of providing a hospital-kit, &c.	230–233
Necessity of training hospital attendants	233, 234

PREFACE TO SECTION X. .. .. i–xliv

Part I. Authorities for the Statistics used in the Section, with an Inquiry as to their sufficiency .. i–xxxiii

	PAGES
Comparison of rates of mortality in army serving at home before and after 1845	ii
How to correct the mortality for each arm of the service	ii, iii
Corrected Table of the mortality of each arm of the service at home during the ten years ending 1846	iv, v
Table of mortality of army at home and abroad, 1839–1853	v–vii
Excess of deaths in the army over those in civil life	vii
Rates of mortality in the army abroad before and after 1837	viii, ix
Considerations of I. Recruiting, and II. Invaliding, which prevent the accuracy of any comparison between rates of mortality in the army and in civil life	x
I. Statistics of Recruiting	xi–xv
Their incompleteness	xii
Rejection of unhealthy lives in recruiting	xiv
Occupations of recruits	xv
II. Statistics of Invaliding	xvi–xxxii
Apparent reduction of mortality effected by invaliding in the army	xvi
At home	xvii
At home and abroad	xviii
Rate of invaliding to strength at home	xviii
Defect in this kind of statistics	xix
Strength, deaths, and invaliding in army at home and abroad	xx
Defect of system of averages in vital statistics ..	xxi–xxv
Tables showing the accumulated loss by death and invaliding	xxvi–xxviii
Loss of veterans to the Army as it is and as it might be	xxviii–xxix
Causes of invaliding: Actual numbers	xxx, xxxi
Proportions	xxxii
Summary	xxxiii
Part II. Abstract of Sanitary Recommendations made by the Army Medical Officers of the Expedition to the East	xxxiv–xliv
In Bulgaria	xxxv
At Scutari	xxxv
In the Crimea	xxxvi
On the Camp	xxxvii–xli
At Balaklava	xli–xliv
General observations on the same	xliv

PAGES

X. NOTES ON THE NECESSITY OF SPECIAL SANITARY PROVISIONS IN CONNECTION WITH MILITARY HOSPITALS, AND WITH THE ARMY IN GENERAL BOTH ABROAD AND AT HOME .. 235-287

What was done by the Sanitary Commission at Scutari .. 237, 238
At Balaklava .. 241, 242
At the Camp .. 243-245
Absence of sanitary knowledge in medical men .. 246
EXCESSIVE MORTALITY OF THE ARMY IN TIME OF PEACE 274
Excessive amount of sickness in the army in time of peace .. 248-250
Excessive mortality from consumption in the Guards 251
Comparison of mortality of Guards and of Metropolitan Police .. 252
Of City Police .. 253
Mortality of army ought to be less than that of civil life, and is double .. 253, 254
Mortality among pensioners within twelve months after being pensioned raises mortality of army still higher .. 255-261
Concluding remark .. 262
Overcrowding in our barracks one main cause .. 263, 264
And in our military hospitals .. 264-267
FOUR PROPOSITIONS FOR CARRYING OUT SANITARY IMPROVEMENTS IN THE ARMY .. 265, 269
Propositions for carrying out immediate sanitary improvements in the army considered in further detail 270-287
1. Reconstitution of the Army Medical Board .. 270-272
Five plans of introducing the sanitary department .. 270-272
Transition period to be provided for .. 272
Medical and sanitary functions essentially distinct .. 273
Examples—Scutari .. 274
Balaklava .. 275
Netley .. 276
Hygiene of buildings and towns a special function, should be made so in the army, leaving the personal hygiene of the men to the medical officers .. 276-281
2. Appointment of an immediate Sanitary Commission for Barracks and Hospitals .. 281-283
3. School of Military Hygiene .. 283-286
4. Revision of sanitary regulations .. 286, 287

PAGES

XI. NOTES ON THE INACCURACY OF HOSPITAL STATISTICS, AND THE NECESSITY OF A STATISTICAL DEPARTMENT .. 293-332

Inaccuracy of the statistics of death 293-294

Standard of comparison as to mortality all over the civilized world is the percentage of deaths *per annum*; in the army it is *per week* 293-295

What statistics are requisite for a Commander of the Forces 294

What he has now 297

Novel methods in the army of calculating mortality in hospitals 298-300

Way in which returns were made at Scutari.. .. 301, 302

Diseases and causes of diseases of Army in Crimea.. 303

Absence of any system for abstracting and publishing the Army Medical records 304-306

Necessity for a Pathological Department 306

Way in which cases were registered at Scutari .. 307

Necessity for a registrar 309

Excess of burials over reported deaths at Scutari .. 309

Utter confusion and inaccuracy of our hospital statistics 310

Ignorance as to the prevalence of scurvy in the army 311

Vital importance of accurate statistics of disease .. 312, 313

Comparison of zymotic disease in the army in the East, and in civil life 314

Comparison of zymotic deaths and deaths from wounds in an army in time of war 315

Comparison of mortality in Army and in Naval Brigade 316

Account of a soldier's day in the trenches 317-319

Mortality in the Crimean army month by month .. 320, 321

Contrast shown by Naval Brigade 322

Imperfect nomenclature of disease 323

Necessity of a Statistical Department for the army in general 324-329

Principles for a Military Statistical Department .. 330-332

APPENDIX TO SECTION XI.

ACTUAL AND PROPOSED FORMS FOR MEDICAL STATISTICS IN THE ARMY .. .. i-xi

Medical statistics should indicate causation of disease i, ii

Present form of classification ii

Proposed form iii

PAGES

Suggestions for constructing a sanitary nomenclature of disease .. .. iv, v
Dr. Farr's classification of diseases of Crimean Army v-ix
Dr. Farr's classification of diseases of infantry of line serving at home, and comparison with those of home population .. .. x, xi

APPENDIX II. TO SECTION XI .. .. xii-xvii

SOURCES OF THE STATISTICS USED IN THE SECTION:

Inaccuracies and discrepancies xii
Results given must be regarded as only approximations xiii
No one of the official sources agrees with any other. xiii-xvii
Four examples of palpable diversity .. .. ..

NOTE TO PAGES 315, 316:

THE ABSENCE OF THE SOLDIER'S DUTIES AS A CAUSE OF THE MORTALITY IN THE CRIMEA .. .. .. xviii-xxii
FURTHER REMARKS ON THE GREATER MORTALITY IN CERTAIN CORPS WITH STATISTICS OF THE NUMBER CONSTANTLY SICK .. .. xxii-xxvii
Admissions into hospital and deaths, in the Crimea and at Scutari respectively, shown, regiment by regiment .. .. xxiv-xxvi
Number constantly sick nowhere given in any report —attempted to be given here xxvii

---

XII. EDUCATION, EMPLOYMENT, AND PROMOTION OF MEDICAL OFFICERS 333-336
Present course of the army medical officer 333-336
Appointment of Principal Medical Officer to the Expedition to the East 334
Logical defect of the whole course of the army medical officer 337-339, 342
Propositions for making the Medical Department purely medical 339-341
Propositions for having an army pharmacopœia, and a selection of Hospital diets 342

SUGGESTIONS FOR A HOSPITAL COURSE FOR MILITARY MEDICAL OFFICERS 343-350
Four subjects of study 343, 344

PAGES

Some of the Tutors must be civilians 348–350
Five subsidiary notes on this subject 350–353

PROPOSED ARMY MEDICAL CADRES 353–357
The First Class Staff Surgeons should be executive officers 354–356
Consequent new scale of payment 356–361
Standing Commission of Inspection 358–365
Character of the inspections made in the Crimea .. 362, 363
Malingering 365–367
Re-constitution of Director-General's office 368–373
Important functions of the Scientific Department .. 369

PROPOSED ORGANIZATION OF THE ARMY MEDICAL DEPARTMENT 370–373

APPENDIX AS TO THE SELECTION OF THE PRINCIPAL MEDICAL OFFICERS OF AN ARMY ON AN EXPEDITION, THE SYSTEM OF SENIORITY AND THAT OF "CONFIDENTIAL REPORTS" .. 373–396

System of Seniority 376, 377
System of Confidential Reports 378, 379
Summary of objections felt to the present system of Inspections; to the degradation of a Scientific Department by making it do housekeeping and bookkeeping; to the "working in the dark" by "Confidential Reports" 380–382
Uncertainty as to promotion 382
Four necessary changes 383
True principle of promotion 384
Confidential Reports must be abolished 385
Substantive and relative rank 385, 386

APPENDIX AS TO THE ORGANIZATION OF GENERAL HOSPITALS 386–389

One executive head, with unquestioned responsibility, essential 387
Contrast of Military and Civil Hospitals 388

APPENDIX IN ILLUSTRATION OF THE UTILITY OF A STANDING COMMISSION OF ENQUIRY, AS BOTH AS TO SCHEME OF CONVERTING GENERAL HOSPITALS EXISTS 389–396

History of the fall of Scutari between two irresponsible powers, Lord Stratford de Redcliffe and Dr. Menzies, the latter of whom applies for assistance to supply the wants of the hospitals yet asserts that "no want" exists

PAGES

XIII. NOTES AS TO PAY AND STOPPAGES .. 397–401
Vexatious action of the multifarious stoppage-system 397
Desirableness of facilitating to the soldier the remitting money home .. 398, 399
Connection of a fixed ration and an uniform stoppage 400, 401

XIV. NOTES ON THE DIETING AND COOKING OF THE ARMY.. 402–425
Hospital kitchens and camp kitchens.. 402–404
Soyer's portable stoves.. 406–408
Soyer's receipts for camp cooking 408–410
Dr. Christison's eight principles of diet 410–412
Dr. Christison's table of nutriment 413
Salt meat not equal to fresh meat in nutritiveness .. 414
Proposed army ration—25 oz. real nutriment—indispensable 415, 416
Actual army ration in the Crimea in the winter of 1854–1855 417
System of rationing and "messing" 418
HOSPITAL DIETS: necessity of variety, importance of good cooking, necessity and abuse of "extras," injustice of hospital stoppage 419–422
Memorandum regarding proposed ration for the soldier and variety in cooking &c 423–425

XV. NOTES ON THE FUNCTIONS OF THE COMMISSARIAT IN CONNECTION WITH THE SUPPLY OF FOOD FOR THE ARMY.. 426–446
Excessive and unnecessary use of salt meat and biscuit in the Crimea during the winter of 1854–5 .. 429–431
Actual issue of fresh meat, vegetable food, fresh bread, &c. 432–434
Actual issue of fuel, blankets, &c. 435
Dietetic system in the army the merest hap-hazard .. 436
Mr. Alexander's letter 437
Dietary of the soldier must be fixed 438
East Indian Commissariat and French Intendance .. 439–444
Lord Raglan's special intervention in particular exigencies 444, 445
Purveying in Regimental Hospitals according to "warrants," and not according to wants 446, 447

XVI. ON WASHING AND CANTEENS 448–456
Washing 448–451
Canteens 451, 452
Reform as to drunkenness accomplished at Scutari. Means used 452–455
Canteens in the Crimea 454

PAGES

XVII. Soldiers' Wives .. 437–476

Women "allowed" in barracks 437
Women out of barracks 438
Hospital accommodation for sick women, *nil* 439
Leave to marry .. 440–462
Soldiers' wives in Bulgaria 462
Ditto in the Crimea 463
Ditto at Scutari .. 464–467
Four improvements recommended 468
Statistics as to soldiers' wives .. 469
What marriage is now with the soldier 470
Condition of the sick wives .. 471
Three suggestions for promoting a better morality .. 472
Mischief of recognizing women married without leave 473
Lodging-houses for married soldiers .. 474–6

XVIII. Construction of Hospitals, especially for the Army .. 477–491

Pavilion system recommended, and why 477–479
Size of wards .. 479–482
Proportion and position of windows necessary for light and ventilation; importance of light for recovery of sick .. 482–484
Best material for floors and walls .. 484–485
Hospital kitchen and laundry 486
Accommodation for nurses 487
Bedding .. 487
Water-supply and drainage .. 488, 489
Ventilation and warming. Necessity of *artificial* ventilation shows defective construction 489, 490

CONCLUDING REMARKS .. 492–520

Sanitary Condition of the Army in time of Peace.. 493–509

Loss of life, of service, and of money value entailed on the country in the case of the army, taken on home service only .. 498, 499
Classes of disease from which this mortality arises on home service, and their causes .. 500
1. Consumption .. 501
2. Zymotic disease .. 502
Can this excessive mortality be prevented? .. 503, 504
Reasons for seizing on this opportunity to do so .. 505–509
Character of our men for endurance and deliberate uncomplaining fortitude .. 507, 508

	PAGES
SANITARY CONDITION OF THE ARMY IN TIME OF WAR ..	509-517
Zymotic disease the cause of the whole catastrophe in the Crimea	510, 517
Mortality in the Scutari Hospitals a separate problem	514-517
Armies perish not by wounds, but by zymotic disease	517
Value of the soldier where enlistment is voluntary ..	518, 519
SUMMARY OF DEFECTS AND SUGGESTIONS ..	521-546
I. FIELD SERVICE	521-524
Defects in sanitary instructions	521
Defects as to supply	521
Nine general defects of procedure	522-524
II. FIELD HOSPITALS	524
III. GENERAL HOSPITALS	525-529
Twelve suggestions	525, 526
Five reasons for separating the office of Treasurer from that of Purveyor	527-529
IV. SICK TRANSPORT	529, 530
V. HOSPITAL MANAGEMENT	530, 531
VI. SANITARY OFFICERS FOR HOSPITALS, ENCAMPMENTS, &c.	532-534
VII. BARRACKS	534, 535
VIII. STATISTICS	535-537
IX. PAY AND PROMOTION OF MEDICAL OFFICERS ..	537-542
X. MEDICAL EDUCATION	542, 543
XI. RATIONS	543, 544
XII. COOKING	544
XIII. HOSPITAL CONSTRUCTION	544-546
WALCHEREN EXPEDITION	547-550
APPENDIX TO SECTION XIV.	i-lviii
SIR A. TULLOCH'S SCHEME OF DIETARY FOR SOLDIERS ..	i, ii
ESTIMATE OF ITS PROBABLE COST	ii-viii
DR. CHRISTISON'S OBSERVATIONS ON THE DIETARY ..	viii-x
DR. CHRISTISON'S OBSERVATIONS ON SOLDIERS' RATIONS..	xi-xvii
Diet in emigrant ships	xviii
Notes upon "extra" hospital diets	xix, xx
FIVE EXAMPLES OF HOSPITAL DIETS	xx, xxxviii
1. Military Hospitals	xxii
2. Naval	xxiii
3. Guy's Hospital	xxiv

PAGES
4. Edinburgh Infirmary .. .. xxv-xxx
5. Proposed diets for Military Hospitals .. .. xxxi-xxxiii
Nutritive value of the above .. .. xxxiv-xxxvi
Instructions as to the above diets .. .. xxxvi-xxxviii

RECEIPTS FOR HOSPITAL DIETS AND DRINKS, BY M. SOYER xxxix-lviii

Broths .. .. xl-xliii
Fish .. .. xliii-xlvii
Meats .. .. xlvii, xlviii
Puddings .. .. xlix-liii
Drinks .. .. liv-lviii

SANITARY NOTES ON ENCAMPMENTS 537-542
Suggestions 542, 543

POSTSCRIPT 545-547
On the necessity of immediate sanitary measures in India.

PREFACE.

In the following pages I have attempted to fulfil the request of the Secretary of State for War, so far as the state of my health has permitted me. The subject has expanded far beyond the limits which I at first assigned to it. Insensibly the question of Army Hospitals and their defects have become part of wider questions, involving the health and efficiency of the Army, and the means of preserving them.

It may be said that such matters are beyond my sphere, but in reply I would state, first, that the Minister at War has requested me to give the results of my observation on these subjects; and, second, that defects similar to those which occasioned so high a rate of mortality among the sick in Hospital, were the cause why so many healthy men came into Hospital at all.

I have endeavoured to show that the Crimean experience has not been solitary, but that, on the contrary, in our various continental wars, like causes have produced like results, and in seeking to prevent similar disasters in future, it is wise to be guided by as many as possible of the lessons of the past. If I have analyzed more in detail

History of the Health of British Armies.

the documents connected with the Crimean war it is because these have been more accessible to me, and because they were the most closely connected with my immediate subject.

Walcheren Expedition. See p. 547.

I have placed at p. 547 an Abstract of the facts respecting the Walcheren Expedition, as an illustration of how an army may be lost by want of attention to the conditions on which the health of armies depends. The history would be incomplete were I not to introduce here a few of the most prominent facts relating to the sanitary condition of the army during the Peninsular War, in juxtaposition with the corresponding facts relating to the Army in the Crimea.

The Peninsular War

The leading details connected with the sanitary state of the army from December, 1811 to June, 1814, are contained in a paper by the late Director-General of the Army Medical Department, Sir James McGrigor, in the sixth volume of the "Medico-Chirurgical Transactions." The campaign opened in the north of Portugal with the siege of Ciudad Rodrigo, in December, 1811, in very inclement weather, and the troops had very little shelter. The wounded were ultimately taken to Coimbra, a distance of more than 40 leagues from the besieged city. A great many of them arrived frost-bitten, and tetanus was not unfrequent. The hospitals along the road appear to have been in a very bad sanitary condition, for "contagious typhus" was prevalent in them; the words "contagious typhus" being apparently used as a technical method of expressing a bad sanitary state in the hospitals. In February, 1812, the siege of Badajos began. Rain fell heavily during the whole period. There was some intemperance, much sickness, and there were above 5,000 wounded in hospital. Hospitals were established along the line of communication to Lisbon, which were speedily

filled with sick and wounded. The chief diseases were pneumonia, catarrh, continued fever, vernal intermittents, sore throat, rheumatism, and locked-jaw.

From June till November, 1812, the army was actively employed, exposed to a burning sun, and to a temperature of 90° Fahr. through the day, followed by exposure from sleeping in the open air at night.

Numerous hospitals were established along the lines of military operations. The sick had to be transported considerable distances. There was a heavy mortality in the hospitals, particularly in November, from intermittent, continued and typhoid fever and dysentery, proving more than anything else could do the defective sanitary state of the hospitals. In October, hospital gangrene prevailed extensively among the wounded, another proof of the condition in which the hospitals must have been at the time. "Contagion" and the means of preventing it appear up to this time to have been the sanitary (?) creed and practice of the heads of the medical service.

When the army reached the Agueda and the Coa, various sanitary measures were carried out by Lord Wellington, in concert with the Medical Department. While the Commander of the Forces took care that everything was done to re-clothe the men, to provide blankets, to procure abundant supplies, and to restore order and discipline,—and the soldiers were everywhere set to repairing habitations, building fire-places, and rendering themselves comfortable,—the Medical Department attended to the cleanliness and ventilation of the quarters and to the general health of the villages. All, therefore, that was right to be done was done and well done; so well, indeed, that one can learn, without much fear of the consequences, that "the most energetic means" were also taken to prevent "contagion,"—"so much to

be dreaded." Whether the "contagion," or the seclusion and sanitary cordons commonly used to prevent it are most "to be dreaded," enlightened sanitary opinion will now decide. The most sensible measure adopted, however, seeing that "Sir J. Pringle, in enumerating the causes of mortality in the army, has represented Hospitals themselves as one of the chief of them," was dividing the sick among a large number of small Hospitals instead of congregating them together in large buildings, which the Medical Department did not appear to be able to preserve in proper sanitary condition. The result of these various measures is stated to have been that typhus, and hospital gangrene soon disappeared, and in four months' time the army was effective and fit for the field, with the exception of the Guards and a few other regiments.

The fate of the Guards in this campaign shews the great importance of sanitary precautions. In November, 1812, the flower of the British army had been rendered so ineffective by fever, that even so late as the end of February, 1813, the Brigade had to be sent to Oporto, and it did not rejoin the Army till after the Battle of Vittoria in June. In August, 1813, the Army was encamped in the mountain regions of the north of Spain, at a distance from the villages. They had moderate and wholesome labour in fortifying passes. They had abundance of good provisions, and there was little drunkenness or disorder among them. The diseases were so mild and trifling that it was found difficult to reduce them to distinct heads.

Throughout the whole period the General Hospitals were scourged by fever and by hospital gangrene, which spread widely among the wounded after the Battles of Vittoria and Pampeluna. The hospitals were overcrowded with wounded.

During the winter of 1813–14 the army underwent great fatigue. They performed long and harassing marches during the day, and usually slept more or less in the open air at night among the Pyrenees. The weather was severe, the mountains deeply covered with snow, and the climate rigorous. The army notwithstanding retained its health and lost but few men. The cavalry alone suffered, which was posted in what were considered good quarters in towns and villages on the banks of the Ebro. Slight fevers and colds existed among the troops on the mountains, while, in the unhealthy quarters of the cavalry, there prevailed fever, typhus, diarrhœa, dysentery, and the usual tribe of zymotic maladies. The Peninsular army, it would appear, had its sanitary experience to gain as well as the Crimean. Mortality on board unhealthy and badly fitted transports was not wanting to complete the parallel. Sick and wounded were occasionally sent from Passages by sea to Bilboa and St. Andero. Hospital gangrene prevailed; simple fever passed on into typhus, aggravated no doubt through the infliction of quarantine regulations by the Spanish Government.

Number of constantly Sick in the Peninsular War, compared with the same in the Crimea.

The amount of sickness which prevailed during these campaigns was enormous. During the whole Peninsular War, from 1808 to 1814, the proportion of sick to 100 strength varied from 9·4 to 33; the mean per centage being about 21. The per centage of sick during the Walcheren Expedition was considerably higher, and varied between 7 per cent. and 58 per cent.; the average being 32·5 per cent. But, during the seven months in the Crimea, from October 1854 to April 1855 inclusive, the per centage of sick to strength varied from 24 to 51; the average being actually during the whole seven months nearly 30 per cent.

This result I have obtained from an examination of the

Statistics, which will be found in detail at p. xxvii of the Appendix to Section XI, p. 332. No attempt has hitherto been made to arrive at this fact, though it is obviously most important. For the amount of men constantly sick shows the number of soldiers at all times to be deducted, as ineffective by reason of sickness, from the Strength of an Army.

This must, on all occasions, therefore, be one of the most essential questions as regards the efficiency of an Army, or the result of a campaign.

The Army Medical Statistics, however, do not appear hitherto to have contemplated the necessity of either Commanding Officer or Minister at War being informed what the number of men constantly inefficient, from sickness, in an army really is, and it cannot be ascertained correctly even for the Crimean Army.*

Statistically, the figures given in the following Table showing, approximately, the constantly sick in the Crimea, are certain to be incorrect, although deduced from the Adjutant-General's, and from Medical Returns. But, for sanitary purposes they give a rough idea of the disabled state of our Army during the seven months in question.

	Strength.	Sick.	Per-Centage of Sick.	Effectives.
October 1854 ..	18,547	4,568	24·2	14,039
November ..	22,047	6,744	30·6	15,303
December ..	25,776	8,342	32·3	17,434
January, 1855 ..	28,579	13,070	45·6	15,508
February ..	27,045	13,428	49·6	13,617
March	25,903	12,774	49	12,933
April	23,947	9,982	41·3	13,965

* Two large folio volumes, laid before Parliament, by the late Director-General of the Army Medical Department, since this Preface was written, profess to give the Medical history of the Russian War. These volumes contain many tables of figures, but from neither any nor all of them can

So that, during this period, the average of "constantly Sick" in our Army was 38·9 per cent.

In other words, not more than 61 per cent. of the nominal force on the plateau before Sevastopol were fit for duty. To keep up an army under such circumstances would require 164 men to supply 100 men for duty. That is, if the besieging force actually on duty had amounted to 100,000 men, there would have been an additional 64,000 constantly in Hospital, requiring an army in themselves for guarding, medical attendance, and nursing; together with an immense transport train for Hospital equipments, medicines, comforts and supplies.

A siege conducted on such principles requires two Armies, separately organized—one to combat with the enemy, and another to combat with disease; and we know that those who fell before Sebastopol by disease were above seven times the number of those who fell by the sword.

With an army as healthy as the force was at the end of the War, say with 5 per cent. of sick, an army of 100,000 men could be kept up with 105,260 men, 5,260 of whom would be in Hospital, instead of 64,000, as in the preceding case.

We may derive an additional idea of the importance of this point, from the fact that an army with 64,000 sick would require 1,140 more orderlies to attend them than the total sick in an army with 5,260 sick would amount to: 6,400 orderlies would be necessary, in the former case, and only 326 in the latter.

To return to the Peninsula.

Admissions into Hospital in the Peninsula and in the Crimea.

We find from Sir J. McGrigor's report that from December 21, 1811, to June 24, 1814, a period of two

be extracted an lots of information as to the average number of men constantly sick, during the War or any work of it.

years and six months, there were admitted into Hospital in the Peninsula 339,870 cases, "a number nearly equal to the whole force, passing through the Hospitals twice in each year." 324,672 appear to have been discharged cured. There died 18,500, and there were invalided to England, 4,500.

But, in the Crimea, during a period of six months only, viz., from October 1, 1854, to March 31, 1855, according to the shewing of Sir John Hall, "a number nearly equal to the whole force" went twice through the Hospitals in half a year. The average strength for the period was 28,623; the admissions in the Crimea alone 52,548. This is exclusive of those under treatment at Scutari.

Enormous as was the mortality in the Peninsula, it was also a small matter in comparison with what took place in the Crimea. This actually averaged during eight months, viz., from October 1854 to May 1855, 60 per cent. per annum of the whole force.

Details of Mortality in certain Corps in the Peninsular War and in the Crimea.

The regiments which suffered most in the Peninsula were those which had gone through the Walcheren campaign; next, the new arrivals; and, next to them, convalescents from General Hospitals.

The mortality in the 1st battalion of the 1st regiment of the Guards in the Peninsula was excessive. From September, 1812, to May 24, 1814, out of a total force of under 2,000 men, including recruits, 674 died in hospital, and 280 were invalided. Out of 300 men sent into General Hospital between October 20 and December 4, there died 140, 100 rejoined the 3rd battalion from General Hospitals, almost all of whom relapsed, and 40 died; shewing a mortality of 180 out of an original strength of 300 men. One would think this a sufficient proof of the bad state in which these General Hospitals were. Malignant typhus seems to have been the scourge of these places.

In the Crimea, also, the mortality in certain Corps was in great excess of the general rate. In the 46th, 95th, 63rd, 33rd, 23rd, 44th, 28th, and 50th Regiments it averaged 73 per cent. from disease alone during the seven winter months from October 1854 to April 1855, a rate of mortality which would have extinguished the whole of these Regiments in ten months, or, in other words, a mortality of 125 per cent. per annum. The details are presented in the following Table.

Corps.	Average Strength of Seven Months.	Deaths within that period in the Crimea and Scutari.	Wounds & Injuries Received.	Remain Mortality from Disease alone.	Ditto per Cent. for Deaths not Reported.	Total Mortality in each Corps.
46th Regiment	378	405	7	398	40	438
95th "	417	354	32	322	32	354
63rd "	448	333	15	318	34	352
33rd "	424	324	32	292	29	321
23rd "	379	359	21	338	34	372
44th "	398	314	11	303	30	333
28th "	522	276	10	266	27	293
50th "	520	327	19	308	31	339
	3,686	2,714	147	2,567	257	2,824

Admissions into Scutari Hospitals from the Crimea, shown by Regiments, and the result.

But, if we go through the whole Crimean force, Regiment by Regiment, and mark what the Admissions into Scutari Hospitals were, and what the Deaths there during those fatal seven months, we shall see how much of the mortality was due in the Crimean case also to the frightful state of the General Hospitals at Scutari; how much it depended upon the number which each Regiment was unfortunately enabled to send to these pest-houses.

I may again refer to the evidence on this point printed at p. xxiv of the same Appendix, p. 332.

General Hospitals unsuccessful in the Peninsula.

The hospital records of the Peninsula appear to begin and end with the word fever, with an occasional digression to point out how, in some cases, there was a tendency to

dissolution of the whole body, mortification of the extremities, deadly coldness, livid eruptions, yellowness of skin; but there is little or nothing said about overcrowding, want of ventilation, want of drainage, bad water, and foul air. Every conceivable remedy appears to have been tried, from bleeding to Cayenne pepper, with equal success; but nobody seems to have thought of trying the effect of pure air. The disasters of the Peninsular General Hospitals fore-shadowed the still greater disaster of the Scutari General Hospitals. But there is no record of any sanitary works having been adopted in the former which were carried out so successfully in the latter.

Sir J. McGrigor appears to have been well aware that General Hospitals were indispensable, and had advantages when "well regulated." "They offered," he says, "the most comforts to the sick soldier." The usual practice seems to have been, wherever a station was selected, to open a separate hospital for the reception of fever and dysentery, a separate hospital or hospitals for wounded and chronic cases, and a convalescent hospital, from which the man was transferred to depôt. But notwithstanding this classification, an enormous mortality arose among the sick, mainly, as it would appear, from overcrowding and defective ventilation, and which was only put a stop to by making every corps keep up its own hospital establishment. McGrigor admits the necessity of General Hospitals; but, somehow or other, they were fatal to the sick, and the only way of preventing this was to have no General Hospital at all. Fortunately, we have the experience of Scutari to prove that it is quite possible to have all the advantages of General Hospitals without the disadvantages which led to their abandonment in the Peninsula.*

* The army in the Peninsula had a remarkable exception from ex-

Need of General Hospitals during time of Peace.

To prevent, as far as human means can do so, the frightful mortality which has usually been the result of our General Hospitals during war, such Hospitals must be organized and maintained in practical efficiency during peace. In this manner, alone, can the recurrence of such catastrophes as I have mentioned be warded off. In the following pages I have pointed out the leading administrative defects, as they presented themselves in the General Hospitals in the East, and I have also pointed out the remedies suggested to me, by personal experience there. In order to carry out these suggestions suitable hospital buildings are necessary. I am not aware of the existence of any Army General Hospital in this Kingdom which would afford the requisite facilities for instructing officers in the administration, government, attendance, and medical service essential for General Hospitals, and where, at the same time, a clinical school might be advantageously established for candidates for admission to the service.

The great establishment for invalids now being raised at Netley, all seem to be agreed, will not answer this purpose. Its wards are too small for clinical instruction. Its administration would be very costly, to render it effective. It

sumption. It appears that out of a total mortality of 18,500 from wounds and disease, there were only 279 deaths from phthisis. At that period Sir J. McGrigor states that he found the mortality from consumption in the army in England in ordinary seasons to amount to one-fifth, or one-fourth, of the total mortality, while, in some regiments, it amounted to half the deaths.

It is important to remark that the proportionate mortality from consumption during the Crimean War was less even than in the Peninsula; while the deaths from the same disease in the army on home stations have risen very much since the period of the Peninsular War. Fifty per cent., which was the maximum mortality from consumption in particular regiments in Sir J. McGrigor's time, has now become the average mortality in the Line regiments, while in the Guards it considerably exceeds that proportion.

is not constructed on a plan by which numbers of sick men constantly confined to bed could be safely brought together, and its distance is too great from any body of troops, for medical candidates to learn their sanitary and regimental duties. It would have been a great saving of cost to the country had a position been selected for the Hospital and a form of construction adopted suitable for all the objects in view, as regards both sick and invalids. But as there appears to be now no doubt that Netley would not answer as a General Hospital, for the purposes contemplated, some more suitable hospital provision will have to be made.

The most likely place for such a hospital would be at Aldershot. A new Hospital is projected there, the plans of which could be easily modified, to afford the required facilities. There will, in all probability, be a large body of troops stationed there in future, and there would be plenty of space for a clinical school, affording all requisite means of study.

August, 1857.

Since the landing of the British Troops at Old Fort, in September 1854, the state of the Army has been constantly before the public, detailed in Despatches, Private Letters, the Public Journals, Speeches in Parliament, and Reports of Commissions, Boards, and Parliamentary Enquiries.

Yet nevertheless the main and real issue for the Queen and the people has never yet been tried, *viz.*, were the Rules and Regulations of the Service adequate to their object,—the preservation in health and life of the British Army?

It is not denied that a large part* of the British force perished from causes not the unavoidable or necessary results of war—a number which must be called large beyond all proportion, when we remember that the Army which thus suffered was for the most part confined in its operations to an area of occupation of six miles by four, to a period of seven months, when there was neither march nor retreat, in a country where the climate was nearly as good as that of England, although more variable.

The question arises, must what has here occurred occur again?

No tribunal has ever yet tried this question. It hardly seems to have occurred to the national mind.

* 10,053 men, or 60 per cent. per annum, perished in seven months, *from disease alone*, upon an average strength of 28,939. This mortality exceeds that of the Great Plague.

Yet this is the great issue to be tried—how an Army is to be preserved in its ordinary Campaigns, if indeed it be presumed that troops are kept up for actual service.

The public mind is gorged with the details of the case, without the real question at issue ever being seen, viz., upon what rules and principles did the Army Authorities act, as far as regards the prevention of that loss which did not occur before the enemy, or as the immediate and inevitable results of the strategy of the siege? what are the rules and principles now? what will they be for the future?

It is upon the answer to these two last questions that depends the preservation of the future British Army, amidst those wants inherent in the nature of any serious campaign.

The remarks which follow refer mainly to that part of the subject which is concerned with the treatment of the sick and wounded; but they have been extended also to those general sanitary arrangements by which the soldier is preserved in health and strength.

PREFACE

TO

SECTION I.

ABSTRACT OF THE PROCEEDINGS OF THE DIRECTOR-GENERAL.

THE Director-General saw Lord Raglan before the Expeditionary force sailed to the East, and, in conversation, advised a previous enquiry into the local peculiarities and diseases of the countries which were to be the seat of war. Lord Raglan advised him to address the Military Secretary on the subject, which he did, February 21, 1854, recommending that three Medical Officers, Drs. Dumbreck, Linton, and Mitchell should be despatched to the Danube and Constantinople to make the requisite enquiries and to report to the Army Medical Department.

February 21. 1854. Commission of Enquiry.

On the same day he received the requisite authority from General Airey; and, on February 27, Dr. Smith sent letters of appointment to the three Medical Officers he had named.

February 27. 1854. Letters of Appointment.

Mr. Mitchell was despatched to Constantinople and the districts south and west of Adrianople, Dr. Dumbreck to Vienna and thence through the Danubian provinces to Constantinople. He was directed to enquire into the climate and diseases of the Principalities and of Turkey.

Dr. Linton was to proceed to Constantinople and towards the interior, taking the routes of Armies advancing to the Balkan, visiting the most likely places for halting and for encampments, enquiring into the diseases of those places and their neighbourhood, and noting any peculiarly healthy or unhealthy localities. Dr. Mitchell's enquiries were to be of the same nature. All three were furnished with the requisite introductions.

These preliminary enquiries were in the highest degree important, and the proposal of them was most creditable to the judgment of the Director-General.

The instructions were meagre—not defined enough, and not

such as a man thoroughly conversant with the subject might have issued, unless he wished to leave every latitude to his envoys and to trust to them.

All, however, depended on the practical result.

March 7. Cholera Bolts. The next communication is one from the Director-General to the Deputy Secretary-at-War, for Cholera Bolts, March 7.

March 21. Tents. On March 23, Dr. Smith makes a very proper recommendation to the Military Secretary for ventilating Bell Tents: he proposes a plan which would not have answered, but he suggests that some better method should be adopted, and that 500 tents and 300 marquees, properly ventilated, be sent, "with all possible speed," to Turkey.

This excellent proposition, which would have saved much sickness, led to no result.

March 23. Dr. Dunbreck from Widdin. On the same date, March 23, Dr. Dunbreck wrote to Dr. Smith, from Widdin, announcing his arrival; Fever and Dysentery among the Turkish troops; Widdin unhealthy and marshy; Palanka more healthy; winter climate most severe; our men not sufficiently well clad to resist it—we cannot have too much bedding or supplies of food, without which our soldiery, in these pestiferous places, would be decimated in a few weeks. Dr. Frasy, who had accompanied him from Belgrade, had been of great service.

April 13. Peat Charcoal. April 13—Dr. Smith requests Military Secretary to send 20 cwt. Peat Charcoal to Turkey, for the Medical Officers. This was sent later.

April 13. Clothing. On the same date, apparently but not avowedly in consequence of Dr. Dunbreck's letter, Dr. Smith addresses the Horse Guards on the want of adaptation of clothing to the Turkish climate; present clothing neither suitable for low nor for high temperatures, such as exist in Turkey; suggests enquiry as to the practicability of improved clothing:—

1. To discontinue the red coat during summer.
2. To have a waterproof blouse.
3. A suitable head-dress, to protect the head from heat.
4. To discontinue the leather stock.
5. To have 1 or 2 flannel shirts.

1 or 2 prs. flannel drawers.

2 „ worsted stockings.

April 13 On the same date Dr. Smith orders Dr. Forrest to Gallipoli.

with special instruction to examine the topography of the town and its vicinity, and to send a description and account of the water supply, requiring, also, full information on all subjects.

Dr. Forrest sent to Gallipoli.

No special sanitary information is asked for, in this letter. Dr. Forrest's report does not appear.

April 17—Dr. Dumbreck announces to Dr. Smith his arrival in Constantinople. He sends a list of places where Hospitals could be formed, and states that the diseases of the Danubian provinces are Fevers and Dysentery, especially along the marshy banks of the Danube, and in deep-sunk unventilated towns in gullies. He promises his Report.

April 17. Dr. Dumbreck from Constantinople

In reply to a letter from the Military Secretary to Dr. Smith, dated March 24, about the purification of water in the District, Dr. Smith writes, April 21, that the Medical Officers sent to enquire will give every necessary information to General Brown and others about the water.

April 21. Purification of Water.

April 28—Dr. Smith sends to Military Secretary, with his own recommendations, an extract from Dr. Dumbreck's Report, given above, about clothing and food for troops.

April 28. Clothing.

Immediately after the troops went to the East, the practical inefficiency of the Army Medical Department began to shew itself.

April 15, 1854, Mr. Alexander, writing to the Adjutant-General at Gallipoli, reports that the battalions "have arrived totally unprovided with necessary field equipments, except marquees." "The sick now under treatment in the field have but one solitary blanket to cover them."

Gallipoli. April 15, 1854. Mr. Alexander's Report.

Mr. Alexander states that he had to write to Malta on the subject the very day he disembarked.

The thermometer was then 28° Fahr., at night.

Medical comforts were also wanting.

April 18. Dr. Burrell, Principal Medical Officer, writes from Malta, "You have half frightened us with the want of comforts."

Malta. April 18. Dr. Burrell.

Dr. Burrell sent 300 sets of bedding, tents, &c.; but could send no comforts, without a letter from Sir G. Brown.

Mr. Alexander, unable to obtain blankets, seized and distributed them himself, on his own responsibility.

April 29—Dr. Menzies writes to Dr. Smith from Constantinople, announcing the arrival of Troops, and their being

Scutari. April 29. Dr. Menzies on Hospitals.

quartered in the Barrack at Scutari. He says, "the Hospital arrangements have been nearly completed for the accommodation of the sick of all the Corps now arrived, and are attended by their own Medical Officers, assisted by the Staff."

This passage indicates the first appearance of that system of Hospital mismanagement which subsequently led to such disastrous consequences. No arrangements for General Hospitals were in contemplation, and Dr. Smith recommends none.

May 2. Rejection of Recommendations about Clothing.

May 2—Letter from the Military Secretary to Dr. Smith, in reply to his of April 13 and 28. Lord Hardinge admits the importance of Dr. Smith's recommendations for the health and safety of the Army, but states, that no change can be effected in the dress, that he hopes bedding enough for the Hospitals has been sent out, that none can be sent for the men, that it is of importance to proceed "only on accurate information," (apparently doubting Dr. Dumbreck's). He advises that Dr. Dumbreck's opinions be laid before Lord Raglan, who will be aided by Officers "who will have acquired some experience of the country," and the Commander-in-Chief will be able to act on Lord Raglan's advice.

Results of Commission of Enquiry.

Thus, the Commission sent by the Head of the Department in charge of the Army's health, and authorized by the Horse Guards in charge of the Army's efficiency, fails to the ground without effect.

The Report from Dr. Dumbreck contains, as has been shown,—

1. Suggestions for improvements in the clothing of Troops.
2. Certain sanitary suggestions for occupied towns.

The suggestions about clothing were urged by Dr. Smith on the Horse Guards, but rejected. And Dr. Smith issues no instructions on the Sanitary part, so that the Commission was a dead failure, in as far as any practical good is supposed to be the result of a Commission.

No Report appears from either Dr. Linton or Mr. Mitchell. Perhaps, it was deemed unnecessary after this repulse.

It would indeed be difficult to frame a system of administration more likely to lose an Army at any time than this. Here is the first downward step of our noble Army to destruction.

For Horse Guards read Home Department, or General Board of Health; for Head of a Department specially charged with the health of the Army, read Sanitary Adviser for Interments' Act or Cholera Investigation—and how differently the matter would have been managed! Were the proceeding the same, the temper and zeal of the adviser would be destroyed—science and observation would be subordinated to the decision of purely official rank; and the whole use of practical scientific advice at once nullified. The consequent reaction on the whole Department would be fatal.

What an honest adviser so treated could do but resign is difficult to see.

Whether or not the Medical Department were fit to advise on such a subject should have been decided before the Army went out. If the Department were incompetent, why sanction the Commission, and put the country to the expense of it? If it were competent, why reject its advice? The system of administration is unquestionably wrong which could bring about such a *reductio ad absurdum* as this. If the Army Medical Department is to be of public service for sanitary purposes, its powers and functions will have to be defined far more distinctly than they hitherto have been.

May 9—Dr. Smith applies for tarpaulin for the floors of Hospital Marquees. — May 9. Tarpaulin.

May 11—Dr. Smith applies for sick ships, and for the establishment of a Hospital on a healthy Island. — May 11. Sick Ships.

May 13—He requests Dr. Dumbreck to lay his observations about bedding for the Troops before Lord Raglan. Not having received information as to the health of the Army, he writes to the Principal Medical Officer, requesting to be kept informed: also, to know if preserved Potatoes, Ale, and Porter, which had been sent out, had been issued, and how they were liked. — May 13. Bedding, Potatoes, Ale, and Porter.

June 12—In consequence of an application from Dr. Smith on this day, 20 filtering machines were ordered to be sent out for the Hospitals. — June 12. Filtering Machines.

June 13—Dr. Smith repeats his recommendation for bedding and warm clothing, and sends a long extract from the Report of Dr. Dumbreck, on the prevention of disease in the country. — June 13. Dr. Dumbreck's Report.

Dr. Dumbreck recommends—

Small doses of quinine,

Warm clothing,
Hourly Guards,
Warm hoods for night duties,
Unhealthy towns to be cleansed on occupation,
Pools of stagnant water drained, and ditches cleansed,
Filters for Hospitals,
Water searchers to precede Army,
Open fire-places or stoves for Hospitals,
Avoiding towns in deep valleys.

In sending this Report, Dr. Smith recommends attention, especially, to the subject of Clothing. He directs attention to none of the Sanitary recommendations—and hence, so far as the health of the Army is concerned, the Sanitary advice of his own Commission was of no use to the Public Service: another illustration of the extremely imperfect nature of the Sanitary administration of the Army.

Lord Hardinge put an end to the practical advice given in one part of the Report, and Dr. Smith put an end to the rest. Such was the result of the preliminary Sanitary enquiry. Dr. Smith never issued any recommendations on the Report, except as to Clothing.

The Army thus went to Bulgaria, without any guidance in Sanitary matters from the head of the Department, although Dr. Dumbreck's Report contains many good suggestions, and much good information. A recommendation for filtering water for the Hospitals had been forestalled by Dr. Smith.

July 3. Varna.

The next Sanitary communication relates to the Hospital at Varna.

Dr. Dumbreck sends a copy to Dr. Smith of certain recommendations for improving the Hospital, made to General Tylden, R.E., of which Dr. Smith approves, July 3.

Dr. Dumbreck recommends—
Enlarging the windows,
Apertures in the walls near the roof and ground for ventilation,
Re-arrangement of internal fittings,
Openings in the roof of the wards,
Boarding the central part of the ground floor,
Drains near and leading from privies to be carefully looked to,

Westward privy to be closed, and used as a room for ablution,
Repairs,
Stoves,
Central court to be raised and made even.

As far as can be judged, without personal knowledge of the Varna buildings, but comparing this account of them with those at Scutari, these Sanitary recommendations were good, but not sufficient. Such as they were, their fate illustrates the utter want of any Sanitary organization, even at the very beginning of the War.

The Principal Medical Officer considers certain Sanitary improvements absolutely necessary to make his Hospital habitable.

In writing to Dr. Smith, June 23, he says he was in incessant personal communication, importuning every one to carry out his improvements.*

The Officer Commanding at Varna did next to nothing to second his efforts. Sappers could not be spared. They would not ask aid from the Turks.

Dr. Dambrock at last saw Lord Raglan who appears to have been always willing to render aid. He ordered labor to be given up for the work. Yet the progress made was slow and irregular. Answers were not even sent to his applications. The Hospital was, at last, only cleansed through the exertions of a Hanoverian Officer in the Royal Engineers.

This history is an instructive specimen of the present Sanitary administration in the Army. The Hospital at Varna would have been a second Scutari, if it had been used long enough.

June 20—Dr. Smith writes to the Principal Medical Officer, Turkey, to learn about coir or straw mats for the troops. — June 20. Mats.

June 29—Ditto. — June 29. Mats.

This was important, as securing the men in tents from damp.

August 3—Dr. Smith writes to the Principal Medical Officer, Turkey, to enquire about winter dress of Austrians and Russians. — August 3. Winter Dress.

August 21—Dr. Hall writes from Varna a full account in reply. — August 21. Winter Dress

* From having seen the same process at Scutari, I can well believe it.

August 18. Winter Clothing.

August 18 – Dr. Smith sends to the Duke of Newcastle the following requirements for the Army in Winter Quarters:—

60,000 Blankets,
40,000 Rugs,
40,000 Palliasses,
40,000 Bolsters.

September 11. Potatoes.

September 11—In reply to a question from the Military Secretary, about sending out a ship-load of potatoes, Dr. Smith recommends that persons conversant with such shipments should be consulted before it is done.

October 27. Vegetables.

October 27—Dr. Hall writes to Dr. Smith that the want of vegetables is being felt in the Camp before Sevastopol—that he has represented the want of Potatoes and Onions—that "it will be quite impossible for the Army to keep the Field, or to exist under canvass during winter."

October 28. Milk and Cocoa.

October 28—Dr. Smith writes to Dr. Hall to know the efficacy and utility of Moore's Concentrated Milk and Cocoa.

November 16. Preserved Potatoes.

November 16—Dr. Smith replies to Dr. Hall's letter of October 27,—informs him that Preserved Potatoes are in the Commissariat Stores, Turkey.

November 2. Vegetables and Scurvy.

November 2—Dr Hall intimates to Dr. Smith the appearance of Scurvy—the arrival of vegetables two days ago—the efforts made to have them regularly supplied.

This, and the letter of the 27th October, are the only letters of Dr. Hall to Dr. Smith, in which any mention of vegetables appears.

The great calamity is now drawing to its height.

It is time to make a few observations.

It does appear that the Director General and the Principal Medical Officer considered themselves responsible for such matters, partly Dietetic, partly Medical, partly belonging to personal hygiene, as blankets, vegetables, lime-juice, &c.

It does not appear how far they were considered responsible for advising upon matters purely Dietetic, such as Rations, or how far these were left to hap-hazard.

Had half the ingenuity, exercised in sending out Lime Juice, as will presently be seen, been expended in making that article unnecessary, the Army might have returned to the shores of England alive and well.

From this point, the correspondence seems to read as if the Medical Office were considered that of registering *post mortem* appearances, instead of keeping the patient in health—as if the business of the police were to record murders instead of preventing them.

In order to make this intelligible, it is necessary to give a sheet summary of what the Army did receive in Vegetables and Blankets.

Vegetables.

1854.
November. Issued to 5 or 6 Regiments, only.
December. To each man ¾lb. for 31 days; or 2 potatoes and 1 onion, *including* Sick.
1855.
January. To each man, ½ lb. per week, *including* Sick.
Preserved Potatoes began to be issued in the latter part of this month, but chiefly to the Hospitals.
Supply becomes regular about 24th.
February. 6 Regiments state supply irregular up to middle of month.
March. 5 Regiments—supply insufficient.

Rice.

Issue of 2 oz. to each man daily, from 15th November to middle of *January*, *discontinued*.

QUANTITY IN STORE.

Rice.

November 15. At Balaclava, 74,000 lbs.
At Scutari, 236,000 lbs.

N.B. The men always declared that they would rather have lost their rum than their rice.

Preserved Potatoes.

November 1. At Balaclava, 32,400 lbs.
October 1. At Scutari, 6,000 lbs.

Peas.

December 16. At Balaclava, 51,000 lbs.

Barley.

October 1. } At Balaclava and Scutari, 65,000 lbs.
November 1. }

With regard to Blankets, the men, and even the sick, lay on the muddy floor of their tents till the end of December with nothing either under or over them, except the great coat and blanket, often wet from the trenches.

In the first week of December, one blanket was given out to every two men. In the beginning of January, this was made up to one blanket to every man.

The questions to be asked are—

Why did not Dr. Smith at once recommend the Military Secretary, who appears to have been aware of the necessity, to send out Potatoes?

And what measures did Dr. Hall take to obtain the Preserved Potatoes, of which he is advised by Dr. Smith?

November 3. Deodorizing.

November 3—Dr. Smith asks the Principal Medical Officer, Scutari, which deodorizing substance is the best?

November 9. Warming Hospital.

November 9—And about warming the Hospitals.

November 15. Ale and Porter.

November 15—Dr. Smith asks Dr. Hall whether the Ale and Porter sent out were useful.

December 17. Ale and Porter.

December 17—Dr. Hall replies that it was not.

147,000 gallons were in store at Scutari, from December 1. The sufferings of the men at this time, from being sometimes all day on fatigue duty at Balaclava without food, were great.

Yet it occurred to no one to bring the Porter to Balaclava and serve it out to them there.

November 17. Lime Juice.

November 17—Dr. Smith intimates the fact of Scurvy having appeared, to the Military Secretary, and advises the immediate transmission of a large supply of Lime and Lemon Juice for the use of the Forces in the Crimea. He suggests application to the Admiralty.

November 18. Warm Clothing.

November 18—Dr. Smith intimates to Dr. Hall the sending out of large quantities of warm clothing for Troops and Hospitals, and requests Dr. Hall to see that the Hospitals have their share.

These supplies, therefore, of warm clothing were announced. But the information does not appear to have been followed up

at either end, in order that the warm clothing might be obtained by the Troops who wanted it.

Dr. Hall intimates to a Surgeon of the Rifle Brigade that there was plenty of Warm Clothing, and urges him to get it at once for the Troops. January 6.

Otherwise, we hear no more about it. And there is nothing in these letters to lead us to suppose that the Principal Medical Officer, or the Director General, know that the Sick are perishing: or, that a great catastrophe is preparing.

November 20—The Horse Guards intimate to Dr. Smith, that 20,000 lbs. Lime Juice will be immediately shipped, consigned to the Commissary General in the Crimea. There is none to spare at Malta, or in the Black Sea Fleet. November 20 Lime Juice.

November 21—Dr. Smith writes to Dr. Hall, that 40,000 lbs. Lime Juice are about to be shipped, consigned, as stated above. November 21. Lime Juice.

November 25—Dr. Smith is informed that 20,016 lbs. Lime Juice, "being a further proportion of the 40,000 lbs., were shipped on board the 'Esk,' expected to sail to-day." November 25. Lime Juice.

November 27—Dr. Smith writes to Dr. Hall that 20,016 lbs. Lime Juice have been shipped on board the "Esk," expected to sail on the 25th; and that 10,080 lbs. had been shipped on board the "Holyrood" on the 21st, expected to leave on the 24th. November 27. Lime Juice.

November 29—Dr. Smith recommends Dr. Hall to see that 1 ounce and upwards per day be given. November 29. Lime Juice.

November 30—Dr. Smith makes a farther Requisition for 40,000 lbs. Lime Juice. November 30. Lime Juice.

December 6—Informs Dr. Hall that this supply will shortly be sent. December 6. Lime Juice.

December 11—The Admiralty report that they have none to send, and suggest an application at Messina. December 11. Lime Juice.

December 16—Sir Charles Trevelyan informs Horse Guards that orders have been sent to Malta to procure 40,000 gallons Lime or Lemon Juice, at Messina, and to forward it. December 16. Lime Juice.

December 19—Dr. Smith sends a Report on Meat-biscuit, in reply to a query from Colonel Mundy. December 19. Meat Biscuit.

December 19—Also intimates that, as there is great reason to fear Scurvy in the Army during winter, a full ration of vegetables should be supplied four times a week. He sends a Report on five kinds of dried vegetables which he recommends. December 19. Vegetables.

Upon this, it is to be observed that, at the time that Dr Smith finds "great reason to fear Scurvy in the Army during winter" this Army had many regiments in which not a single man was free from it, and that the account of Scorbutic Disease for the month of January, when his vegetables would arrive, runs thus.

We calculate from Official Returns for January 1855, that there were in that month

Total Admissions into Hospital (Primary)	11,200	Total Deaths in Hospital ..	3,168

Therefore,—

Per 1,000 per ann. to strength ..	4,176	Per 1,000 per ann. to strength ..	1173·6

Of these, the Admissions and Deaths from Diseases of the Scorbutic type are returned as follows:

	Admissions	Deaths
Scurvy	542	31
Scorbutic Dysentery ..	181	44
	723	75

Or, 75 deaths from Scorbutic disease in that month, when from two-thirds to three-fourths of all the Disease in the Army were due to the Scorbutic type. The larger part, if not all, of the Admissions and Deaths, annexed below, which are for the same month of January, 1855, may be read, "Scorbutic type" or "Bad food," which is the same thing.

		Admissions	Deaths
Scorbutic type	Acute Dysentery ..	865	210
	Chronic „ ..	143	578
	Scorbutic „ ..	181	44
	Diarrhœa	4,191	1,199
	Acute Rheumatism ..	342	58
	Chronic „ ..	84	9
	Frost-bite	1,413	124
	Scorbutus	542	31
		7,761	2,253

Acute and Chronic Dysentery furnish a mortality of 78 per cent.; by far the most fatal disease in the Army.

We also learn that about the 24th of January the supply of vegetables became regular, after three months of privation.

December 21—Dr. Smith advises sending out Soap. — December 21. Soap.

January 2—Dr. Hall is informed that 30 tons have been shipped. — January 2. Soap.

For three months this Army had not had the means of cleanliness, either as to their persons or clothing; and what the state of the men was, on arriving at Scutari, let those who saw it testify.

December 22—Dr. Smith is informed that 9,000 lbs. Lime Juice have been shipped on board the "Sidney Hall." — December 22. Lime Juice.

December 27—Dr. Smith informs Dr. Hall of it. — December 27. Lime Juice.

December 23—Dr. Smith writes to Dr. Hall to ask information about the steps taken to provide Regimental Hospitals during the winter. Recommends Dr. Hall to volunteer an opinion on the subject to Lord Raglan, if he has not been consulted, and suggests trestles for Hospital beds. — December 23. Regimental Hospitals.

December 26—Dr. Smith writes to Dr. Hall about the lamentable state of the sick—advises him to take boards and trestles from Scutari, if necessary—expects to send 4,000 iron bedsteads in a few days, which will place 10,000 bedsteads at his disposal—asks again for information. — December 26. Bedsteads.

December 27—Dr. Smith applies for 40,000 cholera belts; and for supplying troops, on embarking, with these. — December 27. Cholera Belts.

January 6—He makes a Requisition for 2,000 cotton shirts and 2,000 pairs cotton socks for invalids who may arrive at Chatham from Turkey. — January 6. Chatham Invalids.

He forwards a letter, requesting repairs on board the sick ship "Libertas." — Sick Ships.

He forwards instructions to the Principal Medical Officer, Scutari, about cooking Preserved Vegetables. — Cooking Vegetables.

This is curious.—Scutari is opposite a capital of upwards of 600,000 inhabitants, who live on vegetables—therefore any quantity is obtainable.

In the Crimea preserved vegetables would have been of use; but when they were at first offered to the men for sale, the men refused them, because they had no "instructions" for cooking them.

January 8. Ships.

January 8—Dr. Smith requires information from Staff-Surgeon Manifold, as to certain alleged defects on board the "Himalaya."

January 10. Ships.

January 10—He writes to Colonel Mundy, requesting that the Sick Transports between Balaclava and Scutari be fitted up like Hospital Ships.

January 11. Warm Clothing.

January 11—He advises warm clothing being sent with every soldier going out.

January 12. Blankets. Scurvy. Lime Juice.

January 12—Dr. Hall writes to Dr. Smith that "Fevers and Bowel Complaints are more frequent than ever;" also Frost-bites. "Blankets and warm clothing have been distributed; but these do not appear sufficient to protect the men from the weather." Shoes sent out, bad. "Symptoms of Scurvy have made their appearance in some cases; but as yet the disease has not made much progress amongst the men," "and I hope by the arrival of the expected supply of Lime Juice, its further spread will be prevented." Wooden huts have arrived from England—efforts being made to get them up—some Commanding Officers will do nothing—want of transport and almost impassable state of the roads.

This is the substance of this most remarkable letter from the Head of the Department in charge of the health of 29,000 men, which was then at stake, to his Chief at home.

1. As to blankets—

By the end of December, there were sufficient blankets at Balaclava to have given a third blanket to every man. Dr. Hall had been advised by Dr. Smith that a very large quantity of blankets had been sent out, November 18. Had vigorous efforts been made to give consequence to this information, it might have led to the discovery of these blankets, and of this provision made by the Government. It was no wonder that they did "not appear sufficient to protect the men from the weather," since, up to this time, only one blanket had been distributed to every man. Had an energetic communication been made home, a telegraphic message might have been sent out, which would have hastened the distribution of what was essential to the life of the Army. For Lord Raglan seems to have been always ready.

2. The expression "symptoms of Scurvy" seems quite inexplicable, as well as that of its "not having made much progress."

The Army was dying, and of Scurvy. More than half the Infantry were sick in Hospital during this month; and the mortality was 1,173 per 1,000 per annum; greater than that of the Plague of 1665 at its highest rate.

Yet there is nothing to indicate in these letters that either Principal Medical Officer or Director-General know that an Army is dying, or that, if it is, it is any business of theirs.

January 12.
Sanitary.

January 12—Dr. Smith writes to Dr. Hall an Instruction for the first time involving Sanitary duties. He is directed, if he has not already done so, "to make known in writing to the Commander-in-Chief whatever you consider is likely to deteriorate the health of the Troops," and suggest whatever steps he may consider necessary; "by that only you will discharge your responsible and onerous duty."

For the first time, Dr. Smith's eyes seem open to his terrible responsibility.

January 13.
Iron Hospitals.

January 13—Dr. Smith recommends corrugated iron Hospitals, to be sent to the East.

January 16.
Lime Juice.

January 16—Dr. Smith again urges on the War Department that at least 20,000 gallons Lime Juice should be shipped during the next two months, a part at a time.

January 18.
Burials.

January 18—He addresses two letters to Dr. Hall and Dr. Forrest about the burial of dead animals and the Scutari graveyard.

January 27.
Cotton Shirts.

January 27—In reply to a letter of General Wetherall, about flannel shirts, Dr. Smith states that, if flannel and cotton cannot both be sent, cotton are to be preferred

January 23.
Flannel and Cotton Shirts.

January 23—He had recommended both.

January 24.
Unground Coffee.

January 24—Dr. Smith objects to the issue of unground Coffee, and advises ground Coffee and Tea twice or oftener a week.*

* When Dr. Smith wrote this letter of the 24th January, 1855, he does not seem to have been aware that the troops had used not only *unground* coffee but *green* coffee, from the month of November 1854, and, as far as is shown by the correspondence, he never appears to have been informed of the fact. His recommendation to use *ground* coffee, if sent to the Crimea at all, would have arrived there, it is true, after *green* coffee had ceased to be issued, and when the troops were supplied with roasted coffee, and coffee mills had been purchased and issued to them, to the number of

With regard to the Tea, although 170,000 rations of Tea were at Balaclava in December, although more might have been had from the Navy, from Constantinople and Malta, nothing appears to have been recommended by the Principal Medical Officer on that score till March 22, when the Board of Health applied for by him, met and advised Tea, Cocoa, and Coffee alternately. Both Fuel and Roasted Coffee had then long since been issued.

January 27. Clothing.

January 27—Dr. Smith advises a Clothing Store at Scutari for giving warm clothing to men discharged.

This was after this supply had come for three months from private sources, and been classed as an "unnecessary" and "ostentatious" one; after a Quarter-Master General's store had been established, December 5, (or seven weeks before), at Scutari for the purpose; and after the necessity had nearly ceased, for, owing to the distribution of warm clothing at the front, which was then taking place, no great want can be said to have existed after the middle of February, when Dr. Smith's recommendation would come out.

January 31. Scutari Hats.

January 31—Dr. Smith writes to the Principal Medical Officer, Scutari, to negative the erection of buildings in the Hospital Square. [This was not attended to.]

February 2. Lime Juice.

February 2—On account of the reference to Lime Juice not having arrived at Balaclava, in Dr. Hall's letter of January 12, Dr. Smith urges the matter on the Military

about 2,000, that they might grind for themselves, which was about the beginning of February, 1855. This notice of a trifling evil, like so many others, was made after a greater evil had been long and wholly discarded.

Dr. Daubeck's Representation, in his Evidence given before the Sebastopol Committee.

With reference to this question of Coffee Dr. Daubeck states that he "left the camp in front of Sevastopol, *i. e.*, Lord Raglan's Head-Quarter Camp, on the 13th of November, the evening before the great storm; up to that time there were no wants that" he "saw that were not supplied."

He says that "there was a prospective scarcity of fuel;" that he "was told that in some regiments they managed to roast their coffee;" that he "was told that certain Commanding Officers managed better than others, and that in some regiments they managed to roast their coffee, but that in others they left it undone; but that is mere hearsay." That he "never had any direct evidence that green coffee was used;" that "green coffee was issued to the troops, certainly; but he supposed an attempt was made to roast it, in many instances."

Secretary, and asks if anything had been done about his Requisition of November 30, and if any report of the arrival of Lime Juice has been received.

February 5—He is informed that the "Holyrood" was landing her cargo on January 19, that it was presumed the "Esk" had landed hers, as she was ordered on other service, and that the "Sidney Hall" had not arrived. February 5. Lime Juice.

The history of this Lime Juice, which is now brought to a conclusion, is so painfully instructive, that it must here be summed up. Summary of Proceedings about Lime Juice.

The "Esk" had arrived with the Lime Juice on December 10, and though there is some controversy about the date within a few days, she had, at all events, landed her cargo by December 20. This is nowhere denied.

Dr. Hall had been advised in time by Dr. Smith both of her day of sailing, her name, her cargo, and even the name of its consignee, the Commissary-General, as also that the Lime Juice was for the use of the Troops. Letters of November 21, " 27.

Yet it appears to have remained for Lord Raglan to discover its existence on January 24 (six weeks after it was so grievously needed by an Army melting away from Scurvy), through his Order to the Commissary-General to send him returns of everything in store.

Two days after, January 26, he placed his Adjutant-General in communication with Dr. Hall about the distribution of this Lime Juice—and, three days after, January 29, the serving it out as a part of the Ration formed the subject of a "General Order." It was regularly supplied from the first week of February.

It appears to have been left to Lord Raglan's own detective power to be here his own Sanitary Officer.

February 3—Dr. Smith writes to the Secretary of the Board of Ordnance about patterns of Cholera Belts. February 3. Cholera Belts.

Also about Charcoal sent to Scutari. Charcoal.

February 5—He again writes to the Principal Medical Officer, Scutari, about the Burial Ground, recommending decency in removing the dead, careful burial, and obtaining a burial-ground at a greater distance from the Hospital. February 5. Burials.

February 5, 7—He again urges sending out more Lime February 5, 7. Lime Juice.

Juice. Encloses, on the 5th, extract from Dr. Hall's letter of January 12.

February 8. Waterproofs. February 8—He sends to the Military Secretary an extract from Dr. Hall's letter about waterproof articles, and urges their being despatched.

February 8. Asks for Information. February 8—Dr. Smith, "being positively without anything like detailed information touching the state of the sick and wounded in the camp, and the means available for their nourishment and treatment," requests Dr. Hall to send detailed information as to the state of the sick in each Division.

February 8. Lime Juice. February 8—He is informed that directions have been sent to Malta about Lime Juice.

February 10. Warm Clothing. Sir R. Hawes replies to Dr. Smith's letter of January 11, respecting warm clothing for Troops embarking for the East, states the Commander-in-Chief does not think it necessary, it will be enough if got at Scutari.

February 10. Quinine. Extract of a letter of Dr. Hall to Dr. Smith, recommending solution of morphous quinine to be sent out.

February 10. Cholera Belts. Dr. Smith to Mr. Wood, Ordnance Office, refers to his requisition of 9 December last, as pointing out best form of Cholera Belt.

February 11. Dr. Hall, on Burials of Dead and of Carcases. Dr. Hall replies to Dr. Smith's letter of January 18, requesting to know about the Burial of the Dead and of the carcases of animals; that burial grounds are generally sufficiently distant from tents, and graves dug sufficiently deep; but both points are occasionally violated; has seen dead carcases of animals lying about, in every direction, until he had pointed out the fatal results likely to follow. Some effort to get them buried, but imperfectly. "Numerous dead bodies of horses lie about still in every direction, and it is my intention again to call the Commander-in-Chief's attention to the subject." Overcharged Turkish burial-ground, at Balaclava, had created alarm, and the cemetery had been closed. Turkish sick have been removed out of the town. Had remonstrated the objectionable site chosen for new huts, near Balaclava, but was told that there was no other place available. "If we remain here during the summer, we shall, I am quite sure, pay the penalty."

February 12. Cork Mattresses. Quarter-master-General requests Dr. Smith's opinion about Cork Mattresses.

February 12. Dr. Smith to Deputy Secretary-at-War. Informs him that

a ton of chloride of zinc had been got ready to send to Smyrna. Chloride of Zinc.

Dr. Hall replies to Dr. Smith's letter of January 12, respecting the fitting-up of Transport ships. Certain defects have been remedied. States that he had made verbal representations, as to the defective system, but can find no written communication anterior to December 4. "Much of my business with the Commander-in-Chief was necessarily transacted verbally, but I must say I have always found him ready to listen to any suggestions and willing to afford assistance." Early in the season had urged the need of better shelter and more care for the men. Adjutant-General replied "that the Commander-in-Chief thought I had travelled out of the question and he was not pleased." Thinks the "Avon" was properly supplied with comforts. "The paucity of bedpans was matter of necessity, when she was fitted out, and the subject does not appear to have been brought under Dr. Lawson's notice afterwards." Hopes it will be found that he has always made due representations, either verbally or in writing, about the health of the Army. "It is true I have not put on record, in writing, merely for the sake of putting on record, things I knew could not be complied with, and, had I written them, the Commander-in-Chief must have felt I knew they could not be complied with." February 12. Dr. Hall on his own Representations.

In reading this letter the question which suggests itself is, What was the Principal Medical Officer there for? Was he there to judge as to whether things requisite for the sick or for securing the health of the Army, could be obtained or not? Was it not rather his duty to tell the Commander-in-Chief what was wanted? Otherwise how could the Commander-in-Chief know anything of the matter? Was he there to judge whether the state of mind of the Commander-in-Chief was such as would comply with his just demands, for the benefit of the troops? Remarks on Dr. Hall's mode of proceeding.

This extraordinary mode of proceeding is the more to be regretted, as Dr. Hall states, in this very letter, that he has "always found" the Commander-in-Chief "ready to listen to any suggestions and willing to afford assistance." In place of simply doing his own duty and leaving other people to do theirs,

he assumes the functions of the Military Executive in addition to his own.

As Principal Medical Officer he knows that the troops are perishing, but, placing himself in the position of the Military executive, he decides that, as Principal Medical Officer, he should do nothing, because he does not see how the Military executive can carry out his recommendations. There can be no proper medical discipline where such things can take place.

February 14. Preserved Meat. Dr. Smith sends to Colonel Mundy his approval of preserved meat for the troops and recommends a quantity to be kept in the Commissariat stores.

February 15. Steamer "Telegraph." Remonstrates with Colonel Mundy, about the state of steamer "Telegraph" and the want of provision for sickness occurring on board. Submits the necessity of preventing such things in future.

Febeuary 18. Same. Staff-Surgeon Odell writes to Dr. Smith and informs him what had been done to remove the above deficiencies on board the "Telegraph."

February 21. Lime Juice. Letter from Major-General Sir Charles Yorke to Dr. Smith, enclosing letter of the 19th, from the Admiralty, about the lime juice which had been shipped on board the "Esk," "Holyrood," and "Sidney Hall."

Febeuary 22. Scutari Burials. Dr. Cumming acknowledges Dr. Smith's letter of the 5th February, about the mode of removing corpses from the Hospital, to which Dr. Smith had taken objection, and replies "I have to observe that your proposal appears to me more objectionable than the mode now in use," which he describes; also about the new burial-ground.

February 22. Scutari Huts. Dr. Cumming writes, in reply to a letter of Dr. Smith of the 31st January, about objections to site of wooden buildings, in the Barrack Square.

February 22. Specifics against Vermin. Dr. Smith to Under Secretary-for-War, in reply to a letter of his of the 16th inst., advises a considerable number of specifics for vermin, white precipitate, blue ointment, nicotine, staveacre, infusion of tobacco, small tooth-combs, &c., good diet, change of clothing.

A long letter on an abominable nuisance, arising from the sufferings of the preceding winter, and which was well nigh over, by this time.

Extract of letter from Dr. Hall to Dr. Smith:—"I hope," he says, "the 40,000 gallons of lime-juice you mentioned are not far off at present, so that the ration may be continued to the whole Army." Is quite sure that lime-juice, vegetables, warm clothing, and better shelter, and two consecutive nights in bed, would eradicate scurvy and cure diarrhœa. Transports properly fitted up are coming into use. Castle Hospital progressing. "I am quite pleased with the place and anticipate much more benefit by sending men there than down to Scutari. At Scutari the buildings are large, crowded, and difficult to keep well ventilated. Fever, consequently, has made its appearance and proved fatal to many, both officers and men." — February 23. Dr. Hall on Scurvy and on Scutari.

At the date of this letter the Sanitary Commission was on its way to the East, and it will be observed that nothing is even now pointed out to the Director-General, except the hopelessness of sending sick to Scutari. The deaths from fever are taken for granted as a necessary occurrence, only to be avoided by not going there. One would think that not one practical fact in Sanitary improvement had, as yet, been ascertained. — Remarks on the above.

Dr. Smith writes to Colonel Mundy, suggesting the employment of Sick transports, to bring the sick home to England, touching at Malta and Gibraltar, to land bad cases. — February 27. Sending Sick Home.

Dr. Smith to Under Secretary-for-War, asking that 40,000 gallons of lime juice should be sent to Balaclava, as speedily as possible. — February 27. Lime-Juice.

Dr. Smith to Under Secretary, War Department. Explains the startling fact of 20 per cent. of the force at Gallipoli being the average amount of sick, by a statement of the Principal Medical Officer there, that the force consisted of weak and sickly men, left behind when the troops went to Varna. The well-known unhealthy sanitary state of Gallipoli is considered to have nothing to do with the occurrence. Recommends replacing the detachments by stronger men. — February 28. Sickness at Gallipoli.

Dr. Smith to Colonel Mundy, recommends hospitals at Princes' Islands, rather than additional temporary hospitals at Scutari. — March 1. Sanatorium.

Dr. Forrest to Dr. Smith, respecting objections against the buildings in the Barrack-square, Scutari. — March 2. Scutari Huts.

Dr. Smith sends Dr. Forrest's letter to Colonel Mundy. — March 3.

March 2. Beer. Mr. Roberts encloses a letter to Dr. Smith, about brewing beer in Turkey.

March 3. Mules. Dr. Hall writes to Dr. Smith, enclosing estimate for mules required for the Army Medical Department, if the Army take the field.

March 3. Sentari Huts. March 3—Dr. Smith requests the removal, by Lord Panmure's orders, of the buildings within the Barrack-square at Scutari.

[This was never done.]

March 6. Contrast between Dietary of Army and Naval Brigade in Crimea. Dr. Smith writes to Dr. Hall, sending a copy of Dr. J. Davy's letter from the "Spectator," about the contrast in the dietary of a British Regiment serving before Sebastopol and the Naval Brigade, during December and nearly the whole of January, and strongly animadverting on the different mode of administration in the two services. Dr. Smith states that, if the dates are correct, "there are grounds for strictures unfavorable as regards the Army," unless it can be shown that there were insurmountable difficulties, as to the dietary and cooking of the troops. Supposing the statements correct "I confess," he says, "for my part, I can scarcely conceive why the troops should not have been at least somewhat better supplied, both as to quantity and quality of provisions, than it would appear they have been." Even admitting the difficulties, Dr. Smith does not see why the men should not have been provided "with at least a larger amount of fresh provisions." He anxiously expecting replies to his queries about the sanitary state of the troops, and requests copies of all communications and representations "made by you to the Commander of the Forces, in regard to duty, dietary, &c., as affecting the health of the troops."

Remark. One would think that the fact, well known by this time, of an Army having all but perished, would have been of itself sufficient reason for the severest animadversion from the Head of the Army Medical Department. But no! The Sebastopol Committee is to have the doings of that Department before it, and Dr. Smith writes to his Principal Medical Officer, "I beg you to supply me, and that immediately,"—with what?—"with every kind of information which you may deem likely to enable me to establish a character for it" (the department), "which the public appears desirous to prove that it does not

possess." What hope for the Army after this? He might as well have said, Never mind anything if you only enable me to free the Department from blame.

March 6. Mr. Roberts sends to Dr. Smith about Port wine for troops.

March 7. Vegetables. Dr. Smith writes to Colonel Mundy, suggesting more vegetables for the troops, as he has reason to believe that the troops in the Crimea are still without the periodical supply of vegetables suggested by him on December 19th, 1854.

In this month, the supply of Vegetables was regular throughout the whole Army, excepting in five Regiments.

March 7. Pay not to be issued in Hospital. Dr. Smith writes to Colonel Mundy, as to the evils of issuing pay to men in Hospital, and suggests that everything, including tobacco, should be provided for the men by the Government.

March 9. Ventilating, &c., Scutari Hospitals. Dr. Smith writes to Dr. Cumming, at Scutari, requesting his best and most earnest efforts for ventilating the Hospitals: dreads the consequences, if this is not done. Asks about the measures adopted for ventilation. Hopes the fetor of the privies is "kept down," "which must, I fear, discharge their gases into the buildings and even into the surrounding atmosphere. The abundant use of water and charcoal I look on as the best corrective of this."

Remark. This letter was written in London, three days after the Sanitary Commission had inspected the Barrack Hospital at Scutari. It points out two of the most prominent of those sanitary defects which had converted these Hospitals into pest-houses. But why so late? Why was it delayed till the end of the calamity? Was there no medical officer who could have told Dr. Smith, before the Hospitals were occupied, that they were not ventilated and that the sewers "discharged their gases into the buildings:" a fact which was as true before they were occupied with sick as it was when Dr. Smith wrote? The practical result was that the sick men sent down to these Hospitals, in the hope of life, were sacrificed to the utter want of sanitary knowledge or system in the Department.

March 9. Marquee Hospital. Dr. Smith writes to Dr. Cumming about pitching a marquee Hospital in the Princes' Islands.

March 9. Vegetables. Mr. Roberts, in reply to Dr. Smith's letter of 7th, states that every exertion will continue to be made to supply the troops with vegetables.

March 10. Hospital Discipline.

Dr. Smith to Colonel Mundy, about introducing proper Hospital discipline at Scutari: complains of visitors at improper times and suggests improved rules.

March 10. Charcoal, &c.

To Dr. Hall from Dr. Smith, informing him of 80 tons of charcoal and 10 tons of chloride of lime, ordered to be sent to Balaclava, for the Camps, Hospitals, and town. Requests replies to queries, about the health of the troops, previously sent.

Remarks.

Lime-juice, as we have seen, is Dr. Smith's panacea for bad diet, in the case of Scurvy; and peat charcoal is his panacea for neglect of Sanitary measures. In neither case does the idea of *preventing* the mischief ever appear to have been entertained.

March 12. Dr. Hall on the improved Health of the Army.

Dr. Hall writes to Dr. Smith and is "happy" to inform him "that the improved state of health of the Army continues." (The mortality was then no less than at the rate of 56 per cent. per annum!) Mentions the appointment of the Board of Health, by General Order of the 10th March. Had been over the 3rd Division, which is one of the most sickly. Some Commanding Officers exert themselves more than others and their efforts are successful. Other Officers consider that the Government should bring everything to the soldier. "Camps, generally speaking, are much cleaner than they were." Scurvy disappearing and Bowel complaints better. Supplies of every kind ample. French Hospitals not nearly so good as ours now, "but a system of detraction has been commenced against our establishments and has been kept up, by interested parties under the garb of philanthropy."

Remarks.

One is tempted to ask, did Dr. Hall really know that, at the very time he was writing this unfounded statement, the sick in the Hospitals on the Bosphorus were perishing at the rate of 235 per cent. per annum on the sick population? It is incredible that he knew it. The British Hospitals, for several months, had been in such a condition that nearly a third part of all the sick had perished in them, and during the preceding month above one-half of those treated at Kulali had died. Had the British public nothing to do with this?

March 12. Dr. Hall on Detraction.

He goes on about those "detractors:" "Some," he says, have become so, "to regain lost moral reputation, and others to make their mission of importance, and they wish the world to believe that all the ameliorations in our institutions are entirely owing either to their own exertions or those of a few

nurses; and I am sorry to say some of our own department have pandered to this and have been rewarded for it."

Remarks.

One is tempted to ask—have no others been rewarded, who have nothing to show for the result of this same boasted Hospital system, but the wreck of an Army, which they did not even advise the most ordinary precautions, as to diet and clothing, to prevent, and the graves at Scutari?

Issues of Medical Comforts.

Dr. Hall sends Dr. Smith with this letter copies of the issues of medical comforts at Balaclava, in refutation of the statements of the "Times" and "defies the 'Times'" Commissioner to prove that he has issued all the things he says he has for the use of the sick."

The distribution of the "Times'" Fund began at Scutari in November 1854, and in the Crimea in January 1855. The miseries endured in the Hospitals, as attested by the evidence of almost every Commanding Officer and almost every Medical Officer, both Divisional and Regimental, in the Crimea, attested, too, by the statements in the abstracts, Appendix II to Section I, as well as the benefits conferred by the "Times'" and other private Funds, every one now knows; but these very benefits were the condemnation of the Hospital administration of the Department, and, rather than that they should be admitted, rather than that any deficiency should be confessed in the Hospital stores, Dr. Hall has the hardihood to make a statement which is tantamount to accusing the "Times'" Commissioner of peculation! Of what possible assistance could the Director-General be to the Government, when he had to depend on such information as that given in this extraordinary document?

March 12. Lime-Juice.

Major-General Sir C. Yorke informs the Director-General that 5,000 gallons of lime-juice had been directed to be sent from Malta to the Crimea.

March 16. Sick to be sent Home.

Dr. Smith transmits to Colonel Mundy extract from proceedings of a Medical Board, consisting of Drs. Dumbreck and Forrest, Mr. Menzies and Dr. Mapleton, who had all served in the East, recommending the evacuation of the "crowded and polluted" Hospitals, to the greatest practicable extent, and to bring the sick home.

Remark.

This letter was sent to the War Department the very day before the sanitary works at Scutari were begun by the Sanitary Commission, and immediately before the striking improvement

in health which followed. At that date the deaths on cases treated were no less than 315 per 1,000, or nearly one in three, and, when the sanitary works were almost completed, the deaths fell to 22 per 1,000 on cases treated.

March 23, Peat Charcoal. March 23. Sanitary Recommendations for Scutari.

Dr. Smith sends extract of recommendation of Board of Medical Officers to Dr. Cumming, at Scutari, recommending peat charcoal for the burial-ground, &c.

Dr. Smith sends to Dr. Cumming, at Scutari, other sanitary recommendations about the hospitals, as follow :—

1. Turning the Apothecary's and Purveyor's stores, at the General Hospital, into wards.

2. The "defective and unscientific" construction of the drains to be "seen to."

3. The state of the burial-ground, as already pointed out.

4. Mending the floors.

5. To improve the sanitary state of the eastern wing of the Barrack Hospital (how or in what respect is not stated).

6. Huts in the square should be removed.

7. The Palace Hospital ought to be evacuated, on account of its "notoriously unhealthy position."

8. "It is said that the rooms for sick, at Kulali Barrack, are over stables." Stables should be rendered healthy.

9. What means have been taken to remedy "the offensive and pestilential state" of all the privies?

Also the abandonment of the Turkish privy and the formation of another kind is recommended.

Remarks.

This letter, like so many others in the correspondence, is so far behind its time, that one wonders why it was written except to save the Department from the charge of absolute neglect of duty.

The sanitary advice in it is not worth much, but it would have been better, had the letter been sent nine or ten months earlier. It would arrive at Scutari at the end of the first three weeks of the Sanitary works instituted by the Commission, and when the mortality on cases treated had fallen from 315 to 180 per 1,000, in consequence.*

Conclusions. I. Sanitary.

I. It will be observed in Dr. Smith's Correspondence—

1. That, as far as sanitary recommendations are concerned, these letters are most defective.

* Dr. Cumming's singular reply to this letter of Dr. Smith is given *ante*, Preface to Section III (p. xiv).

2. That there appears to have been no preliminary sanitary instruction sent to the Army in Bulgaria, even after the receipt of Dr. Dumbreck's Report, prepared as that Report was by Dr. Smith's desire.

3. No instruction sent, to examine and prepare the Hospitals on the Bosphorus, before they were occupied.

4. No sanitary instruction issued for the guidance of Medical Officers going to the Crimea, on any one subject, either regarding town or country.

After sanitary neglects had become matter of public notoriety, a stir was made about individual cases, as, *e.g.*, the drainage and graveyard at Scutari, but all this was after the evil was done and the penalty incurred.

II. As to Supply.

II. It will be seen that the recommendations affecting the personal hygiene of the soldier evince more information and practical insight. They are often enforced with vigour, as, *e.g.*, in the case of Lime Juice, ventilated Tents, and, to a certain degree, Clothing.

But the Army could not live on Lime Juice; it appears to be Dr. Smith's *idée fixe*. There is little mention made of Vegetables, or of unground Coffee, till the mischief was done. There is no mention at all of Fresh Meat, Bread, Fuel, Roasted Coffee or Cooking. The very essentials to life are neglected, and even the remedies are posthumous to the death of the Army in many cases, in others tardy and ill-timed.*

* *Fresh Meat.*

Average Quantity of Fresh Meat issued to each Man of the Five Divisions composing the Army, *including the sick in camp*.

	Per Month. lbs.	oz.
December, 1854	6	4
January, 1855	0	0
February, "	8	2

Fresh Bread.

Not a morsel issued to Sick till April 9, 1855, nor to the Troops till later.

Green Coffee.

From beginning November, 1854, till end January, 1855.

Fuel.

Charcoal.—Issue began December 8—only to Troops in front.
Wood.—Issue began December 29—only to Troops at Balaclava, except a small quantity to the Hospitals in front.

Camp Kettles.

Not issued till January, 1855.

With regard to Hospital supplies,† which were undeniably within the jurisdiction of the Department, nothing about them appears in this correspondence, although Dr. Smith must have known that they were exhausted.

---

† Let us see what, supposing there had been 2,000 sick only, according to the calculation at eight per cent. would have been the allowance of Medical Comforts per Sick Man, during six months, viz., June, July, August, September, October, November. If we take Dr. Smith's return of supplies forwarded by him, the simple calculation of numbers, shown by figures, gives the allowance *per* Sick Man, for six months:—

Port Wine	7 bottles	Essence of Beef	1½ lb.
Brandy	1½ bottle	Concentrated Milk ..	½ pint
Sago	6 lbs.	Oatmeal	2½ lbs.
Tea	1½ lb.	Preserved Potatoes ..	5 lbs.
Sago or Arrowroot ..	2½ lbs.	Barley	½ lb.
Preserved Mutton ..	½ lb.		

Taking 2,000, the lowest estimate of probable Sick, Dr. Smith's Return shows a great deficiency.

The Director-General considered the Supplies sufficient for Six Months, and did not anticipate any purchases on the spot. He says he proposed to wait for Requisitions, before sending further Supplies.

It appears from Dr. Smith's evidence, Sebastopol Committee, 2nd Report, Qu. 8,117, that he considered that "there were stores sufficient sent out" to "have lasted them for six months;" that he "must wait for requisitions."* Yet he says, Qu. 8,128, that the "Officers under the Medical Department" "had power to purchase," but that there was "a doubt as to what is the position of the Purveyor." He reiterates, however, Qu. 8,130, that he did not calculate that the Hospitals would require anything from the markets of the East; "the intention was," he says, "that the Hospitals should be supplied from this country with all that was requisite," and not on the spot. He again repeats, Qus. 8,182-3, that on November 5, 1854, he "was aware that he had dispatched from this country ample provision for every want;" and, in the next place, "it was considered by the Medical Authorities out there that they had what was wanted;" that he "had no reports to have justified him in saying anything else." He tells us, Qu. 8,902, "always to keep in view that, the moment the Principal Medical Officer joined the Army, he would be aware what he possessed, and if he saw that anything was getting low, he would immediately make a requisition for whatever he wanted, and continue doing so periodically."

All this makes confusion worse confounded—especially as, according to Dr. Smith, Qu. 8,043, "Inspector-General" Hall did "report to the effect that everything was amply provided," on his arriving at Constantinople.

---

* He states, however, Qu. 8,903, "that he never waited for the Requisitions, for he thought his safe course was to continue sending out stores."

The following corrections should be made in some passages of this abstract:—

P. ix, lines 11 and 12, dele the words *and safety*.
P. v, line 10 from bottom, after *also* insert *June* 8.
P. vii, line 15, after *June* 23 insert 1857.
P. vii, line 7 from the bottom, for *June* 20 read *July* 29, and correct the marginal date.
P. xi, line 11, for 20,000 *read* 40,000.
P. xi, line 14 from bottom, for 40,000 *lbs.* read 40,000 *gallons*.
P. xiv, line 13 from bottom, for *blankets* read *warm clothing*.

I have thought it desirable, at the very outset, to give the details of the Director-General's sanitary correspondence, during the period ending the 23rd March, 1855, by way of Preface to the account of the privations of the Army during the same period. The actual wants of the Army may thus be fairly compared with the provisions made for supplying and the precautions taken for anticipating them.

A classified abstract of the correspondence of the Principal Medical Officer in the Crimea, during the first winter of occupation, until the arrival of the two civil Commissions in the East, will be found at the end of the Section, p. 66. An examination of these two collections of official correspondence will, it is believed, afford the best and surest justification of what is stated in the Section.

give
end-
, by
the
the
ions
lici-

Prin-
nter
mis-
tion,
ficial
and

I.

Notes on the Sufferings and Privations of the Army from April, 1854, to the Beginning of 1855.

Privations taken in April, 1854.

The Army of 25,000 men, intended to land in Turkey, in April, 1854, at some spot to be determined by the position of the Russian Army, was preceded, owing to the foresight of the British Government, by an Engineer, three Medical and one Commissariat Officers, to report upon the facilities of the country for their several objects.

It does not appear, however, that the Medical Officers ever placed themselves in communication with the resident practitioners of the country, with the view of making known to the Army Medical Staff the peculiarities of the effects of the climate in regard to the treatment of disease. Three or four of these resident practitioners, nevertheless, held degrees of British Universities, and two of them had from 14 to 20 years' experience, being officially attached either to the Sultan or the British Embassy, whilst a third was a native Armenian, educated for ten years in England, who was well-known in Constantinople, Broussa, and the neighbourhood. At least we cannot trace that any suggestions or instructions were issued to the Medical Officers of the Army in the summer of 1854, as to the nature of the climate, clothing required, or any remarks as to the caution required in prescribing remedies, such as calomel, &c., for disease in Turkey.* Valuable information was afterwards given (too late) by these to Army Medical Officers, chiefly

* The Director-General states that he "did not make any definite recommendations to the Government," in consequence of the Reports of the three Doctors, because "a copy of that Report was left with the Army, for the guidance of the Inspector-General of Hospitals, Dr. Hall."

as to the kinds of clothing and of medicine necessary for the troops in that climate.

Lord Raglan's General Orders in May, 1854, for a System of Supply of Necessaries to the Soldier.

The Army landed at Gallipoli, proceeded to Scutari, was ordered to Varna, after Lord Raglan had (in May) made such preparations for the Campaign as he judged best. By referring to Lord Raglan's General Orders in May, it will be seen that he had anticipated those evils which were the principal cause of the after sufferings of the troops, viz., the leaving to the discretion of the Commissariat, or even of the soldier himself, the supply of proper food.

Neglect of these Orders.

That a man must be kept alive to fight, and cannot, if in Hospital, be in the trenches, would seem to be a truth, though a truth not recognised, in general, by military authorities, though certainly Napoleon considered that the principal qualities required to make a great Military Commander were Civil ones. Yet, in a country where the soldier was necessarily dependent upon the Commissariat for every kind of supply, it appears to have been in a very short time left, contrary to Lord Raglan's orders, to the sanitary knowledge of a Commissary General, whether the soldier was to live on salt meat, rum, and biscuit, and on these alone, or not; and to the sanitary knowledge of the soldier himself, whether he were to purchase vegetables or not; and, so far as appears, no remonstrances or representations were made, at the time they ought to have been made, viz., in the summer of 1854, by the Head of the Medical Department, who does not appear to have remembered his sanitary functions.

By Lord Raglan's General Orders (at Scutari), in May 1854, founded upon a Treasury Minute, the Commissariat was ordered to provide, to be paid for monthly out of the messing,

Preserved Potatoes,
Chocolate,
Coffee,
Tea,
Sugar,
Rice,
Barley.

Porter, Ale, and Tobacco were also to be provided, and were to be paid for daily out of the pocket money of the soldier, if he chose to have them. None of these articles except Coffee, Sugar, and, for a short time, Rice, formed part of the regular Ration. It was left to the soldier himself to determine whether he would have them or not.

Fuel was to be provided as a Ration:—

¼ lb. Charcoal, or
3 lbs. Wood.

The absence of this Ration in the Crimea was for some time almost tantamount to ordering the soldier to eat his meat raw, or not at all.

Lord Raglan also laid down the number of Tents and amount of Transport.

In about three weeks the above system of supply ceased, in consequence of various irregularities, and was, in short, a failure.

After about Three Weeks the System of Supply is abandoned. Consequent Privations and Sufferings of the Army in Bulgaria.

The sufferings of the Army in Bulgaria and in the Crimea from want of blankets and of proper food are well known. The bread in Bulgaria was sour and unwholesome, supplied by contract, and this, though there were the ovens of the country, and others might have been built, and bakers existed in the Army, and others might have been obtained. If the Army were too weak to give bakers, or the country could not supply them in sufficient numbers, especial representations ought to have been made to England for them. Lord Raglan and his

Bad Bread and Meat.

Staff occasionally ate the French bread, the French Army having baked for themselves the whole time.

In the Crimea, the men had only biscuit, till bread was brought from Constantinople.

The meat, supplied to the Army as mutton, all over Turkey, was generally bad, and was sometimes goats' flesh: salt beef or pork were supplied in the Crimea; in both instances, the men were unable to eat their whole Ration, and large quantities of it were thrown away.

Yet, upon these things depends the health of a man; and in the Army, above all other trades, the physical state of the employed is the force of the employer. The health of the men is the main engine of the Commander.

Contract System.

The system of contract for many articles, especially for Meat and Bread, is extravagant, insecure, and inefficient. Bread can be provided for an Army cheaper and better by its own bakers than by any contract system. The sour bread in Bulgaria, and the constant use of biscuit in the Crimea, have been alleged by most of the Medical Officers as a powerful cause of disease.

According to the contracts, the fresh Meat was delivered killed to the Troops. Goats were thus constantly substituted, without possibility of detection, for Sheep. The Sheep and Cattle should always be delivered alive.

Drill.

At Scutari and in Bulgaria, six hours' drill, under a burning sun, greatly impaired the health of the troops; but we find, in these same General Orders, Lord Raglan's precautions for the health of his Army, as to length of drills, time of day of drills, fatigue duties, &c. These precautions extend even to orders about Latrines.

In general the causes of our suffering in Bulgaria were the unhealthy nature of the ground, want of proper food, of proper clothing, of shelter from the sun, and of medical supplies.

All the Surgeons are unanimous in saying, that even in Bulgaria the food was bad, the tents were bad, the transport bad.

The remedy for the food is to have the Ration laid down, to have the Bread baked and the Meat killed not by contract, but in the Army. Other changes in the Commissariat will be suggested. The remedy for bad tents is to have good ones and carriage for them.

With regard to all these deficiences, the questions of importance to solve seem to be—

Were Lord Raglan's General Orders disregarded or discontinued? If so, why so? Was it brought to his notice?

Why were Lord Raglan's General Orders disregarded?

The Duke of Wellington, we know, wrote to the Premier in England for shoes, saying, "If you don't send shoes, the Army can't march."

He corresponded himself with Admiral Berkeley at Lisbon, in order to arrange for sending, during a whole winter, sailing transports for fresh meat to Vigo and Oporto.

He ordered marches to be made in directions where bullocks would be found.

He ordered men to march considerable distances, in order to fetch their own clothing when it arrived, and return with it on their backs.

He writes on one occasion to one of his Generals:—"I wish I had it in my power to give you well-clothed Troops, or to hang those who ought to have given them their clothing."

He is known to have paid particular attention to the sanitary position of his encampments.

He appears to have been his own Quarter Master General, Commissary General, Adjutant General, and Principal Medical Officer.

The question arises,—Is it safe to have a system which

consists of a man?—in short, where the Commander of the Forces does everything himself, even to ordering his Army's shoes? (which seems nearly as inexpedient as Miss Nightingale ordering the men shirts).

Lord Raglan appears to have trodden close in the steps of his Master and *Friend*, with this difference that his General Orders were disregarded, after a time, without his knowledge.

With regard to the famous move to the Crimea, without pretending for one instant to enter into the military question, it may safely be said that, in a sanitary point of view, it appeared the only salvation for the Army, which was so reduced in health that, another month in Varna, (so it is thought by many high Medical Authorities) and nothing would have been left of the British Army but its graves. As it was, the men were so weak that it was found necessary, as is well known, to give an Order that they should abandon their kits on landing in the Crimea.

Also, the Army could not have advanced towards the Danube, even had it been necessary, for the Commissariat had neither transport nor supplies.

To retreat upon Constantinople would have fatally injured the *morale* of the Army.

That the sufferings and mortality of the men were frightfully increased by the expedition to the Crimea is, alas! too true. Could they have been prevented?

Why was no Report of the Sufferings of the Army made by the Principal Medical Officer.

It is, we presume, the business of the Principal Medical Officer with the Army to report to its Commander the state of its health, and both what he judges to be necessary to secure that health and to be likely to impair it, as well as to take steps to cure disease; and that measures in this department must be taken beforehand is as obvious as that the Artillery or Transport must be prepared beforehand.

But, when the Army landed, where was the Principal

Medical Officer? In India. He did not leave England with the Army, as did the Commander of the Forces, Quarter Master General, Adjutant General, Commissary General. Instead of accompanying the Forces, his preparations having been all made in England, or, what would have been better still, preceding them, the first Principal Medical Officer was appointed at Malta. He joined the Army at Scutari, after having been superseded, and having, in consequence, resigned before he left Malta. Thus although he continued with the Army till the arrival of the next Principal Medical Officer from India, he could have little interest in originating suggestions which he would not see carried out.

Date of the appointment of the Principal Medical Officer.

There were three Principal Medical Officers in the course of one month; and on June 17, 1854, Dr. Hall joined from India. Too late—as will presently be seen.

Dr. Smith admits that "there was fault in the system," and that "that system has not been changed."

Vide Stafford's Committee, p. 18, Q. 401-2. Cumming Maxwell Report.

Dr. Hall writes a letter to Lord Raglan, from Varna, August 3, 1854, and again August 11, stating his requirements in the way of Transport, the only effect of which could have been to relieve himself from responsibility; for he must have known that, as to asking Lord Raglan for spring waggons in Bulgaria, and at that time, he might as well have asked for a roc's egg. The letter should have been written in March, or early in April; when Dr. Hall was in India. This was no fault of his.

The Ambulance Waggons sent out, being too heavy, were all broken to pieces; the Ambulance Corps had fallen of their animals, and were almost extinct—the Army was actually without Transport.

To return from the appointment of the Principal Medical Officer to his duties.

Duties of a Principal Medical Officer. *Vide* Queen's Regulations.

These are, as we have already said, to detail all his

recommendations to the Commander of the Forces, as to matters affecting the health of the Troops;

Clothing,	Drilling,
Rationing,	Sick transport.
Testing,	

Was this done?

To acknowledge the receipt, to the Director-General in England, of Medical Stores, &c.; to detail the anticipated wants to him, from time to time, together with what there is in store, in order to be able to meet the demands likely to be made.

Was this done in July or August, 1854?

That all these wants existed will presently be shown. That the Principal Medical Officer could not detail them, while in India, and that, therefore, till his arrival, it was no fault of his, has also been shown; but it has been denied that they existed.

Evidence from Official Documents.

It therefore becomes necessary to quote evidence; and as it is generally considered, and some of the quotations which follow, tend to imply that civilian judgment upon the wants of Military Hospitals is not of so much value as that of Army Medical Officers, the evidence of these last and of Commanding Officers upon the spot will be almost invariably quoted. We will begin with Lord Cardigan's evidence, as follows:—

Lord Cardigan on the Fears felt by Medical Officers.

"I found the supply of medicines very inadequate, from the first moment that we landed at Varna. I was constantly spoken to by the Surgeons themselves, and also by the Brigade Major, who said that there was great difficulty from the want of medicine. This was in the month of July 1854, when there was a great deal of sickness. The Surgeons were in such a situation with regard to medicines, and there was such a total want of medicines that I wrote to Lord Raglan a most pressing letter,

requesting that he would send for the Chief of the Medical Department at Varna, and that he would represent to him that the Medical Officers of the Brigade under my Command were very ill supplied with medicines, and had no medical comforts of any description. I got an immediate answer from Lord Raglan, to say, that he had sent to the Chief of the Medical Department, and that a large stock of medicines and medical comforts had been immediately sent out on mules to the Brigade. I think I might also state that I had great difficulties to contend with in this matter; for, although the Surgeons of the Regiments constantly came to me, and freely communicated with me as to the deficiency of the medicines, yet when they found that I was going to take this thing up, and communicate with the Commander-in-Chief of the Army, a totally different view of the case seemed to come over them, and they appeared to me to be very much alarmed at the probable or possible displeasure of the Head of the Medical Department, and I was particularly requested not to name any one of these Surgeons, or to represent, in any strong language, that they had made these representations to me. In short, it appeared to me that there was a great terror of the Head of the Medical Department. The consequence was that I had to manage this matter by writing a private letter to Lord Raglan, and I requested Lord Raglan to send for the Head of the Medical Department, and to say, that there was a deficiency of medicine, but I did not attach blame to anybody; and I so managed it that we got the medicines, and the thing passed off, without anything else being said. Certainly, when I was about to make that representation to Lord Raglan, there seemed to me to be a great deal of apprehension amongst the Medical Officers, that they would get themselves into difficulties by making a representation, which might reflect upon the Head of the Medical Department. One or two of them said that they had forwarded Memorials to their own superior Medical Officers, and the others said that it had not been done generally. However, the grand object was that no blame was to be thrown upon the Head of the Medical Department, and therefore I made no observation which could reflect upon him, and the matter was settled quietly by the medicines being sent out. I had a very great difficulty about it. I was at first requested by the

Medical Officers not to make any representation at all. I said that was impossible; that they had represented to me that they had not got medicines; that there was great unhealthiness in the Camp; that the men were dying; and, 'do you mean to say,' I added, 'that, on account of any feeling with respect to the Medical Department, or anything else, I am to refrain from letting Lord Raglan know that there is not a sufficient quantity of medicines for the cure of the men?' "

Accuracy of this Picture.

This is an accurate picture of the state of the Army Medical Department generally. It will be denied: but it is true for all that. I stand upon my personal observation and upon much evidence which, though one thing may be said to me and another to their Chief, is also true.

Absence of Official Representations to the Commander of the Forces, and to the Director-General, as late as the end of 1854.

The history of our sufferings, for the latter part of the year 1854, is well known. I am not going to recall them. I am simply going into the question of the causes which produced them, and the remedies which are to obviate these causes of suffering.

Was Lord Raglan made aware of the improper quality of the bread and meat furnished to the troops, and if so, at what date?

Was the General Order of May 1854 cancelled, and if not, why did not the Commissariat continue the system thereby established, and write to England for a continued supply of such articles as could not be furnished in Turkey among those detailed in Lord Raglan's Orders?

Was the Fuel provided when the troops could no longer obtain it for themselves?—and if not, why not? The General Order of the Commander of the Forces was sufficient authority.

But July, August, September, October, November, 1854, have passed, and where are the official remonstrances and representations from the Principal Medical Officer to the Commander of the Forces, and to the

Director-General in England, as to the Diet, including Green Coffee, and not including Lime Juice, &c., as to the Clothing, or rather nakedness, of the Troops,—as to the want of Medicines and Medical Comforts,—as to the state of the Hospitals?

Did he wait for December until the mischief was done?

And did the course of events wait until these tardy remonstrances were forthcoming? Let the Medical Officers who did not wait to make theirs, tell.

Evidence of Medical Officers, as to the actual state of things. Dr. Alexander's Evidence.

Dr. Alexander, now Inspector-General, says:—

"*Camp, Heights, Scutarigod,*

"*January* 15, 1855.

"We have been much worse off here for medicines, comforts, &c., than we were in Bulgaria." [Was this possible?] "The misery and wretchedness the troops have suffered here, but more particularly the sick, are scarcely credible, and require to be seen to be believed—poor sick wretches lying on the ground, with some miserable blankets, in tents that let in rain as if they were sieves, and with no fuel save the miserable roots and brushwood that could be gathered for cooking, &c."

He further states that—

"At Monastir he was informed 'that the demand for Essence of Beef (in his Division, the Light) amounted to almost the whole of the supply originally sent from England.'"

When it is seen what that supply was, this will be thought very little to be wondered at.

Farther he says, still speaking of Monastir:—

"I received an express from a 1st Class Staff Surgeon, in charge of a Cavalry Brigade, requesting me to send him some medicines, as 'he was completely run out of everything,' and his men were dying from Cholera."

State of things as represented on the Spot. Surgeon Cooper.

To continue—Surgeon Cooper, 4th Dragoon Guards, says:—

"Ever since I joined the Regiment, I have experienced the utmost difficulty in procuring sufficient medicines for the treatment of the cases in Hospital. I have, over and over again, applied for some of the most useful, commonest, and most familiar drugs, without being able to procure them. My requisitions have never been responded to, in full. It is a false position for a medical officer to be placed in, when obliged to supplicate, in place of receiving without any difficulty being raised.

"The Hospital has not been supplied with fresh meat for the last three weeks.

"*Cavalry Camp, Crimea,*

"*Dec.* 24, 1854."

Surgeon Nicoll.

Surgeon Nicoll, Grenadier Guards, says:—

"*Camp before Sevastopol,*

"*Dec.* 20, 1854.

"Up to a late period no beds or bedding were available to the men. Our requisitions for certain quantities of medicine are nearly always cut down. Medical comforts are totally insufficient. The means of carriage supplied for the sick and wounded, in the field, are lamentably deficient. Lately, the French have taken our sick into Balaclava."

Surgeon Wyatt.

Surgeon Wyatt, Coldstream Guards, says:—

"*Camp before Sevastopol,*

"*Jan.* 10, 1854.

"The sick, most of whom were afflicted with Cholera, Dysentery, and Fever, were compelled to lie on the wet ground, with no other shelter than a bell tent, which often was pervious to the rain. It is of little use for the Regimental Surgeon to know that abundance of Medical stores and comforts have been sent from England, if, through mismanagement or neglect, the

most required and essential articles cannot be procured through those channels through which the custom of the Service directs him to apply for them, and at a time when their failure is of the most vital importance."

Let us now see what was the "abundance of Medical Stores and comforts" which had "been sent from England."

Dr. Smith writes, Sept. 23, 1854, that he is "quite unable to apprehend what has become of all that have been already forwarded, viz., of medicines, medical comforts, and Hospital stores." — State of things as represented at home.

He furnishes a List of the "ample supply" which he "has sent out." — The "Ample Supply."

Let us now examine it, in order to see what and where was this "ample supply."

The "Return [furnished by Dr. Smith] of the Medical Comforts supplied for the Army in the East," shows that, from the beginning of the War, up to November 14, 1854, the following quantities of Articles were sent out, so as to arrive, and the ships they were sent in did arrive, prior to December 1, 1854:— — Dr. Smith's Return of Stores sent out, up to Nov. 14, 1854, calculated for the Supply, say, of 2,000 Sick, eight per cent. of 25,000.

Port Wine	1,200 doz.	Sebastopol Committee, 3rd Report, p. 462, pp. 568—10.
Brandy	500 galls.	
Sugar	11,680 lbs.	
Tea	2,600 lbs.	
Barley	1,680 lbs.	
Preserved Potatoes	85 cwt.	
Arrowroot	2,464 lbs.	
Preserved Mutton	1,792 lbs.	
Essence of Beef	2,240 lbs.	
Oatmeal	7 cwt.	
Sago	2,688 lbs.	
Cocoa and Milk	560 pts.	
Concentrated Milk	560 pts.	

Vide 2nd Report Sub. Committee—Dr. Smith's Evidence, Q. 8978.

These quantities were calculated as for the wants of an Army of 25,000 men. Dr. Smith states that he "calculated" then on "ten to twelve per cent. of sick, at the outside,"* though, afterwards, he says that he "should double it" for an Army in the field. The Army was only 25,000 strong when it landed at Scutari, and, if we put the sick, not at ten or twelve, but at eight per cent. only, the number of men for whom hospital stores should have been supplied, would be 2,000.

The actual Number of Sick rose gradually to nearly 20,000, before the end of 1854.

In actual fact, the sick must have increased to 10, 15, 20, and even 50 per cent., in July, August, September, October, November, December, and January.

For these are the "Returns showing the total number of men of Lord Raglan's Army, sick or wounded, during each month, from the landing in Turkey."

1854.	Sick or Wounded.
April	503
May	1,835
June	3,498
July	6,937
August	11,236
September	11,693
October..	11,988
November	16,846
December	19,479

And, alas! in January, 1855, though this does not concern us now, 23,076.

An abstract is annexed, prepared from the Adjutant-

* This extraordinary estimate, of what the sickness should be (what it never, under Dr. Smith's predecessors, has been) in war, leads us to ask. Did not Dr. Smith know what the sickness was, in the Peninsular War, or did he hold that his sanitary arrangements were so perfect that this afforded no just analogy for his guidance?

General's returns, shewing the sick present, *i. e.*, in the Crimea, and the sick absent, *i. e.*, at Scutari, &c., in every week from October 1, 1854, to April 30, 1855.

RETURN OF SICK.*

		Present.	Absent.	Total Number.
1854 October	1	119	4,273	4,392
	8	506	4,804	5,310
	15	694	3,620	4,314
	22	667	3,549	4,216
November	1	977	4,453	5,430
	8	1,895	4,874	6,769
	15	3,451	5,649	7,100
	22	1,930	5,743	7,677
December	1	2,272	5,440	7,712
	8	2,657	5,224	7,881
	15	2,181	6,334	8,515
	22	2,504	6,745	9,239
1855 January	1	3,090	7,459	10,568
	8	3,858	7,082	10,940
	15	3,374	7,995	11,369
	22	4,498	7,907	12,405
February	1	4,246	8,776	13,022
	8	4,262	8,995	13,257
	15	4,167	9,427	13,594
	22	4,186	9,454	13,640
March	1	3,936	9,673	13,668
	8	3,712	9,259	12,971
	15	3,327	9,216	12,543
	22	3,073	8,896	11,969
April	1	2,770	8,199	10,969
	8	2,818	7,685	10,503
	15	2,513	7,270	9,783
	22	2,130	6,553	8,683

Yet it appears, by the above-mentioned "Return of Medical Comforts," that none were supplied from England between 27 May, 1854, and 20 Sept., 1854, although, in Aug. and Sept. the "total number" of sick had increased to 11,000.

* The Return, p. 16, gives, it appears, the Sick, "Remaining and Admitted" for each month. This Return, the actual number of those in Hospital on each of the days mentioned.

Taking however, 2,000, the lowest estimate of probable Sick. Dr. Smith's Returns shows a great deficiency.

Let us, however, see what, supposing there had been 2,000 sick only, according to the calculation at eight per cent. would have been the allowance of Medical Comforts per Sick Man, during six months, viz., June, July, August, September, October, November. If we take Dr. Smith's return of supplies forwarded by him, the simple calculation of numbers, shown by figures, give the allowance per Sick Man, for six months:—

Port Wine	7 bottles.
Brandy	1½ bottles.
Sugar	6 lbs.
Tea	1½ lbs.
Sago or Arrowroot.. ..	2½ lbs.
Preserved Mutton	¾ lb.
Essence of Beef	1½ lb.
Concentrated Milk.. ..	½ pint.
Oatmeal	2½ lbs.
Preserved Potatoes.. ..	5 lbs.
Barley	¾ lb.

It is to be remarked here, that Bread and Meat are furnished to the sick man in Hospital by the Commissariat Contractors; and Tea and Sugar are also supposed to be supplied; but Wine, Sago, Arrowroot, &c., &c., are sent out from England, unless the Purveyors can procure them on the spot.

Absence of any Supply between May and September, 1854. Three Shipments. 1. By the "Bride" and "Balbec."

In order to see whether there was a sufficient supply of Medical Comforts to last from May to September, (four months) during which time the Army did not receive any, it is necessary to take the three supplies, of which the total has been given, separately.

Sailed, per "Bride," 15 April; and per "Balbec," 2 May; both arriving 27 May, 1854, at Scutari.

1st Supply.

arriving in May.

Port Wine	600 doz.
Brandy	300 galls.
Barley	1,626 lbs.
Sugar	4,680 lbs.
Tea	2,200 lbs.
Arrowroot	672 lbs.
Preserved Potatoes.	45 cwt.
Preserved Mutton	1,120 lbs.
Essence of Beef	1,120 lbs.
Sago	672 lbs.

Sailed, per "Mauritius," 17 Aug.; arriving 20 Sept., at Scutari.

2. By the "Mauritius," arriving in September.

2nd Supply.

Arrowroot	560 lbs.
Sago.	1,120 lbs.
Oatmeal	5 cwt.

Sailed, per "Vifredo," 20 Sept.; and per "Briton," 28 Sept.: arriving 1 Oct., and 9 Nov., at Scutari.

3. By the "Vifredo," and "Briton," arriving in October and November.

3rd and last Supply up to 14 November, 1854:—

Port Wine	600 doz.
Brandy	200 galls.
Sugar	7,000 lbs.
Tea	400 lbs.
Arrowroot	1,132 lbs.
Preserved Potatoes.	40 cwt.
Preserved Mutton	672 lbs.
Essence of Beef	1,120 lbs.
Oatmeal	2 cwt.
Sago.	896 lbs.
Concentrated Milk.	560 pints
Cocoa and Milk	560 pints

Was the Date of Delivery known or not known to the Director-General?

In every case, the "Date of Delivery" of the articles to "Consignee," is stated as "not known at this Office" (namely the Director General's), even at the date of April 27, 1855, a year after the sailing of the first supply.

Nevertheless Dr. Smith also states that, "reports relating to general matters connected with the health of the Army and the supplies are sent to him every mail," that "he gets the receipts of medicines and medical comforts that have arrived at Scutari, from Scutari, on the medicines arriving there; that is the depôt from which all our stations are supplied;" that he "gets an acknowledgment in letters;" that he "has these documents;" that "he is getting them printed now, to show when the medicines were sent out, and when they arrived; by what ship, and at what date;" that, "as a matter of course, there is only one officer to receive them. If they are medicines, it is the apothecary; if hospital stores or medical comforts, the Purveyor receives them;" that "having acknowledgments in letters, of the arrival of them, of course, whoever writes the letter, signs it." This is March 26, 1855.—Yet on April 27th, one month later, the date of delivery is not known to Dr. Smith.

In his Evidence on March 26, he states that, "Varna," not Scutari, "was likely to be the Head Medical Quarters of the Army." Yet elsewhere he says, that he "sent enormous quantities" (of quinine) "to the Medical Depôt at Scutari;" that he "has been going on sending them from the time the Army went out."*

Vide Stafford's Committee Q.4614—4617.

* Dr. Smith says, in answer to the question "Have you any Returns of the stores that have been sent to the East, and can you put them in?" "They were all put in before the Sebastopol Committee. They are all printed in the Report of that Committee."

Q. "Are you aware of the dates when the first ships with stores and medical comforts arrived in the East?" "No, I cannot charge my memory with that."

Was the Delay with the Admiralty?

Let us now compare the dates of Dr. Smith's requisition on the Ordnance, of the Orders of that Board for the supply of such requisition, and of the period at which the articles ordered were reported ready for embarkation, or at which they were actually shipped.

Perhaps the blame of dilatoriness rests with the Admiralty or the Ordnance.

The requisition for the first supply was made by Dr. Smith in February, and on March 24th; the supply was ordered by the Board, on February 20 and April 3, respectively; the articles were shipped in the "Bride" and "Balbec," which sailed, the first, on April 15, the day the articles were actually shipped, and the second, May 2. For the next supply, per "Mauritius," Dr. Smith made the requisition on August 8; it was granted August 8, and the ship sailed August 17. For the third supply, per "Beiton," the requisition was made by Dr. Smith September 2, granted September 4; articles shipped September 21; vessel sailed September 28.

There does not seem to have been much delay here on the part of the Admiralty or Ordnance.

The "Army and Navy" was granted by the Board, November 17, on requisition made by Dr. Smith, November 17 (this vessel was taken up by the Army Medical

Q. "Are you aware that none arrived between May and September, in the year 1854?" "They must have arrived in the East between those periods, because I was sending out constantly medicines and medical comforts."

Q. "Let me call your attention to Appendix, No. 8, of the Report of the Committee on the Army before Sevastopol, p. 402, where it states that the two first ships arrived May 27, at Scutari, and that no other ships with medical stores and comforts arrived till Sept. 20, in the same year?" "Probably they went to Varna."

Here Mr. Peel very seasonably interrupts, and steps in to the rescue of Dr. Smith, by changing the subject.

Department); articles shipped December 12; vessel sailed same day.

The Director-General considered the Supplies sufficient for Six Months, and did not anticipate any purchases on the spot. He says he proposed to wait for Requisitions, before sending further Supplies.

But what follows now will probably appear the most curious of all the facts stated. It appears from Dr. Smith's evidence, Sebastopol Committee, 2nd Report, Qu. 8,117, that he considered that "there were stores sufficient sent out" to "have lasted them for six months;" that he "must wait for requisitions."* Yet he says, Qu. 8,128, that the "Officers under the Medical Department" "had power to purchase," but that there was "a doubt as to what is the position of the Purveyor." He reiterates, however, Qu. 8,130, that he "did not calculate that the Hospitals would require anything from" the markets of the East; "the intention was," he says, "that the Hospitals should be supplied from this country with all that was requisite," and not on the spot. He again repeats, Qus. 8,182–3, that on November 5, 1854, he "was aware that he had dispatched from this country ample provision for every want;" "and, in the next place, it was considered by the Medical Authorities out there that they had what was wanted;" that he "had no reports to have justified him in saying anything else." He tells us, Qu. 8,002, "always to keep in view that, the moment the Principal Medical Officer joined the Army, he would be aware what he possessed, and if he saw that anything was getting low, he would immediately make a requisition for whatever he wanted, and continue doing so periodically."

All this makes confusion worse confounded—especially as, according to Dr. Smith, Qu. 8,043, "Inspector General" Hall did "report to the effect that everything was amply provided," on his arriving at Constantinople.

Having, now, stated what was actually sent out, the

* He states, however, Q. 8,003, that he "never waited for the Requisitions, for he thought his safe course was to continue sending out stores."

result will the less surprise us. We resume the evidence as given on the spot.

Evidence (from Official Documents) of the Sufferings of the Army. Resumed. Evidence of Medical Officers. Surgeon Bostock.

Surgeon Bostock, Scots Fusilier Guards, says:—

"*Before Sevastopol,*

"*Jan.* 1, 1855.

"In reviewing the events of the last six months, every Surgeon in charge of a Regiment must have been painfully sensible of the inefficiency of the means to supply the exigencies of the Service in the field. The Army has been without transport for the Sick and Wounded, without proper shelter and accommodation for men suffering under acute disease, and without an adequate supply of medicines, appliances, and comforts, essential to their treatment. With regard to medical comforts I regret to say, that the most necessary articles for the diet of the sick were supplied in such limited quantities as to excite the surprise of every officer present."

Surgeon Hearn.

Surgeon Hearn, 1st Royals, says:—

"*Before Sevastopol,*

"*Dec.* 1854.

"The chief cause of the great sufferings of the sick and wounded of the British Army may, I fully believe, be traced to the general and, indeed, almost incredible apathy evinced by the authorities, from the very outset of the Expedition, with regard to everything connected with the Medical Department. When we sailed for the Crimea, we were obliged to leave behind us a new Regimental Medicine Chest, which had been issued at home, expressly on account of our embarkation for active service, and, in fact, everything except two small pannier, containing surgical instruments and a supply of medicine, which, as regarded quantity and variety, was most miserably scanty, with Hospital Canteens A and B, the sets of Bedding which accompanied them, and the Hospital Marquee. No ambulance nor vehicles of any description were allowed to be embarked, nor was any provision made for the conveyance of the wearied, sick, or wounded soldier, who had to endure a long

march and fight his way through an enemy's country, unless the ten stretchers given over to the band, who were also encumbered with their own packs and accoutrements, could be considered as such. Before we commenced our march, from the landing at Old Fort, the Hospital Marquee, canteens, and bedding were ordered to be re-embarked, and there were but four water mules for the whole Battalion. The sick or wounded were, in short, to all appearance, thrown entirely overboard, one small circular tent only being allowed for a whole Regiment. The consequences soon became apparent: when men fell out of the ranks from exhaustion, or were seized with sudden disease, of which Cholera was the most frequent, the medical officers could render no effectual aid. The regiment moved on, and the victims were compelled either to drag themselves miserably along or to perish where they lay. In short they were left to their fate. The history of Alma, I regret to say, is but too painfully true. There were no means of carrying the wounded off the field, except the few Bearers already alluded to; and whilst, on the day following the battle, there was not a wounded Frenchman on the ground, it was disgraceful to the British nation to see, even on the second day, many of its brave defenders suffering, without any human aid, where they fell. The present ambulance, I need hardly say, has proved a complete failure. The carriages are heavy lumbering machines, which, on good Macadamised roads and with stout English horses might answer their purpose well, but which are all but useless in field practice. The class of men also sent out in this Department was probably the very worst that could have been selected, being composed chiefly of worn out, drunken, and useless old soldiers, most of whom perished at Varna, shortly after their arrival.

"But little, comparatively speaking, has been done for the sick. During the late severe affliction of Cholera, when the Admission and Discharge Book was converted almost entirely into a Registry of Deaths, it was most melancholy to see the men wet, wearied, and half naked, borne by their comrades, or dragging themselves slowly and painfully along to an hospital tent wholly unprovided with anything for their comfort. Destitute of bedding, of blankets, and of fuel, it was impossible to produce or maintain even that degree of

mere animal heat that was requisite for their recovery. Of what avail, I would ask, were Doctors and Physic in this deplorable state of things?"

Upon my personal experience I stand, and I declare that, judging from the condition of the men I saw, these statements are the literal truth, and no more than the literal truth.

I would also, as far as my personal observation goes, re-echo the statement of Dr. Alexander that—

"It is due to the Medical Officers, as well as to those in charge of medicines and purveyor's stores, to state that no men could have worked harder or performed more zealously their arduous and onerous duties (both in Bulgaria, during the ravages of Cholera, as well as in the Crimea) and that none of them have spared either trouble or inconvenience in doing all they could to obtain whatever would tend to the comforts of their sick."

Circular from the Purveyor of the Forces to the Medical Officers, referring to a representation made to Dr. Dumbreck.

The following letter was circulated for the information of the Medical Officers:

"*Balaklava*,

"*October* 3, 1854.

"Sir—With reference to your requisition of the 2nd for medical comforts, I beg to inform you that there is no arrow root, brandy, essence of beef, sago, or candles in store, and that ground rice will be substituted for arrow root and sago. The ground rice, however, has not yet been procured from on board ship, although two requisitions have been made for its being landed. The above has been made known to Dr. Dumbreck, the Principal Medical Officer in the Crimea, who proposes that rum should be procured from the Commissariat, in lieu of the brandy required.

"I have, &c.,

"(Signed) K. JESSER,

"Purveyor to the Forces."

Dr. Dumbreck's representation.

After this letter the evidence from this very Dr. Dumbreck, which we now insert, is the more unaccountable.

Dr. Dumbreck states that he "left the camp in front of Sevastopol, *i. e.*, Lord Raglan's Head-Quarters Camp, on the 13th of November, the evening before the great storm; up to that time there were no wants that" he "saw that were not supplied."

He says that "there was a prospective scarcity of fuel;" that he "was told that in some regiments they managed to roast their coffee;" that he "was told that certain Commanding Officers managed better than others, and that in some regiments they managed to roast their coffee, but that in others they left it undone; but that is mere hearsay." That he "never had any direct evidence that green coffee was used;" that "green coffee was issued to the troops, certainly; but he supposed an attempt was made to roast it, in many instances."

He states that "the Army never suffered, while he was in Medical Command, for the want of surgical appliances;" that "during his stay at Varna, there was not the slightest vestige of the want of medical comforts; they had a very abundant supply;" that "he saw no want of medical comforts in any of those instances, viz., the battle of the Alma, Balaclava and Inkermann, at all of which he was present."

He states that "before he left the Crimea, some articles of medicine were consumed at such a rate as to render their probable want to be feared; opium, for instance." That he himself "made a requisition to Scutari for the articles that were wanted; at least the Dispenser that was under his orders did."

We will now resume the evidence of the real state of things, as represented on the spot.

Surgeon Davies.

Surgeon Davies, 49th Regiment, says:—

"*Camp, before Sevastopol,*

"*Dec.* 12, 1854.

"No beds have been supplied until the last week, when 24 sets were received, without any bedding whatever."

"*Dec.* 21, 1854.

"The supply of medical comforts has improved, but no fresh meat has been supplied for the sick for the last ten days or a fortnight, and not for many weeks to the Regiment. In consequence, scurvy is showing itself, and there have been no vegetables for the last two months."

Surgeon Blake, 55th Regiment, addresses his Divisional Staff Surgeon thus:— Surgeon Blake.

"*Camp before Sevastopol,*

"*Nov.* 26, 1854.

"Sir—I have the honor to remonstrate most respectfully against the very inadequate supply of medicines and medical comforts for the sick issued to the Hospital under my charge, though, I believe, I am in the same position as others. At this moment, with a large number of cases of Dysentery and Diarrhœa, I can obtain no castor oil, no preparation of opium, nor a small quantity of morphine, no preparation of chalk, nor anything for a gargle, should I place a patient under the influence of mercury.

"The only medical comforts issued are arrow root and port wine, and these in quite inadequate quantities; tea can hardly be procured. Under these circumstances, and without any sufficient protection from the inclemency of the weather, it is impossible to treat Patients with any hope of success, or with justice to themselves or the service."

"*December* 21, 1854.

"The number of tents in use is four ordinary bell tents for the sick, and one for stores, hospital serjeant, and orderlies. The number is quite inadequate, and the tents themselves are ill calculated for the accommodation of sick.

"Twenty blankets issued in October is the only bedding I have received since landing in the Crimea, and many of these were lost when the Hospital was vacated on the morning of November 5. About a week ago 24 beds were issued, without bedding. They are, however, of little use, as it is impossible to place more than five in a tent; and to do that it is necessary to treat two-thirds of the men in their own tents, a most unsatisfactory mode of proceeding. I need hardly state that the whole of the articles mentioned under this head are totally inadequate for the number of sick.

"At the present time, when fresh meat, even for the sick, is a rarity, about 3 lbs. tea, 2—3 lbs. arrow root or sago, with, latterly, brandy and port wine, as required, is the whole amount of medical comforts issued, and this is a far more liberal supply than at any previous period. For upwards of a week no fresh meat has been issued, and I have been obliged to boil rice and biscuit together, for the greater portion of the Patients in Hospital. The above-named articles, with rice at times, forms the whole list of extras I have been able to obtain.

"The only means of cooking consists in one camp kettle, issued in October. Of course this is quite insufficient.

"With respect to the conveyance of sick and wounded in the field, I think it would be far better, were an Ambulance Cart attached to each Regiment, or what would be still more useful, a proper line of mules, with litters, such as those used in the French service, and from which we have of late derived so much benefit, and which have the advantage of being useful anywhere, whilst the Ambulance Cart requires a good road.

"I would suggest that one pack-horse is not sufficient for the conveyance of Hospital stores. In fact, the want of further means prevented any stores, even cooking utensils, being carried on the march.

"Whilst the Ration issued to the troops consists of salt meat, almost constantly, I think it would be highly advantageous, were a larger proportion of rice issued, or a proportion of preserved potatoes. Preserved meat or soup for the sick would be a very acceptable addition to the list of medical comforts. For a considerable period, green coffee has been issued to the men, which they can neither roast nor grind properly.

and which is consequently of little use. Were tea or cocoa substituted, it would, I think, be of great service."

Surgeon Graves, 68th Light Infantry, writes:— Surgeon Graves.

"*Camp before Sevastopol,*

"*Dec.* 26, 1854.

"Fuel for cooking Hospital Rations has never been supplied, the Orderlies having procured wood wherever it was to be cut in the neighbourhood of the camp. This has of late become scarce and difficult to obtain, and which difficulty must increase as the season advances, the thermometer standing now at freezing point. This want of fuel has been productive of much disease, because the Rations were used in an uncooked state, than which nothing is more conducive to affections of the stomach and bowels.

"I feel bound to state, that neither medicines, medical comforts, hospital furniture and conveniences, were sufficiently supplied for a length of time, and our very last requisition for comforts, viz., Arrow Root, Sago, and Prepared Cocoa, was not complied with. In lately requiring for medicine, neither Tincture or Powdered Opium were supplied. Fresh meat has been supplied whenever the Commissariat were able to procure it, and that has been tolerably regular to the Sick in Hospital."

Surgeon Macartney, 77th Regiment, writes:— Surgeon Macartney.

"*Lines before Sevastopol,*

"*Dec.* 22, 1854.

"In the Crimea the sick and wounded in the field are brought in by the hand on the Hospital stretchers in the first instance, and they are afterwards periodically conveyed to Balaclava, *en route* to Scutari, &c. This was done at first by the English ambulance, but latterly by the French; the latter, consisting of strong mules, with chairs, for the sitting and reclining posture on either side of the animal, seems admirably suited for the purpose; but the waggons of the former are too heavy for the state of the roads of the country, and the men

too old and drunken. After the battle of Alma, the wounded of my regiment were carried to the Ships from the Field Hospital, in hammocks slung from poles, by the sailors.

"I have been frequently unable, for a considerable time, to procure supplies of

Pulv. Opii.	Esp. Lyttæ.
Pulv. Cretæ c. Opio.	Arrow Root.
Tinct. Catechu.	Rice.
Hydrarg. c. Creta.	Preserved Soup
Ol. Terebinth.	Wine, Brandy, &c."

Surgeon Scott. Surgeon Scott, 79th Highlanders, writes:—

"Another source of difficulty in obtaining medicines and medical comforts, &c., is the number of signatures required to be attached to each requisition, as well as the difficulty and loss of time in finding the proper persons to authorize the issue. It would be very desirable that this should be, in future, simplified.

"With regard to the means and modes of carrying sick and wounded, I am of opinion that a well organized Ambulance Corps, similar to that used by the French, would be a great improvement, and should be adopted without delay. From what I have seen of the ambulance waggons now in use with the army, I have come to the conclusion that they are only adapted for the conveyance of sick and wounded in a level country with good roads. They are so heavy that, under most favourable circumstances, they require six mules to draw them, and on bad roads from eight to ten. They can only carry ten men, and from the nature of the springs, are very rough and uneasy. The system in use by the French has many advantages, as has been obvious from the extraordinary amount of assistance it has afforded us at a time when we were perfectly helpless, from our ambulance establishment being completely knocked up. Their system consists of an iron frame chair fixed on each side of a mule by means of a pack saddle, in which a patient, if slightly wounded, sits on each side; if badly wounded, however, he lies on an iron frame litter, covered with a waterproof sheet. This litter can be removed with the

patient in it, and forms a bed or stretcher. By this means sick or wounded men are easily transported up or down very steep hills and along the worst possible roads, with ease and safety. In this way, every single mule is made available, and not one more than necessary is employed. One muleteer is able to drive and take care of three mules and six patients, and almost as many when in litters. In addition to the above, it cannot be denied that a certain number of light spring waggons will, under certain circumstances, be very useful; at all events, one waggon should be attached to each regiment for the conveyance of an Hospital tent, medical comforts, stores, &c., as indispensable in our Field Hospitals."

Surgeon Anderson, 90th Light Infantry, writes:— Surgeon Anderson.

"The sick in camp receive the same ration as the efficient soldier. The only means of cooking the extremely limited provision of extras is at a miserable fire of green boughs and roots at a hole in the ground. Firewood is extremely scarce, and obtained with the greatest difficulty.

"I beg leave to state, for your information, that the sick of the regiment under my medical charge, are suffering much from the very inadequate supply of medicines, medical comforts, and the necessary transport for these latter articles, which might be obtained from Balaclava, were the transport available; and further, that I have no doubt but that the sickness has been greatly augmented in consequence of the men not being supplied with occasional fresh meat, rice, &c., &c. The men of the 90th Regiment have now been on salt provisions for three weeks, consisting of pork or beef, biscuit, coffee in its raw state, and sugar of the worst description, and in very small quantities. A great proportion of the sickness is attributable to the imperfect preparation of the coffee; and very frequently, during the very inclement weather, the men have no possible means of cooking even their salt provisions, leaving them ill-fed and overworked."

Surgeon Munro, 93rd Highlanders, writes:— Surgeon Munro.

"*Camp, Balaklava,*

"*Jan. 7, 1855.*

"The different medicines contained in the panniers were good, but too small in quantity, suited only for field service, and not, in my opinion, sufficient for the expenditure of a temporary Hospital. Since the investment of Sevastopol and the formation of General and Field Regimental Hospitals, I have found it difficult to obtain supplies of medicines and medical comforts; not that transport was not attainable, for a fatigue party of a few men could always be got, but frequently such medicines as were asked for were not in store at Balaklava; and during nearly two months, to the best of my recollection, my requisitions for Arrow Root, Ground Rice, and Essence of Beef, were not complied with.

Surgeon Fraser.

Surgeon Fraser, 2nd Battalion Rifle Brigade writes:—

"I have no especial remark or suggestion to make to the above [viz., his answers to queries], but simply and earnestly to state that the continued deficiency of a due and regular supply of medicines and medical comforts and conveniences for the sick, often made my duties most painful and irksome, and rendered medical aid comparatively useless.

Prediction of Zymotic Disease.

"However, I may add that, though so much has been neglected in remedying diseases when they have developed themselves, on the other hand, much has been omitted in the way of preventing disease, especially Dysentery, occasioned, no doubt, very much by the vicissitudes of the weather, without due protection from them, and the continued hardships of duty, combined with the rations which, though of sufficient quantity, have not been daily mixed with farinaceous or vegetable food. And since the early part of November, the ration of meat being almost continuously salt, without rice or potatoes (save for a few days with some onions), or lime juice with the rum, the Dysentery becomes now necessarily Scorbutic, and Scurvy itself has made its appearance in its usual form of spongy gums, swollen and discoloured extremities; and if the above causes are allowed to operate (I mean those over which we have control), the efficiency of our Army must be more affected by it than by the sword and artillery of the enemy."

Preponderance of Zymotic Disease in the Crimea.

In order to test the truth of this remark, let us examine the "Return showing the specific Diseases by which the Admissions into Hospital and Deaths have been occasioned among the troops serving in the Crimea, from October 1, 1854, to March 31, 1855, exclusive of those under treatment at Scutari: prepared from a Return furnished by Dr. Hall."

The total of Admissions is 52,548

3,806 only are Wounded

48,742 Sick.

Of this total of sickness the cases of Zymotic preventible Disease, namely

Scurvy	1,678
Cholera	2,167
Diarrhœa	18,708
Dysentery	4,441
Fevers	9,185
amount to no less than ..	36,179

So that if these be deducted from 48,742, one-fourth, or 12,563, is all that remains. That is to say, that Preventible Disease, that which is, or may be, prevented at home, made 75 per cent. of all the Diseases of the Army.

The total of Deaths is	5,359
from Wounds	373
from Disease	4,986

From Zymotic Disease, consisting of

Scurvy	92
Cholera	1,237
Diarrhœa	1,303
Dysentery	696
Fevers	1,137
the total of Deaths is	4,465

which being deducted from 4,986, only 521 remain, being little more than one-tenth of the whole; so that nearly 90 per cent. died from preventible causes alone.

It is here to be noticed that the term "Scurvy" means only the scurvy which shews itself by sores; as eight-tenths of all the disease in our Army was scorbutic, occasioned chiefly by improper diet. The average strength of the army for this period was 28,623.

Probably even greater at Scutari.

For various reasons, which will be given hereafter, the Returns of Disease and of the Causes of Death at Scutari are so incorrect that they will be of little use for our present purpose, and are therefore not quoted here. The probability is that Scutari would shew even a larger proportion of Zymotic Disease than the Crimea. The mortality, also, from diseases of the stomach and bowels was 25 per cent. higher.

But, almost all the admissions at Scutari having been re-admissions from the Crimea, to give these here would only be repeating the same information; and, although indubitably much Hospital Fever and Choleraïc Disease were generated within the Hospital walls of Scutari, yet as the deaths which resulted were entered under the name of the disease assigned at admission, it will be of as little avail for our purpose to give the Returns of deaths as those of admissions.

Dr. Alexander. Inspector-General Dr. Alexander, Light Division, further says:—

"*Jan.* 15, 1855.

"About the same period, December, although the troops were on sufficient rations, few or no medical comforts could be had, there being at the time neither sago or arrowroot when applied for, &c. Now, I must acknowledge, with the ample supplies sent out by the Director General for any contingency, and command of the Constantinople market, I cannot conceive why anything tending to the comfort of the sick and wounded were not always at hand when required, both in Bulgaria, as well as here in the Crimea; more particularly as we had command of the sea, and steamers continually plying, both when we were in Bulgaria, between Scutari and Varna, and now between the former and Balaklava."

Dr. Smith states that "he communicated to Dr. Hall that there was an ample supply of medicines and medical stores prepared at Scutari,* from which he might draw any supplies for the Army." Farther, he quotes a letter received by him from the Acting Apothecary in Chief at Scutari, dated November 14, 1854, saying, "I beg to give you an unqualified contradiction that any want has been felt since I arrived in the Command, for either medicines or surgical appliances;" and he adds, "I am bound to consider it as a distinct refutation of any statement to the contrary, being official, and from an Officer whom I am bound to trust."

Surgeon De Lisle, 4th Regiment, writes:— Surgeon De Lisle.

"*Camp near Scutari,*

"*Dec.* 26, 1854.

"It is impossible to state how often I have fruitlessly made requisitions for medicines and medical comforts. With regard to the former, I have not often been refused altogether, but the quantities issued have been often ridiculously small. I complain, however, less of this than of the want of medical

* Compare Note to page 21, together with pp. 20, 23.

comforts. My sick ask me for soup and sago, and I must soothe them with a dose of medicine in lieu of these. Now, few of my sick would have been patients at all, if they had enjoyed warm clothing, less fatigue, less exposure, and more regular and more extensive meals. I cannot go on heaping up medicine after medicine in the stomachs of those who require nourishment more substantial. The Purveyor's store is the only dispensary from which I wish to draw my supplies. My cook, had he something to cook, would be my most efficient orderly. I cannot state how often, or for how long a period, I have been refused these supplies on requisition; but I can state that I have scarcely ever known my Requisitions complied with, without such a severe curtailing as left me but little to boast of.

"On October 3, the Purveyor of the Forces informed us that he had in store neither 'Arrowroot, Brandy, Essence of Beef, Sago or Candles.' He reminded us, however, that 'Ground Rice made a capital substitute for Arrowroot and Sago.' But, unfortunately, he had also to remind us in the next paragraph of his letter, that the said Ground Rice was not forthcoming. It was on board ship, though two Requisitions had been made for it."

Surgeon Marlow.

Surgeon Marlow, 28th Regiment, gives the following general view:

"*Camp before Sevastopol,*
"*December* 18, 1854.

"I am therefore inclined to enumerate amongst the chief causes of diseases:—

1st. Inadequate shelter when off duty.
2nd. Irregularity in the rationing.
3rd. Want of sufficient clothing.
4th. Almost incessant duty and consequent exposure.

"The last of the causes assigned is, as a matter of course, unavoidable, and may be at once dismissed. But with regard to the first a few words may be said. The tents at present in possession of the regiment have nearly all been in use since April, and many of them are quite worn out, decayed, full of

holes, and as pervious to water as a sieve. The men return from a fatiguing day's duty in the trenches, cold and wet through, and find the floor of the tent in which they have to sleep, a mere puddle; until very lately, their single wet blanket answering for bed and bedding; they have now two. Second, irregularity in the rationing. There have been days, both in this month and the preceding, and not a few, on which a short allowance of biscuit and meat has been issued; occasionally there has been no sugar, and latterly no rice at all. With respect to the coffee, it is given out in a green state. The fuel is not to be looked for by the men themselves, however tired they may be; means for roasting the coffee have then to be found, and the result is generally a compound resembling so much charcoal and hot water, and about as nutritious. A few instances of undoubted scurvy have occurred, but the scorbutic diathesis is apparent in many of the men; and it is much to be wished that lime juice could be issued as a preservative measure, as on long sea voyages, before the disease has time to develop itself, not to mention the prejudicial influence such a state of the constitution would be likely to have in all cases of wounds and accidents. Third, want of clothing. Until very lately the men were literally in rags, swarming with vermin, the boots in many instances useless, and the so-called great coat threadbare. After the chief burst of the sickness had occurred, a supply of warm clothing was distributed. But the field hospital soon became so crowded (our own means of transport being a mere cipher), that the assistance of the French ambulance was solicited, by the aid of which this great accumulation of disease, filth, and misery was handed over to the medical department at Balaklava in hundreds. It would thus seem, that while the causes of disease would appear to have received scarcely sufficient attention, the efforts of the Medical Officers to remedy the evil have neither been supported, nor at all times justly appreciated.

"I have, &c.,

"(Signed) B. W. Marrow, M.D.,
"*Surgeon 28th Regiment.*"

The above extracts have been taken at hazard from

the correspondence of the Medical Officers, and while the most distressing and disgusting details have been, in each letter, purposely omitted, these letters are by no means chosen as being the strongest evidence of the state, not admitted, of the sick and wounded at that time, as to absence of medical comforts, of sick transport, of proper tents, &c. If it be thought that they have been purposely selected as being the strongest in description, we would refer to the evidence of Surgeon Lockwood, 7th Royal Fusiliers, December 21, 1854; Surgeon Longmore, 19th Regiment, December 24, 1854; Surgeon Watt, 23rd Fusiliers; Colonel Yea, Commanding 7th Fusiliers, and others. Surgeons Howard, 20th Regiment, Mackinnon, 21st Fusiliers, Marlow, 28th Regiment, Grier, 92nd Highlanders, in Charge of Medicines for the Division (Light), give "Returns of their Requisitions for Medicines," as also for "Medical Comforts," shewing the quantities required and those received, side by side.

Cumming Maxwell Report.

Evidence of Commanding Officers.

A few extracts from the letters of Commanding Officers will here be added.

Col. Hodge, Commanding 4th Drag. Gds.

Colonel Hodge, Commanding 4th Dragoon Guards, says:

"*Camp, Kadikoi,*

December 25, 1854.

"The comforts of the sick soldiers, belonging to the Regiment under my command, have been, in my opinion, but little cared for ever since we landed at Varna in July last.

"No beds or bedding have been given to the Hospital.

"Four stretchers, borne by men, is all we have to carry our wounded from the field; an absurd mode of conveyance for cavalry, whose wounded are frequently miles from the rear of the Army. It is a pity that we do not copy our allies, the French, whose admirable mule chairs have been so freely made use of by our sick and wounded during this Campaign.

"I can answer for the Surgeon having asked for very simple medicines, and not having been able to procure them."

Colonel Newton, Commanding 1st Battalion Coldstream Guards, says:—

Col. Newton, Commanding 1st Batt. Coldstream Guards.

"Many medicines have been applied for in vain, also medical comforts, and Hospital necessaries; and the allowance of fresh meat for the Hospital has also been in many instances deficient.

"Opium at one time was not to be procured, and some was given for the use of the Hospital by Lieut.-Colonel Carlton of this Battalion. Brandy also has not been obtained, nor is it now; but it has been given by Lieutenant-Colonel Wood, of this Battalion, and myself. Tea has also been given by the Officers."

January 11, 1855.

Colonel Walker, Commanding Scots Fusilier Guards, writes:—

Col. Walker, Commanding S. F. Gds.

"*Scutari,*

"*December* 11, 1854.

"No bedding beyond blankets has been provided, the sick and wounded faring alike. I endeavoured ineffectually to procure some straw for the Hospital tents, but my application was not attended to. I consider men in sickness, or suffering from wounds, do require a softer bed than the bare ground, and that the addition of hay or straw would greatly add to their comfort, and even perhaps save life."

Lieutenant-Colonel Unett, Commanding 29th Regiment, writes:—

Lt.-Col. Unett, Commanding 29th Regt.

"*Camp before Sevastopol,*

"*Dec.* 20, 1854.

"So small has been the supply issued at the various times (viz., of medicines and medical comforts), that it has been used up generally in two days, consequently it has been impossible to keep any store of medicines; the same applied to the medical comforts, and it has been my painful position to hear

repeatedly from sick Officers and Orderlies attending the Hospital, the impossibility there was of obtaining from the Regimental Hospital either the medicines they required, or the comforts they needed. I reported this want personally to the Officer Commanding the Division a few days after our batteries had opened. The General contradicted the report I made in such a strong manner, and with such strong expression, that discretion thenceforth kept me silent on this matter. I immediately returned and corroborated my statement by a personal investigation in the regiment.

"There can be no doubt that, had the regiment been provided with proper means of transport for the men who fell sick on the line of march, as well as transport for the medicines and requisites for the sick men's proper treatment, with better protection against the weather, and better provisions for the care of the sick when the Field Hospitals were established, that very many valuable lives, in all human probability, might have been saved."

Col. Horn, Commanding 20th Regt.

Colonel Horn, Commanding 20th Regiment, says:—

"*Camp before Sevastopol,*
"*Dec.* 30, 1854.

"I cannot but deplore the sad want of better arrangements for the restoration of the sick and wounded of the regiment under my command, and the lamentable results therefrom.

"The Surgeon reports to me the want of one of the most useful of medicines, where the prevailing sickness is bowel complaint, viz., opium.

"Since writing the above, I have been required to send a party of 150 men of the regiment to Balaclava, for the purpose of bringing a small portion (only) of the planking and timber required for the construction of their huts. On the return of these men, they will almost to a man be required to proceed to the trenches for the night, after their twelve mile trip and labour to and from Balaclava. These and other hard duties (for our soldiers sometimes go four days out of the seven in the trenches), coupled with the fact of their being frequently on short rations, imperfectly cooked from want of time and good weather, cannot, I apprehend, at the present inclement season,

but seriously affect the sanitary state of the troops serving in the Crimea."

Lieut.-Colonel Lord West, Commanding 21st Fusiliers, writes:— Lt.-Col. Lord West, Commanding 21st Fus.

"*Dec.* 25, 1854.

"The miseries endured by our sick on the march from the landing-place in the Crimea to the Alma, after the action, and during the march thence to the heights above Sevastopol, I consider to be the usual concomitants of any great enterprise, such as that we undertook.

"It was probably found impossible to provide and embark a sufficiency of bât animals to convey the stores, the material and baggage of a numerous army, hastily thrown upon a hostile shore.

"When such an effort is to be made, a calculated sacrifice of men must, in general, be decided upon.

"Such a sacrifice, unfortunately, did occur. In my Regiment alone in addition to the deaths recorded and known, I have incurred a loss of forty-seven men unaccounted for, being those who fell out in the march and could not be brought along; or who, being embarked from the Alma to Scutari, died on the passage, having never been heard of since.

"I pass over such incidents as these, which must be classed amongst the usual calamities attendant upon long marches and other rapid operations, which mark the commencement of a campaign.

"I come now to what has occurred in our own standing camp, which occurrences have been so fully described by Dr. Mackinnon.

"The utter helplessness of our Medical Department, their total inability to meet the pressing emergencies, as they arose, became most conspicuously manifest.

"This may be attributed partly to their dependence upon the Commissariat and to their want of stores, medicines, Purveyors, and Clerks, upon the spot in the field.

"Each division ought to have a Purveyor and an Apothecary Department.

"The sick in Hospital should not be dependent, for their Rations, upon the Regiment to which they belong; they should receive their Rations from the Purveyors, as well as their medical comforts and other extras.

"In visiting my Hospital, I have constant complaints, from the Patients, that they have not received their biscuit and coffee from the companies.

"The Commissariat of the Division will not now issue fresh meat to the Surgeon on his Requisition, and deduct it from the Ration Return of the Regiment; but they require it to be issued to the different companies, who are then supposed to send it to their sick, in Hospital, and this is very often most irregularly done.

"The Deputy Inspectors and Staff Surgeons of Divisions appear to possess no powers whatever.

"If, for instance, they send in an Indent to the Commissariat, for straw for the Patients to lie upon, or for carriage, it is most probably refused; the Surgeon must then try to obtain these and similar things through another channel, through the Commanding Officer of the Regiment, who refers it to the Assistant Quarter-master-General of the Division, who forwards it to the Quarter-master-General of the Army.

Requisition System Exemplified.

"It is this perpetual bandying to and fro of Requisitions, from one Department to another; the furnishing of one portion of Hospital diet by the Commissariat, and another, including medical comforts, by the Purveyor, that creates the delay and embarrassment that prevails at present.

"In conclusion, it appears to me, that unless the Medical Board is reconstructed on a basis of greater authority and independence, as regards the procuring of carriage, of Hospital accommodation, furniture and utensils; and unless it is provided with an efficient staff of purveyors, clerks and apothecaries, present, on the spot, where the Army is encamped, or in quarters in the field, the unfortunate scenes of misery and destitution, and consequent loss of life, such as I have witnessed amongst the sick in the camp, during the inclement weather of the last six weeks, will inevitably, under similar circumstances, again occur."

The system of Requisitions is wonderfully fallacious

It is generally defended, on the ground of a Requisition being necessary as a Voucher, but it is no check in that way, because, if an article be not in store and not issued, that article may not be, and frequently is not, struck off: it is obvious therefore that nothing but a Receipt from the recipient can be a voucher.

The Duke of Newcastle's Commission, two of whom were Medical Officers, make the following recommendations:—

"That every Regiment should always be supplied at once with its due allowance of Hospital accommodation and furniture, without requisition.

"That the store of medicines and medical comforts kept with the Regiment should always be sufficient for at least a fortnight's probable consumption, and should be replenished periodically, from the Principal Store, without requisition.

"That, when the regimental stores fail before their periodical replenishment, the requisition of the Regimental Surgeon should be complied with, without needing the approval of the Medical Officer of the Division; and, to prevent fraud, that the whole of the Requisition should be in the handwriting of the Surgeon."

"According to the ordinary practice" (we quote again from the same Report) "when a Regimental Surgeon is in want of medicines and medical comforts, he applies to the Principal Medical Officer of his Division for a supply. This Officer, if he approves of the Requisition, countersigns it, and the required articles are issued, by the Apothecary or the Purveyor's Clerk in charge of the Stores attached to the Division. When the stock of medicines and medical comforts in these stores began to fail, the Regimental Surgeons endeavoured to get their wants supplied by the Apothecary and Purveyor at Balaclava, where the principal stores in the Crimea are kept. This practice entailed upon these latter gentlemen a great addition to their ordinary labours, and, upon the Surgeons, the inconvenience of sending several miles for their supplies. This inconvenience became gradually aggravated, in proportion as it became frequent, and its frequency became more and more

necessary, as the quantities that were dealt out at a time to them, in answer to their Requisitions, became smaller. The practice, under such circumstances, of requiring the countersignature of the Medical Officer in charge of Divisions, operated very vexatiously.

"We learnt that the issue to Regiments of huts, and marquees, and other articles, was made only upon Requisition. We think that the consequence of this practice may be observed in the Hospital accommodation which our table exhibits. The condition of the sick varies in every Regiment, and it varies, in great measure, with the energy and zeal of the Commanding and Medical Officers, and with the means of transport at their disposal. We think that the state of the men should not be left dependent on such circumstances.

"The diet-roll is, as we have already observed [that is, in General Hospitals], submitted to the Staff Surgeon of the Division, who revises it."

Dr. Alexander states, being in charge of the Light Division:—

"Requisitions for medicines, comforts, &c., were at first sent direct to the Apothecary and Purveyor, until Dr. Hall desired their being sent in direct to him, for his approval," &c.

Dr. Alexander, being in medical charge of 1st Brigade, Light Division, says:—

"On arriving at Scutari from Gallipoli, I set about at once preparing for the field, and called upon all the Surgeons of my Brigade to furnish me with a list of what they conceived necessary for the field, and that we would arrange together. Such was done, and communicated to the Principal Medical Officer of the Division, whose answer was that he would not 'break bulk;' and on repeatedly reasoning with him and urging him to have some supplies, save the paltry pannier one, the same answer as above was given, with 'I am responsible.' I believe, however, some small supplies of tea and arrowroot were issued, prior to our embarking for Varna."

Lt.-Colonel Patullo, Commanding 30th Regiment, writes:—

Commanding Officers' Evidence Resumed. Lt.-Col. Patullo, 30th Regt.

"*January* 15, 1855.

"The state of the Hospital, since bad weather has set in, has been deplorable, and it is not to be wondered at that few return to their duty who enter it.

"The regiment, as far as I can judge, has been invariably in want of proper medicines and hospital comforts. I have always, in cases of Cholera, which were very frequent, heard the Medical Officers say that they could do nothing for the men; they had no means of treating the Patients. Even in cases of officers and men of the Regiment who were taken into Balaclava, suffering from Cholera, the Medical Officers who accompanied them were unable to obtain, at the General Hospital, a grain of medicine suitable to the disease.

"In conclusion, I am of opinion that the Department has been conducted during the Campaign with too rigid economy by the Superintending Officers, and that many of the subordinates are deterred from making the necessary Requisitions through fear of its bringing on them the censure of their Seperiors, and affecting their future prospects.

"The Medical Officers of the Regiment have exerted themselves to the utmost with the means at their disposal."

Colonel Spencer, Commanding 44th Regiment, writes:—

"*December* 1, 1854.

"The quantity of medicines and medical comforts has been very limited; not long since there was no Brandy or Opium for Cholera Patients.

"Supply of fuel bad."

Colonel Haly, Commanding 47th Regiment, writes:— Col. Haly, Commanding 47th Regt.

"*January* 4, 1855.

"I will not attempt to disguise from you that it was most

depressing and discouraging to see the very meagre allowance of comforts and appliances for the accommodation of the sick, especially in Bulgaria, where there was no difficulty, had proper arrangements existed, in providing any amount of nourishing diet, prepared in a palatable form, with any medicines or comforts that might be necessary for them.

"The nature of the bedding was, in my opinion, totally unfit for the use of the sick, in the manner in which it was there applied; it consisted of a piece of double canvass laid on the bare earth, without the slightest intermediate substance, the soldier's great coat, and an ordinary blanket. Sick men who were obliged to lie in a state of suffering on the hard ground for days and even weeks, had much to endure, which could not tend towards the patient's convalescence. Having, during the period we were in Bulgaria, discovered that the canvass spread under the patients was, in reality, the ticking of a palliasse, I made application, through the regular channel, for a supply of straw for the sick; pointing out that, if the Authorities at home had supplied palliasse tickings, it must have been intended that the sick should be furnished with straw to fill them. I regret to say that my application was returned to me, with a remark signed by the Staff Surgeon of the 2nd Division, that the supply of straw for the sick was deemed unnecessary. However, not satisfied at seeing my sick men lying on the ground, I succeeded in the course of some days in making some hay, which I gave over to stuff the beds in the Hospital, having previously given one small hair mattress for the use of each patient as might be most in need of it.

"Being informed that the supply of wine to the Regimental Hospital was so very limited, I constantly gave such contribution as I could from a small stock purchased by myself for the purpose, and only regret that my very limited means prevented my being able to afford a better supply."

Illustration from the Evidence of Purveyor's Clerk, Harrington.

Purveyor's Clerk Harrington, in charge of Light Division, writes, enclosing the following Requisitions, answered and unanswered:—

"Invoice of Medical Comforts supplied for the use of the

Light Division, after repeated applications, August 1, 1854, at Monastir:

"48 bottles Port Wine.
"36 „ Brandy.
"50 lbs. Sago.
"3 „ Arrowroot.

"The above were supplied at the time the Cholera was at its height.

"Requisition made November 11, 1854, for

"150 Mats	90 received.
"1,000 Guernsey frocks	not received.
"800 Cholera belts.	
"12 Tarpaulins ..	11 received.

"K. Jenner, Esq., Purveyor.

"No reason assigned; but I understood that the articles not supplied were still on board ship.

"*November* 11, 1854.

"200 Blankets	not received.
"4 Hospital Marquees ..	not received.
"1,000 Guernsey frocks.	

"This requisition was approved by the Inspector General of Hospitals, Dr. Hall, and also by General Airey, and forwarded three times to the Officer in Charge of the Quarter-Master General's Department, at Balaklava, who returned it because he had not noticed the approval of General Airey.

"*November* 16, 1854.

"4 boxes Essence of Beef	2 received.
20 lbs. Arrow root ..	received.
"20 „ Tea	not received.
"12 „ Candles	not received.*

"Purveyor's Clerk, Head Quarters.

"Reason assigned—none in store.

"It is impossible to overstate the horror expressed by Regimental Medical Officers, at the suffering entailed upon Cholera Patients, by being seized in the night, and there being no candles to light the attendants in taking the necessary measures. See also the next page.

" *November* 18, 1854.

" 1 chest Tea	..	..	13 lbs. received.
" 25 lbs. Ground Rice		..	not received.
" 25 „ Sago	..	..	received.
" 20 „ Arrow root		..	not received.
" 12 „ Candles	..	..	6 lbs. received.

" K. Jenner, Esq., Purveyor.

" Reason assigned—none in store.

" *November* 22, 1854.

" 4 boxes Essence of Beef		received.
" 20 tins Chocolate	..	received.
" 2 dozen Brandy ..	..	not received.

" *November* 29, 1854.

" 4 doz. Port Wine		..	received.
" 50 lbs. Sago	..	..	30 received.
" 20 tins Chocolate		..	received.
" 100 cases Essence of Beef			received.

" K. Jenner, Esq., Purveyor.

" *November* 30, 1854.

" 12 lbs. Candles	..	..	received.

" K. Jenner, Esq., Purveyor.

" *December* 2, 1854.

" 4 cases Preserved Potatoes	received.

" K. Jenner, Esq., Purveyor.

" *December* 4, 1854.

" 2 cases Lime Juice		..	not received.
" 12 lbs. Candles	..	..	not received.

" K. Jenner, Esq., Purveyor.

" Reason assigned, I believe to have been, that the Purveyor had but a small supply in store, as he afterwards sent out both Arrow root and Sago without requisitions being sent for them.

		"*December* 13, 1854.
"2 doz. Port Wine	..	3 doz. received.
"12 lbs. Candles	..	received.
		"*December* 14, 1854.
"24 lbs. Arrow root	..	not received.
"30 " Sago	.. ..	not received.
"10 boxes Essence of Beef		not received.
"12 lbs. Candles	..	received.

"Reason assigned, that there were none in store, but they were daily expected; and the Purveyor at the same time informed me that as soon as they arrived he would supply them, which he did as soon as they were landed, which was not until December 30, since when the Requisitions have been always complied with. At the same time I consider it my duty to state that, from Purveyor Jenner, I have invariably met with every desire to furnish the supplies required, and that in the cases in which he has not been able to meet fully, he has done so as far as lay in his power, and has repeatedly advised me of the arrival of fresh stores at Balaclava, in order that I might obtain them."

Major Davis, Commanding 95th Regiment, writes:— Major Davis, Commanding 95th Regt.

"*Camp before Sevastopol,*

"*Jan.* 12, 1855.

"Medical comforts are so few as to be almost unknown, and the supply of medicines has been so inadequate that a similar reply to this part of the question might be given, with little exaggeration.

"There is little use in making suggestions, as there has been much difficulty lately, even in subsisting the men on salt provisions. The want of fresh meat and vegetables, or some kind of mixed diet, together with fatigue and exposure, insufficiency of clothing, (which latter is now being corrected) I believe to be the chief cause of sickness. It would be beneficial if rice and vegetables (if fresh cannot be had, preserved potatoes) and fresh bread occasionally, which our allies find no difficulty in obtaining constantly, in lieu of biscuit, could be issued by the

Commissariat, and fresh meat at least twice a-week. Also, if the men could have three nights uninterruptedly off duty; and, if tents could be given them in the redoubts, and on all pickets, where it would not be dangerous to have them. Men, after twenty-four hours' continuous exposure to rain and snow, and having no change, lie in their tents, rolled in wet blankets, till dried by their own heat, or till they are carried to the Hospital."

Col. Shirley, Commanding 88th Regt.

Colonel Shirley, Commanding 88th Regiment, writes:—

"*Camp before Sevastopol,*

"*Dec.* 28, 1854.

"The hospital tents now used are five common round bell tents, and one of these is used to contain the Medicines, &c. There are not nearly sufficient to contain half the sick (having by this morning's state—

Sick	
Sergeants	3
Rank and File	107
	110

25-only in hospital tents)

and are, moreover, perfectly unsuited to the purpose, especially in such weather as we have had for this last month or more, as they are not weather-proof, being simple, without any sort of lining to make them warm or water-proof.

"The means of cooking are the same as those for the rest of the regiment, viz., camp kettles of a very defective construction; no stoves or fire places of any description, except a heap of stones piled up to raise the pot, and placed against a wall of loose stones. Within the last few days, three pots with handles, and placed on iron stands, were issued to the Regiment, and I sent them to the Hospital. These are an improvement on the common camp kettles, inasmuch as they have handles, but I am not aware that any saucepans or utensils for cooking, different from those in use in the Regiment, are even issued

for the Hospital. In short, I consider the means of cooking anything which requires more than common boiling, most inadequate.

"I conceive that, if the control of the Medical Staff was placed more immediately under the General Officers, commanding Brigades and Divisions, than it is at present, the supply of necessary comforts for the men would be much greater and earlier obtained, than at present: and, at all events, Officers commanding Regiments, as the reports to the General Officers would then go through them, would know what the men received in the way of comforts, which, in consequence of the excessive jealousy of the Medical Department, regarding the slightest interference with their practice, they cannot ascertain with any degree of accuracy at present."

State of things in the Hospital at Scutari. Lord Hardinge's Statement.

We have now to say a few words about Scutari.

Lord Hardinge stated that "the Hospital at Scutari was under Lord Raglan's command: but that, at the same time, the reports made to him (Lord R.) did not give such a true account of the extent of the misfortunes as, perhaps, ought to have been given;" that "Lord Raglan did not receive, at an early period, sufficient information of the extent of the distress; he did not know that the case was so bad;" that "Lord Raglan sent down Dr. Hall to make inquiries into that matter;" that "Dr. Hall's report was to the effect that everything was in capital order;" that "Lord Raglan was therefore not to be blamed; but that Dr. Hall was to be blamed;" that he (Lord Hardinge) "was not aware that any inquiry had been made into the conduct of Dr. Hall for giving that incorrect report;" although he admits that "it was Lord Raglan's duty to call Dr. Hall to account;" but that he considers "it is scarcely fair for him (Lord Hardinge) to express an opinion upon these points." "If Dr. Hall," he adds, "made a report which was not justified by the state of the Hospitals, and that report went to Lord Raglan, the Honour-

able Chairman is too keen not to know that the blame attaches to the person who made the untrue report."

Lord Hardinge farther stated, in answer to a question: —"Was it not Lord Raglan's duty to see to the state of the Hospital?" "But an Officer in the Field, a long distance from the place, in the state in which the lines at Balaklava were, could not be absent from his post for a moment."

Question:—"But he could have made enquiries in a much shorter time than we could?"—Lord Hardinge's answer: "Yes, but his suspicions of anything going wrong had been corrected by Dr. Hall's report; one hardly sees why he should have sent another person down."

Question:—"But the newspapers and the same means that were open to you for exploring into the mischief, were open to Lord Raglan?"—Lord Hardinge's answer: "I suspect that we heard earlier from the newspapers than Lord Raglan did; it came here first, and then went back to the Camp."

Statements made by Dr. (now Sir John) Hall.

Dr. Hall thus reports (20 Oct., 1854) home, to Dr. Smith, that he has "much satisfaction in being able to inform him that the whole Hospital establishment here (at Scutari) has now been put on a very creditable footing, and that the sick and wounded are all doing as well as could possibly be expected." "I am also happy to inform you that, by the strenuous exertions and unceasing labors of First Class Staff Surgeon Menzies and the Medical Officers under him, all our difficulties have been in a great measure surmounted, and in a short time, I flatter myself, we shall have an Hospital Establishment that will bear a comparison with any one of the same magnitude formed under similar disadvantages; or, indeed, I may almost venture to say, under any circumstances."

In his letter to the *Times*, July 9, 1855, he says, that

he "reiterates and adheres to every syllable he then wrote," viz., when he left Scutari, Oct. 21, 1854. He "considers he is quite as good a judge of the subject, and quite as worthy of credit, as the Duke of Newcastle's informants, whose reports may, perhaps, refer to an earlier or a later period than his."

Mr. Herbert's Statement.

Mr. Herbert, in his evidence, says that "Lord Raglan sent Dr. Hall to inspect the Hospitals, and Dr. Hall went back giving a very flourishing account of the state of them, and that report was sent home to us," that "Lord Raglan had reason to believe that all was going on well," that "all the information which he (Lord Raglan) had was perfectly satisfactory to him, which was the information given by the Inspector-General of Hospitals, in whose statement he of course placed confidence;" that "Dr. Hall's statement was founded upon what he had himself seen. But I apprehend," adds Mr. Herbert, "that people have looked upon the state of things at Scutari with very different eyes. I have received throughout extremely contradictory evidence from Scutari. Officers who were there even quite at the beginning, wrote and said that they had never seen an Army Hospital more effective; there have been great improvements of late years in Hospitals, especially Civil Hospitals. I think originally too much was expected. At the same time I am bound to say that I think that too little was done; but men who have been accustomed to see Hospitals in the field, would not be so much shocked at discomforts and deficiencies as Civilians would be, who had never seen an Hospital established in war."

Duke of Newcastle's Statement.

The Duke of Newcastle says, in his evidence, that "so far from ever having received any official information from the doctors or anybody in command, of the misery then existing in the Hospitals, when enquiries were immediately

sent out to them, they were, to a very great extent, if not entirely, denied;" that "Dr. Andrew Smith expressed at first his entire incredulity as to the truth of the private communications which he (the Duke of Newcastle) had received;" that "he received from Lord Raglan no report by the Commandant as to the state of the Hospitals;" that "he was convinced that there must be abuses to a very considerable extent, because so much concurrent testimony could leave no doubt upon the subject;" but, that he "still hoped, having those strong denials from the Medical gentlemen and others, that there had been a very considerable extent of exaggeration."

Duke of Newcastle's answers before the House of Commons' Committee.

"14,808. CHAIRMAN.] Move especially if Dr. Smith did not make any complaint to you?—Certainly; not only did he not make any complaint to me, but I made a great many complaints to Dr. Smith, to the correctness of which he did not assent."...

. . . "So far otherwise, that when I called upon Dr. Andrew Smith for an explanation, he assured me that the thing was perfectly impossible that there could be any deficiency, because more than *ample supplies* had been sent from home; and he gave me, at my desire, lists of every article which had been supplied. I should state, that the first complaint that I received of any deficiency in that department was when the army left Varna, when I received private complaints that there was an insufficiency of port wine and arrowroot, and what are called medical comforts, for the sick in the Hospital at Varna. I called upon Dr. Andrew Smith for an explanation of this, and he produced to me lists of the articles sent out, and expressed a positive opinion that it was impossible they could have been consumed. I felt satisfied that either some accident must have occurred, or by some means they had been misplaced, and therefore, in order to secure an adequate supply, I desired that a very large further supply, beyond anything that he believed to be requisite, should be instantly sent out of those and some other articles." . . .

. . . "I am at a loss to understand the *answers*, because I think that Dr. Smith must himself have admitted in the course

of his examination, that he had made those very preparations; and if he had made those preparations, he must have made them under some information. The circumstances were these. When the army was moved from Scutari to Varna, the principal Hospital was established at Varna, there being facilities there, and it being much nearer than Scutari to the position of the army. Subsequently, when the expedition was determined upon to the Crimea, the head-quarters of the Hospital, if I may so say, were re-established at Scutari; and I can mention a misfortune which will corroborate that statement, namely, that when it was represented that soldiers were brought to Scutari immediately after the battle of the Alma, and that sufficient supplies of all kinds were not found in the Hospital at Scutari which had been established, the answer was, that directions had been given to send back again from Varna the articles which had been conveyed there, and that, through the neglect of a Medical Officer, combined, I believe, with some negligence on the part of a Captain of a transport, those things had failed. I mention this as an incident occurring to my memory at the moment, to prove that Dr. Smith must have been mistaken in the evidence which he gave."

When these much talked-of and much expected stores did arrive from Varna at Scutari, which was not till December 4,—if any one wishes to know what they were, let him compare the Returns given on the next page, and estimate what was this mere "mirage" to fainting people.

RETURN of MEDICAL COMFORTS remaining in Store at the GENERAL HOSPITAL, VARNA, on the 1st December,* 1854.

Articles.	Quantities.
Brandy	8 bottles
Port Wine	207 „
Arrow Root	82 lbs.
Sago	6 „
Ground Rice	1,241½ lbs.
Essence of Beef	434½ pints
Preserved Potatoes	158 lbs.
Preserved Meats—Boiled Mutton ..	192 „
Barley	250 „
Concentrated Milk and Cocoa ..	None
„ Milk	93 tins.
Lime Juice	3 casks
Tea	These articles were always readily procurable from the Commissariat
Sugar	
Rice	

Abydos, 16th *December*, 1854.

W. J. A. TUCKER,
Purveyor to the Forces.

RETURN OF MEDICAL COMFORTS received at Varna from the 1st September to the 17th November, 1854, shewing from what Quarter they were obtained.

1854.	——	Port Wine.	Brandy.
		Bottles.	Bottles.
September 6	By Purchase	—	12
7	Do.	—	10
16	Do.	36	—
19	Do.	—	16
21	Do.	36	—
27	Do.	36	—
October 23	Do.	72	—
November 15	Do.	8	—

Abydos, 16th *December*, 1854.

W. J. A. TUCKER,
Purveyor to the Forces.

* Probably a misprint for September.

MEDICAL COMFORTS, &c., issued for the Use of the Sick (other than those in the General Hospital) at Varna, from 1st September to 17th November, 1854.

Date.		Lime Juice.	Brandy.	Sugar.	Tea.	Port Wine.	Lemons or Ord.	Candles.	Soap.	General Diet.
		lbs.	btls.	lbs.	lbs.	bottls.	pnts.	lbs.	lbs.	lbs.
1854	Totals...	28	29	462	125	239	30	197	98	518

Algiers, 16th *December*, 1854.

W. J. A. TUCKER,
Purveyor to the Forces.

Lord Raglan, the Duke of Newcastle, and Mr. Herbert were bound to believe the official information of their Heads of Departments. How far this official information was correct, how far they were well used by the officials under them, who gave them that evidence to which they were compelled, officially and technically, to trust, is now the question.

Dr. Hall left Scutari, Oct. 21, 1854. On that day, by the official returns, there were, in hospital at Scutari; Barrack Hospital, 1267; General Hospital, 658.

The Superintendent of Nurses arrived on Nov. 4, 1854. There were then in Hospital at Scutari; Barrack Hospital, 1,500; General Hospital, 800; also by official return.

There were therefore only 375 patients more in the Hospitals than when Dr. Hall pronounced them in a satisfactory condition. No other change had taken place. What the wants were will be seen by the Requisitions, signed by Medical Officers, which began to flow in upon the Superintendent of Nurses,—an abstract of which is annexed, p. 59—and which came to her, because they could not be satisfied elsewhere.

It is painful, but necessary, to mention, that the Principal Medical Officer in charge of the Barrack Hospital made his first Requisition, stating that there were but twenty utensils in a Hospital, of which 1,000 cases, then under treatment, were Diarrhœa and Dysentery; that the inhabitants of the hospital were living over a cesspool, an evil which was not remedied till April, 1855, by the Sanitary Commission; that the drains were first cleaned out by this Commission; that, as to the Latrines, which, in Turkish buildings, are merely holes surmounting earthenware pipes, some of these pipes had burst and saturated the building,—which nuisance necessarily continued up to the time the British left the East; that one side and a half of the building, partly occupied by patients, were exposed, from want of repair, to the weather; that the washing was almost nil, and the cooking abominably bad. The greater part of these nuisances had been reported on by and to the then Principal Medical Officer so early as May 1854. That they were all considered as nuisances and evils, is proved by their having been officially remedied, when remonstrated against in earnest.

Vide Stafford's Committee, Q. 699–706, and 8th Com. 4th Report, Q. 20,526.

More will be said of this elsewhere. Let us, however, still keeping to official documents, now look at a return of what was in store even on January 1, 1855, of Hospital Furniture.

On that day, (the number of patients who had arrived in the Hospitals of the Bosphorus during the last fortnight amounting to 2532, followed by 1044 more in the next six days) the Superintendent of Nurses, according to her invariable custom of ascertaining first, whether the articles, for which requisition was made upon her by Medical Officers, were or were not in the Purveyor's Stores,—in order that no ostentatious display or unnecessary issue might be made by her, received the following return, from

the General Hospital at Scutari, where the Central Store then was.

January 1, 1855.

Plates (tin)	none
Candlesticks	none
Tin drinking cups	none
Urinals (metal)	plenty
Bed pans	some
Close stools	plenty
	but frames wanted
Tin Pails for Tea	none
	at present
Bolsters	none
Night caps	a few
Slippers	none
Knives and forks	none
Spoons	none
Flannel Shirts	none
Socks, pairs	none
Drawers, pairs	none

Some tea pots and coffee pots.

On January 18, 1855,—2,438 more patients having arrived since January 1,—and half one wing of the Barrack Hospital having been occupied (on that day), though entirely bare of every one of the above articles, the Purveyor-in-Chief reiterated the same negative in the presence of the Inspector-General to Miss Nightingale, who then supplied the articles.

To sum up:

The propositions which flow from the foregoing facts, are three. Summary.

I. It is proved, not by the vague reports of newspaper correspondents, nor from the cursory views of benevo- A real Deficiency existed.

lent dilettanti, but from the written evidence of almost every Commanding Officer and Regimental Surgeon in the Crimea, that the troops did suffer, in the winter of 1854, from a greater or less deficiency of medical comforts, medicines, &c.

It could not but have existed, with the amount of supplies sent.

2. This deficiency is not only shown by testimony to have been the actual fact, but it may be proved that it could not have been otherwise, by reference to the list of supplies of medical comforts sent out, furnished by the Director-General himself, who states that he had, according to his judgment, provided medical men, medicines, and medical stores in abundance. In other words there is no occasion for "surprise" as to "where these enormous supplies could have gone." These "ample stores" were sufficient to have lasted an army in which were 2,000 sick (the rate of sickness, it is supposed, allowed by the Director-General) a period of from 3—4 weeks. It must, therefore, have been anticipated that they could not last an Army, in which were 11,000 sick, a period of six months, but that Requisitions would be made by the Principal Medical Officers on the spot, for further supplies, when they were required. No such requisitions appear, in any Documents published to have been made in any part of 1854, excepting one for medicines. On the contrary, the Army appears to have been left six months upon these supplies, if men were not furnished on the spot; it being always answered by the Principal Medical Officers, that "the wants of the Army were fully supplied." With regard to these deficiencies and sufferings, it is therefore proved not only that the fact was so, but that it could not have been otherwise.

It will be so again, unless the system be altered.

3. Having proved it to have been so, and that it could not have been otherwise, it may also be proved that it ever will be so, unless a different system be adopted.

Was the very simple expedient of sending out a printed tabular form, to be filled up so as to state (under heads) what are the medicines and medical comforts now in store, what the receipts of the same from home, since the date of last Report, and what the present wants, employed in 1854?

Absence of all official information, given to the authorities at home, of the wants of the men, and of the means for supplying them.

Dr. A. Smith states, March 26, 1855, in answer to the question "Do they (the Reports sent you) contain the receipts of medicines and medical comforts that have arrived there since the date of their last Report?" "No."

Dr. Smith writes, "Sept. 23, 1854," to the "Principal Medical Officer, Turkey,

"The supply of medicines you have demanded, and also a supply of medical comforts, will leave in a few days in the 'Prince,' a large steamer, which is being loaded with stores for immediate dispatch."

Was this the first "demand" for "Medicines?" were the "Medical Comforts" on Requisition or not? what was the supply on board the *Prince*, which does not appear in the "Return" furnished by Dr. Smith, and, when she was lost, Nov. 14, 1854, what measures were taken to replace the supply?

Four Questions on this subject.

The questions we would ask are four.

1. How is it that the food of the soldier was bad? that he had in Bulgaria sour bread, in the Crimea, biscuit? that he had in Bulgaria bad meat, sometimes goat's flesh, in the Crimea salt meat?

Was Lord Raglan made aware of it, by the Principal Medical Officer, and at what date?

2. Was the General Order of May 1854 cancelled, and at what date? If not, was Lord Raglan made aware of the virtual cessation of the supplies (ordered in it to the

men) by the Commissary-General, and at what date? Or did the Commissary-General write to England for a continued supply of such articles as Turkey did not furnish, in order to enable him to meet Lord Raglan's Order?

3. How was it that the Fuel was not provided?

The General Order of the Commander of the Forces was sufficient authority for the Commissary-General.

4. Did the Principal Medical Officer remonstrate, officially, with Lord Raglan, in July, August, September, October, November, 1854, as to the Clothing, Salt Meat, Biscuit, Green Coffee, want of Lime Juice, &c., &c., for the troops? In December the mischief was done, as is shown by the frightful increase of Disease,—

(viz., 19,500 Sick and Wounded).

Did he also remonstrate officially with his Chief, in England?

With regard to the Green Coffee, a letter appears from Dr. Smith, dated not earlier than Jan. 24, 1855, remonstrating against its use.

And this, when we know that it had been said, for the previous four months, that the Soldier would manage "somehow" (without any means) to roast and to grind, or rather to mash it—and this with a Capital of 300,000 inhabitants, within thirty-six hours' passage, the whole of whom drink coffee (of course roasted and ground, or pounded) every day of their lives.

Three Conclusions.

1. The Duke of Newcastle, Lord Hardinge, and Dr. Smith, we have seen, question the existence of any wants, upon the ground of no official evidence of such having reached them, or, rather, upon the ground of the official reports of the Principal Medical Officer and others, up to February, 1855, as to the "ample supply" of everything.

It would appear as if Dr. Hall not only made no Requi-

ation for more stores (except of medicines) before the return or winter, but even denied that he wanted any.

2. It appears hazardous, to use the mildest term, for Dr. Smith to assert, upon the ground that he had received no Requisition from Dr. Hall, that, therefore, there were no wants, when, by looking over the List of his own supplies sent, he would have seen that there could be no stores of medical comforts left, and that the supply forwarded in April and May could not possibly have lasted till September, when the next supply arrived, nor that, again, even with the third supply, till December, unless more was purchased on the spot.

3. The Commission, sent out by the Duke of Newcastle, two of the three Members of which were Army Surgeons, viz., an Inspector-General and a Staff Surgeon, state, in their Report, p. 11, that the "Hospital accommodation" was "very inadequate," the "tents being wholly unsuitable," that there was a "general want of bedsteads and every other means of raising the men above the ground," a supply of "Hospital utensils far too limited," and "of medicines and medical comforts, in some important particulars, very insufficient. Upon this point," they add, "we have the almost unanimous testimony of Regimental Surgeons, Surgeons of Divisions, and of the Principal Medical Officer of the British Army in the East." Dr. Hall states, in his Evidence, January 16, 1855, that these wants were officially reported to him.

The Report of the Commissioners is dated February 23, 1855, and, at this very time, Dr. Smith was denying these wants, on the authority of his officials on the spot.

He also says, in answer to the question "Did Dr. Hall ever go to Scutari to examine the state of the Hospitals?"

"He did. He reported to me that, considering the circumstances and the difficulties to be encountered, the Hospitals were in as good a state as it could be possibly expected."

He adds, very reasonably,—

"I must trust to the Officers of my own Department, who are responsible. I cannot take for granted every thing that I see or hear from public rumour to be correct; at the same time that I am not prepared to say that it may not be correct. It is not my business to admit it to be correct, so long as I have statements from my own Officers, which statements do not warrant me in believing that it is correct."

As many of the Surgeons and Commanding Officers state that their sufferings began in Bulgaria, that the seeds of the ill health of the troops were sown there, that their wants were there made known to Dr. Hall, who even then could not supply those wants—as the Purveyors say that they strongly reported the wants, in respect to Medical Comforts, to their Medical Chiefs, and even issued circulars to the Medical Officers of the Army, that these articles were not in store—as not only they state that they reported these wants, to Drs. Dumbreck and Hall, but the latter states that they were reported officially to him—as even an order was issued for Medical Officers not to apply for sago, arrow-root, &c., as there were none in store—it seems unaccountable to deny these wants, and more especially for these Medical Chiefs to deny the existence of what was officially brought to their notice.

It seems, also, to be presumed that they reported "no wants" as existing, not only to their Head, in England, but also to Lord Raglan, on the spot. It is, therefore, no longer a matter of surprise that proper food, proper clothing, proper Hospital comforts, were not provided, as

here, before it was too late, for the Army, in 1854. The officers whose special duty it was to bring these details, so far as they affected the health of the troops or threatened to affect it, before the notice of the Commander of the Forces, failed to do so.

Object not to attack individuals for the past.

It would be as useless as injudicious to select individual instances or persons as the objects of animadversion. The system which placed them where they were is the point to be considered. The object, while in the Crimea, was to modify and alleviate the evils of that system, to live through and know them by experience. Now it is to represent them; not giving out such representations by feble driblets, but presenting them as a whole—not as complaints against individuals, but against the system which places them where they are.

But to provide for the future a better System.

Without wishing to attach blame to any one, or to mention the names of officers so often brought before the public already (for they may be as good men as the country is likely to have to act in any future war) let us try to see whether such a system cannot be invented, as men of ordinary calibre can work in, to the preservation and not to the destruction of an Army.

Let it not be said "It is all past—bygones are bygones." A future war is not past. We are speaking for the future. Nay, we have actually had two wars since the ratification of the peace.

Otherwise it may be prophesied, as certainly as the evils of the past war were prophesied by many at the beginning, that, exactly in the proportion in which similar circumstances recur, will similar destruction recur. We shall do as before and lose again half an Army from disease: till it will no longer, as civilisation advances, be possible to recruit an Army. It has been said by officers, enthusiastic in their profession, that there are three causes which make

a soldier enlist, viz., being out of work, in a state of intoxication, or jilted by his sweetheart. Yet the incentives to enlistment, which we desire to multiply, can hardly be put by Englishmen of the nineteenth century, in this form, viz., more poverty, more drink, more faithless sweethearts.

And, in England, Conscription will ever be impossible.

APPENDIX I

TO

SECTION I.

Abstract of the Correspondence of the Principal Medical Officer.

An Abstract of the correspondence of the Principal Medical Officer of the Army in the East, during the first winter of the occupation, will now be given under the following heads:

Diet,
Clothing,
Construction, &c., of Field Hospitals,
Hospital Supplies,
Scutari,
Sanitary arrangements.

1. Diet.

In the Crimea, during the winter of 1854–5.

Informs Medical Officers that Lime Juice may be obtained from the Purveyor, at Balaclava.	Medical Memorandum. October 30, 1854.
Extra Rum ration for men in trenches.	General Order, October 14.
Ration of Biscuit, 1½ lbs. daily.	General Order, October 15.
Ration Fresh Meat to be 1½ lbs.	General Order October 25.
Ration Biscuit reduced to 1 lb.	General Order, November 7.
Dr. Dunbreck informs Adjutant-General that some cases of scurvy had appeared, 1st Battalion Rifle Brigade, and recommends issue of vegetables.	Dr. Dunbreck, October 24.
Dr. Hall advises Admiral Boxer to increase ration Fresh Meat on board "Bombay," Hospital transport.	Dr. Hall, October 19.

Dr. Hall. October 30. Letter from Dr. Hall to Quartermaster-General, detailing distribution of Vegetables.

10 sacks Potatoes,
19 „ Onions,
31 casks Cabbage.

This must have been for the sick.

General Order. November 16. Fresh Vegetables would be issued from Steamers, "Trent," "Harbinger," and "Albatross," on the receipt of Quartermasters or others, duly authorised.

General Order. December 3. Fresh potatoes from Trieste and England; to be obtained by Quartermasters on paying for them.

Observe this method and the disastrous consequence of continuing the old system of Regimental Messing here, instead of making Vegetables a part of the regular Ration. This will be fully discussed in the Notes on Diet and Ration Stoppages, in Sections XIII, XIV, XV.

Dr. Hall. December 26. Dr. Hall to Lord Raglan, recommending fresh vegetables, rice, salt, pepper, and lime-juice, for Scurvy.

Dr. Dunbreck. October 2. Dr. Dunbreck to Commissary-General Filder, for fresh meat for the sick Officers on board "Hydaspes."

Dr. Hall to Quartermaster-General. November 29. Encloses letter of Surgeon Longmore, regarding want of fuel, dry clothing, and blankets, and urges the necessity of a speedy supply of camp kettles, fuel, blankets, and shelter for the men.

Medical Memorandum. Dr. Hall. November 29. Medical Officers can obtain dried and preserved potatoes from store, for the sick.

Dr. Hall. December 14. Letter, on the same subject, to Staff-Surgeon Marshall.

Dr. Hall. December 17. Reports against the practicability of supplying Porter to Troops.

Dr. Hall. December 20. Letter of Dr. Hall to Staff-Surgeon Elliot, sanctioning use of preserved meat to sick, when fresh cannot be obtained.

Dr. Hall. December 18. Regimental Medical Officers directed to draw camp kettles and saucepans for Hospitals.

Dr. Hall. Dr. Hall's remarks on Adjutant-General's Return for November, sent early in December, pointing out the absence of vegetable food.

" Repeats the same remark on Return for December

Not till this monthly report to the Adjutant-General, for December 1854, which would be sent at the beginning of January 1855, does Dr. Hall even hint at the effects of the continued use of Salt Rations on the health of the troops. In that report he says "the ration contains too much salt meat," at a time when the whole amount of fresh meat supplied to the troops was 3 lbs. per man per month. He does not recommend fresh meat at all, but advises lime-juice and vegetables, as a preventive measure, to ward off the evils already incurred from bad diet. In his observations on the January return to the Adjutant-General, sent in, no doubt, in February 1855, he again refers the Scurvy then prevalent to the living on salt provisions, but again he harps on lime juice and vegetables, to prevent the diseases which he confesses, in the return, had originated from salt provisions.

Approval of Moore's Concentrated Milk.	Dr. Hall. December 15.
About dieting sick Officers on board Transports.	Dr. Hall.
Requests of Adjutant-General that men be cautioned against using herbs they are unacquainted with.	December 28. " 29.
Medical Officers are informed that Preserved Potatoes and Lime Juice are in store, and recommended to use them freely (for sick?)	January 2, 1855.
Dr. Hall complains to Commissary-General Filder about want of fresh meat, for Hospitals, 3rd Division.	Dr. Hall, January 26.
Dr. Hall to Major-General Estcourt, recommends issue of Lime Juice and fresh Vegetables.	Dr. Hall. January 27.
Dr. Hall complains to Commissary-General Filder of want of fresh meat for sick, 3rd Division, for five days.	Dr. Hall. February 12.
Letter to Lord Raglan about assembling Board to enquire into Dieting. Why not till now? Had the diet been good up to this date?	Dr. Hall. February 12.
Dr. Hall to Quartermaster-General: recommends Lime Juice to be continued.	Dr. Hall. February 14.
Writes to Dr. Smith that Lime Juice and fresh Vegetables had been issued to troops—thinks they will check Scurvy and Diarrhœa sooner than Opium or any other drug.	Dr. Hall. February 28.
Informs Staff-Surgeon Roberts that fresh vegetables and preserved potatoes can be obtained from Commissariat for the use of troops.	Dr. Hall. March 6.

Dr. Hall. March 8. Dr. Hall to Colonel Steele, enclosing Contract for fresh Bread from Baker, at Balaclava (for the sick?)

The Commission, consisting of Sir John McNeill and Colonel Tulloch, had been two days at Scutari, by this time.

Dr. Hall. March 10. Dr. Hall to Lord Raglan, on Tea, Coffee, and Cocoa on alternate days.

Dr. Hall. March 22. Remarks on the above Correspondence. Transmits proceedings of Committee on subject.

It will be seen that, up to the period of the arrival of Sir John McNeill's Commission, so far as concerns any opinion on the dieting of the Army from the Principal Medical Officer, there is absolutely nothing of importance. Biscuit and salt beef alternating with salt beef and biscuit, and no camp kettles, the want of which was not represented till November 20, and not supplied till January 1855,—this seems to have been the dietetic *régime* which he tacitly sanctioned. Only after Scurvy had appeared, in consequence of this *régime*, does he first indicate any vitality on the subject, and then he harps on vegetables and lime juice, to do away with the effects of the bad diet and exposure. One would be led to imagine that the dieting of the troops in no sense comes under the cognizance of the Army Medical Department, which is only supposed to interfere, *after* defective diet has caused disease. Where the powers of Departments are so undefined, it is difficult to say which Department was to blame in the matter. If it was no part of the duty of the Principal Medical Officer to interfere with the dieting of the troops, we may fairly ask, Why did he do so at all? And if it were his duty so to interfere, we must ask, Why did he not do so earlier, and more efficiently? One thing is quite certain, that no good was done. And the public has a right to require that a system, the only result of which is to shift responsibility, should be replaced by another, which shall fix the responsibility.

The contrast between the Diet correspondence of the first winter and that of the remainder of the campaign is striking. After Sir John McNeill's Commission went out, the Principal Medical Officer appears to have received new light on the subject of diet, and during the remaining part of the occupation, he writes and applies continually on all subjects; meat, bread, vegetables, lime juice, porter. A description of the disease produced by want, and a prescription of lime juice and

vegetables, as the remedy, were the first winter's mode of action; replaced during the after period by an abundant correspondence about diet, and a lively sense of its importance.

2. Clothing.

Instructions about issuing 5,500 Jersey frocks. — Medical Memorandum, November 3, 1854.

Recommending medical officers to apply for a due share of blankets, warm under-clothing, &c., per "Jura," for sick. — Memorandum, November 29.

There is a letter to Dr. Alexander, on December 5th, 1854, asking why the Light Division had not got its share of warm clothing. — December 5.

One to Staff-Surgeon Marshall, on December 14th, directing him to apply to the Quartermaster-General for warm clothing for the sick and for additional blankets, to whom he writes on the subject on the 15th December— — December 14.

and one to Dr. Forrest, on the 20th December. — December 20.

On the 25th Dr. Hall writes to the Adjutant-General about sailor men out without great coats. — December 25.

On the 6th January he recommends Surgeon Brown, of the Rifles, to apply to the Quartermaster-General for clothing and blankets for the men. — January 6.

On the 7th a similar letter was sent to Mr. Marshall, Principal Medical Officer, 2nd Division. Same date, a similar letter to Surgeon Blake, 55th, about warm clothing for sick. — January 7.

Up to March 1855, the recommendations are simple advertisements to Medical Officers, where to apply for clothing. — "

There is not a single remonstrance, such as a Principal Medical Officer ought to have written to the Military authorities, when men were perishing within six miles of clothing supplies.

3. Construction and Repairs of Hospitals in Crimea.

So far as can be judged from the abstract of Dr. Hall's letters on this subject, we find—

1st. That there appears to have been either no necessity at the beginning of the winter of 1854–55 for representing defects in Hospital accommodation for the Army in the Crimea,

or that the requisite representations were delayed. Not till the 18th November, 1854, is there any representation for other accommodation than *tents*, or for erecting Hospitals. It may have been that the Military Authorities did not anticipate remaining in the Crimea, but certain it is that no efficient steps appear to have been taken to provide for the sick.

2nd. There is plenty of suitable correspondence about the General Hospital, Balaclava.

3rd. During the latter part of the winter of 1854–55, there are far more numerous applications about Hospital accommodation, and from that time onwards the advice given and applications made appear to have been more appropriate.

4th. The want of preparation, before the winter of 1854–55 began, is the great defect in this part of the correspondence.

4. Hospital Supplies, &c.—Bulgaria and the Crimea.

The deficiencies in medicines and medical comforts which existed during the period when Cholera prevailed in the camp at Devna have been frequently referred to, as illustrative of the defective arrangements of the Army Medical Department.

The following are the facts, as they can be gathered from the correspondence between Dr. Hall and Dr. Alexander, Principal Medical Officer of the Light Division.

June 17, 1854. Cholera appeared in the Light Division on the 17th June, 1854, and, on the 20th July, Dr. Alexander writes from

July 29. Monastir. Monastir, to Dr. Hall, at Varna, to request that the Purveyor might be desired to forward immediately the supplies of

July 28. Brandy, Arrowroot, &c., applied for on the 26th inst.: had desired brandy to be purchased, as there was none. Also that

July 29. the Apothecary forward to-day (20th July) supplies of medicines. "We are in want of several articles, for instance, Pulv. Opii:" wants naphtha. "A horse Arabs could soon arrive here."

July 30. Next day, July 30th, Dr. Alexander again writes to Dr. Hall that the medical stores applied for on the 26th had not arrived. Much in want of several articles, Pulv. Opii, Hydrocyanic Acid, Brandy, Arrowroot, Wine all but expended. Requests supplies immediately, "as cholera is still raging." The orderly dragoon could bring some Pulv. Opii and Hydrocyanic Acid.

On the following day, the 31st, Dr. Alexander again writes to Dr. Hall, cites letters for supplies, written on the 27th, 29th, and 30th, without result, requests anew the supplies asked for on the 26th. General Airey has given him an orderly to send. Requests that a few articles, Hydrocyanic Acid, Liquor Ammoniæ, Turpentine, Mustard, Opium, Camphor, Laudanum, Naphtha, Carbonate of Soda, and Tartaric Acid might be sent, also some Arrowroot, Sago, Brandy, and Port Wine, "as we are now out of all the above articles." "The disease is still raging among us." Requests that remainder of requisitions be sent out. July 31.

Next day, August 1st, Dr. Alexander takes the opportunity of an orderly passing through to Varna to write another letter to Dr. Hall, "in case the others may have miscarried," and repeats his request with reference to medicines and medical comforts, made on the 26th ult.: "We are out of all these medicines and we have also no Wine, Brandy, Arrowroot. Sago is all but finished, and all are in great demand, as the Cholera still rages amongst us." Requests an immediate and large supply to-day or early to-morrow morning, by some mule waggons. August 1.

On the 30th July Dr. Hall, without replying to any of the letters, sends Dr. Alexander 5,000 cholera belts, in consequence of an application made by the latter to General Airey, and requests to be kept more accurately informed of medical events in the Light Division. July 30.

On August 2nd Dr. Alexander acknowledges receipt of these belts, and expresses surprise at the non-arrival of his letters regarding the Cholera: "I wrote to you two letters on the 23rd, two on the 24th, one on the 25th, one on the 27th, and one on the 1st August, and all the other days up to this period." Will write every day. August 2.

Dr. Hall writes from Varna, August 2nd, acknowledging the receipt of Dr. Alexander's letter of the 30th July, "which reached me yesterday evening," and also the letter of "yesterday's date, last night about ten o'clock." The stores were dispatched at daybreak of the 31st July, with 5,000 cholera belts. If they have not arrived, to let him know. Dr. Alexander's second letter of the 31st had also arrived. August 2.

August 3. On August 3rd, at 7½ A.M., Dr. Alexander informs Dr. Hall that Cholera has appeared among the Artillery. Requests that Purveyor should send immediately his requisitions for medical comforts, applied for on the 28th and 31st ult. Those received on the 1st will soon be expended.

August 4. On the 4th Dr. Hall replies that he has given instructions to the Purveyor to send the supplies, "so far as the store will admit of it." He complains of the "unexpected demand" for and "lavish use" of some articles, arrowroot in particular, "has exhausted the stock sent out from England and all the Purveyor could procure here, but I have indented on England for more;" has sent orders to purchase it at Constantinople. Says Dr. Alexander's demand of the 28th had not come to hand, another on the 31st; requisition of 1st August has not reached its destination. Referring to a communication from Dr. Alexander to General Airey, about deficiencies in the Medical Department, Dr. Hall points out how necessary it is to be precise, as to dates and facts.

August 7. To this Dr. Alexander replies, on the 7th, that he had only answered questions which General Airey had sent by Captain Nolan for immediate reply, sends copies of requisitions already made, and denies that he is not precise in dates and facts.

Dr. Alexander, having reported to Dr. Hall the illness of an assistant surgeon, Dr. Hall replies that he has no one to send. "What with Cholera and sickness, most of the divisions are nearly in as great want as yourselves." Has approved of requisition, "but I fear you will not be able to obtain anything like the quantity of arrowroot you have demanded, for not only has all we had in store been issued but every ounce that can be purchased here. I have sent home for more to be sent out and to Constantinople to purchase what is to be obtained there." Quantity of essence of beef sent out was originally small, but there can be no want of this, as fresh meat and poultry can be obtained.

August 7. Dr. Hall writes from Varna, on the 7th August, repeating his statement to Dr. Alexander, that his requisitions of the 28th July and of the 1st inst. had never reached him and requesting copies of the same to be sent. Repeats his statement about essence of beef. Dr. Alexander received this letter at Monastir,

about three P.M. of the 10th, and requests Mr. Harrington, Purveyor's Clerk, to furnish the copies. These he forwarded to Dr. Hall, on the 11th.

In consequence of Dr. Hall's letter of the 4th, about complaints having been sent, by Dr. Alexander, to the Commander-in-Chief, Dr. Alexander writes to General Airey, on the 11th, to remind him of the fact of his having sent Captain Nolan to Dr. Alexander, to make enquiries, to which Dr. Alexander had only given answers. To this letter General Airey replies on the 14th, and confirms Dr. Alexander's statement. Had sent Captain Nolan to Dr. Alexander, "to know how the Division was off for medical comforts, which I found to be by no means what it ought to be." "I found that, apparently, very unnecessary delay had taken place, in meeting the requisitions which you had very regularly and very properly sent in," which circumstance General Airey had lost no time in representing to the Commander of the Forces; and he adds: "I shall take very good care to do the same whenever the necessities of the troops under my command or the exigencies of the Service appear to me to make it desirable that I should do so." He states further, that, in consequence of the provision that had been made by Dr. Alexander, he had been able to assist the 2nd Division with medical comforts, which they also "urgently required," and only yesterday "a trooper came in from the Medical Officer of the 5th Dragoon Guards, entreating for aid, they likewise appearing to be without the necessary medicines, which, to a limited extent, I felt compelled to afford them."

August 11.

August 14.

On the 13th August, while medicines and medical comforts were urgently required, Dr. Hall writes to Dr. Alexander the following remarkable letter:—

August 13.

"Sir,—I have the honour to inform you that your requisition for medicine has been ready for two or three days, but, as it is not a load for an Arab, we have no means of sending it out. Could you not order in one of the hat-horses with panniers, which would be quite sufficient to carry it.—I have, &c., J. Hall.

"To Dr. Alexander, 13 August, 1854.
"Staff Surgeon, 1st Class, Light Division."

It is certainly a new view to take of the importance of medi-

cases, in Cholera, when the probable loss of life, for want of them, during a severe epidemic, is considered of less consequence than sending them by the only means of conveyance at one's disposal, because there may be not a large enough kid for it!

While Dr. Hall, at Varna, was writing this most singular apology to Dr. Alexander, at Monastir, for leaving the Light Division without medicines, Dr. Alexander, as it happened, was writing to Dr. Hall, on the same day, in a very different strain. He says:—

August 13. "*Camp Monastir,*
"*13th August*, 1854.

"Sir,—I have the honour to request that you would be pleased to desire the medicines to be forwarded to us with as little delay as possible, which Mr. Green applied for on the 5th inst., as we are much in want of many of them, and more so now, as I have had this day to issue to the Cavalry Brigade several of those most in request at present, as Dr. O'Flaherty has written to me, stating that they 'are completely run out of everything,' and wished a supply, which I complied with, as far as my limited stores would admit of.

"I have, &c.,
"T. ALEXANDER,
Staff Surgeon, 1st Class.

"Dr. Hall,
"Principal Medical Officer,
"Varna."

August 14. Before this letter could reach Dr. Hall, he wrote, on the 14th August, to Dr. Alexander, requesting him to send a pack-horse and panniers for the medicines. "When a package is small, an Araba and escort is hardly required." Difficulties experienced in forwarding medicines. Rice has been ground, as a substitute for sago; a small quantity of arrow-root in the bay.

August 16. On the 16th Dr. Alexander acknowledges receipt of the letters of the 13th and 14th, and will at once send a pack-horse. This was done next day together with a letter, requesting Dr. Hall to forward, at the same time, the contents of a requisition sent last evening.

August 18. On the 18th Dr. Hall informs Dr. Alexander that he had not received the requisition, and wonders why they miscarry. "Yesterday, there being an Araba, for the conveyance of some medicines," he had directed wine, brandy, ground rice to be

sent, and some arrowroot and sago will be sent in the panniers. So, after all this delay, the Araba is at last sent! Perhaps a sufficient load of medicines had at last been accumulated for it.

The Araba at last arrived at Monastir, at four P.M. of the 18th August, and Dr. Alexander announces its arrival to Dr. Hall by letter, dated the 19th, acknowledging the receipt of "some few medicines and comforts." He gives Dr. Hall a sharp and just reproof for his tardiness. He informs him "that the medical officers here have complained, and justly, at being out of the medicines required hourly for the treatment of the present epidemic, caused by the very unnecessary delay in the transmission of the same from Varna. The requisition being dated the 5th August and sent early from this on the morning of the 6th, and approved by you on the 7th, and yet they only arrived at four P.M. on the 18th inst.;" and he adds, indignantly, "Surely the Commissariat would furnish a mule and cart, if requested, for the rapid conveyance of medical comforts and medicines, during the present epidemic." He encloses a copy of the missing requisition and states his requisitions are sent by the regular mail. August 19.

It is singular to what an extent human life can be risked and the efficiency of an Army compromised by so trifling a question, as whether the medicines urgently required during an epidemic of Cholera are or are not a sufficient load for the means of conveyance? Usually loads are left behind, because they are too heavy. In this remarkable case medicines and medical comforts are left behind, because they are not heavy enough!

With regard to the missing requisition, Dr. Alexander had the post-bag examined and found his letter of the 16th (it contained, however, only a Cholera state and some death reports) which had returned in the bag from Varna.

It appears that after all the Araba did not contain all that was wanted. A board of survey was called on its contents, and it was found that one rather important article in the treatment of Cholera, namely, port wine, was not there. Dr. Alexander notifies this fact to Dr. Hall, on the 22nd August, and has "the honour to inform you that we have only two bottles August 22.

remaining," and sends requisition for the missing article. He sends also a requisition for bottled porter, for the sick.

August 24. Dr. Hall replies, on the 24th, that he had directed the requisitions of the 16th, 21st, and 22nd to be complied with. Purveyor had not put up port wine, although directed to do so, "in anticipation of your wants." He sends the Porter.

So ends this singular correspondence which, as illustrative of the want of relation between the requirements of the Army, for medicines and medical comforts, and the supplies and means of transport, was a fitting prelude to what occurred afterwards in the Crimea. It reminds one of the prologue in an ancient drama, dimly shadowing forth the crime to be evolved in the play and the retribution which is to follow.

August 8, 1854. Dr. Hall makes demand on Scutari for Medicines and Surgical Instruments. Has no particulars, and does not state the result.

July 21 and August 9, 1854. Dr. Hall demands Medical Comforts of Director-General; has no particulars, and states no result. Nor has he any particulars of requisitions for Medicines forwarded from time to time to England.

August 2. Dr. Hall represents to Lord Raglan the Ambulance accommodation required for the Army.

August 5. Sees Lord Raglan about two Hospital Steamers. Lord Raglan agrees to the requirement.

August 11. Dr. Hall applies to Quartermaster-General for Transport conveyance from Varna.

September 17. Personal application to Quartermaster-General for Land Transport for sick.

September 20. For Ship Transport for 200 sick.

October 5 Dr. Dumbreck to Quartermaster-General about distribution of 12 ambulance waggons and sick transports.

" 13

October 25 Balaclava Hospital filled with sick. More sick transports wanted.

Representations were frequently made from this period as to defects in sick transport, and as to its final break-down.

December 20. Dr. Hall, on the 20th December, advised that the whole Ambulance transport should be remodelled, after the French plan.

5. Scutari.

The Sanitary recommendations in regard to the Hospitals on the Bosphorus will be found in abstract in the Preface to Section III. The following are those relating to supplies and equipments.

Dr. Hall to Dr. Menzies, directing him to urge the Chief Apothecary and Chief Purveyor to furnish the Principal Medical Officer with their Quarterly Store Accounts, up to the 30th of June, with a Memorandum of all Stores that might have been received by them after the Quarterly period. — July 20, 1854. Quarterly Store Accounts.

Dr. Hall to Dr. Menzies, acknowledging the receipt of the Purveyor's Memorandum, and expressing his surprise and regret at its nature. Enclosing a copy of a letter from the Director General, and an Invoice of Purveyors' Stores shipped on board the "Jason" and "Medway" Steamers, at Woolwich, on the 20th July, and directing him to instruct Mr. Ward, the Purveyor, to look out for their arrival, and apply to the Agent of Transports to have the supply landed at Scutari, to enable him to fit up the Barrack Hospital. Directing him, if he thought the sleeping platforms in the Barrack rooms would not answer for sick and wounded men, at once to apply to Mr. Tucker, at Varna, for all his spare boards and tressels, as they would not be required there when the Army embarked; expressing a hope that he would not relax in his endeavours to secure the whole of the General Hospital at Scutari, or in his efforts to purify and fit up the Barrack Hospital for the reception of sick. — August 28, 1854. Dr. Hall. Stores Invoice. Furnishing Hospital, &c.

It will be observed by referring to p. iii. Preface to Section III, that the purification of the Barrack had been written about on August 13th, by Dr. Hall, by Lord Raglan's direction. — Remark.

Dr. Hall to Dr. Menzies, in answer to one of his of the 28th of August, stating that the whole of the General Hospital at Scutari had been received over from the Turkish Government, expressing a hope that he had taken measures to prepare the Barrack Hospital for the reception of sick; informing him that the "Jason" Steamer had brought her freight up to Varna Bay, and that measures were being taken to get them shipped into the "Bombay," for transport to Scutari. Directing him to indent on Mr. Tucker for what Boards and Tressels — September 2, 1854. Dr. Hall. Preparation of Barrack Hospital for Sick.

be required to fit up the Barrack Hospital at Scutari, and the General Hospital about to be established at Abydos.

September 16, 1854. Dr. Hall. Stores and Medical Comforts.

Dr. Hall to Dr. Menzies, in answer to one of his of the 12th, stating that the Stores sent out from England in the "Jason" had been received at Scutari by the "Bentley" transport, and that an indent had been made on Mr. Tucker, at Varna, for Boards and Tressels. Inclosing an Invoice of Medical Comforts sent out in the "Mauritius" Steamer by the Director General of the Army Medical Department, and directing him to instruct Mr. Ward to look out for their arrival.

October 27, 1854. Dr. Hall. Dispatch of 570 Sick and Wounded, &c.

Dr. Hall to Dr. Menzies, informing him that 570 sick and wounded had been dispatched from Balaclava to Scutari, and that at least 1,000 more would soon follow, for whom preparation must be made. Acquainting him that 1,000 palliasses and other articles had been sent down to Scutari.

November 12, 1854. Dr. Hall. Hospital Equipment.

Dr. Hall to Dr. Menzies, instructing him to furnish Lord Stratford with a precise detail of any articles of equipment he might require for the Hospitals at Scutari.

November 19. 1854. Dr. Hall. Turkish Porters. Remark.

Dr. Hall to Dr. Menzies, informing him that Lord Raglan sanctioned his having Turkish porters for the conveyance of sick and wounded men from the wharf to the Hospital at Scutari.

It will be observed that according to strict regulation, the Principal Medical Officer at Scutari had no power to do so simple a thing as to hire carriers for the sick without the sanction of the Commander of the Forces, 300 miles away, and that until such sanction was obtained, the sick might have lain on the wharf, unless some charitable person had paid the cost of the removal out of his own pocket. Surely no stronger proof of the necessity of having a Governor with independent responsibility and power could be afforded.

November 24, 1854. Dr. Hall. Provision for 1,000 Sick to be made. October 23, 1854. Dr. Hall. Invoice of Stores.

Dr. Hall to Dr. Menzies, directing him to provide accommodation for 1,000 sick, informing him that there were 2,200 sick in Hospital in the Crimea, and that the list was likely to increase.

Dr. Hall to Dr. Menzies, enclosing an Invoice of Stores and utensils shipped on board Her Majesty's Ship "Strombolí," and directing him to instruct the Purveyor to look out for her arrival, and land them at Scutari.

October 28, 1854.

Dr. Hall to Dr. Jameson, at Varna, calling for an explana-

tion of Mr. Tucker's conduct in not having sent down the stores from that Station to Scutari, as instructed, both verbally and in writing, by him.

Dr. Hall to Dr. Smith, and on the same date to the Principal Medical Officer at Scutari, regarding port wine, supplied for the use of the sick, which was found to be of inferior quality, and condemned by a Board of Survey.

Dr. Hall to Mr. Filder, Commissary General, requesting a supply of Stores brought out in the "Manilla" Steamer, to be landed at Scutari.

Let any person, practically conversant with such subjects, ask himself, What does all this correspondence amount to? Is there anything in it likely to have secured for the sick the equipments and comforts which they so much required? Does not the whole of it rather look as if its chief object were to shift responsibility? At all events, the melancholy result proved that it might just as well never have taken place. This correspondence, with its results, shows conclusively the danger as well as the absurdity of having placed any portion of the administration of these Hospitals in the hands of persons at such a distance.

Dr. Hall. About Stores left at Varna.

November 17, 1854. Dr. Hall. Inferior Wine for Sick.

December 22, 1854. Dr. Hall. Stores for Sick. Remark.

6. Sanitary Arrangements.

General Order issued by Lord Raglan before Dr. Hall's arrival in the East, fixing the hours of parade, bathing, and sleeping. Medical Officers to examine vicinity of Camp, for the discovery and removal of malaria. Privies to be inspected daily by Quartermaster and Medical Officer, and reported weekly. Lime or earth to be used daily.

May 12, 1854. General Order. Sanitary Measures.

Officers to enforce cleanliness in the vicinity of encampments. Latrines to be constructed and nuisances prevented.

June 27, 1854. General Order. Sanitary Measures.

Dr. Hall informs Dr. Smith of the steps taken to clean, whitewash, and ventilate the Barrack at Varna, given over for a Hospital.

Dr. Matthew states that the defects were never efficiently remedied.

July 2, 1854. Dr. Hall. Cleansing of Barrack at Varna.

Dr. Hall to Lieut.-Col. Steele, bringing under notice of Commander-in-Chief the injudicious sites of the Camps of

July 15, 1854. Dr. Hall, Varna.

Injudicious sites of Camps

the Light Division and Cavalry at Devna, the numerous drills and field days, the crowded state of the tents of First Division and bad position of the Artillery Camp attached to it; inferior quality of ration bread issued, want of salt and pepper, and recommending a ration of rice on account of Diarrhœa.

July 22, 1854. Dr. Hall. Memorandum. Cholera.

Recommending Cholera belts. Medical Officers to make diligent enquiry daily, and pay early and particular attention to looseness of the bowels, and to impress on the minds of the men the necessity of reporting such ailments at once, and receiving appropriate medicines for their cure.

This is good as far as it goes, but it is a generally received principle, in dealing with Cholera, that it is dangerous to trust to men applying for relief, and the General Board of Health has issued a special code of instructions, under the "Diseases Prevention Act," for Medical Officers to discover and to treat Diarrhœa on the spot, a practice far more easy to be followed in the Army, where the men are all under the eye of the Medical Officer, than in Civil life, where the Medical Officer has literally to hunt the disease from house to house.

July 30, 1854. General Order. Cholera.

Cholera present; men cautioned against using fruits of the country; to avoid exposure after sunset; to cover their throats and button up their jackets, when compelled to go out. Small spirit ration sanctioned and a cup of coffee recommended morning and night.

August 12. Varna. Dr. Hall. French Cholera Cemetery. August 27, 1854.

Calls attention of Quartermaster-General to proximity of Depôt Camp at Varna to the French Cholera Cemetery, and its injurious effects on health.

Dr. Hall to Dr. Smith, recommending waterproof cloth for men to sleep on in camp. The same on January 18th, 1855.

November 14, 1854. Crimea. General Order. Burial Ground. January 24, 1855. Crimea. Dr. Hall. Sanitary state of Camps.

On representation of Dr. Hall, burial prohibited in a field near the Windmill, and burials to be made at a distance from water supply and camps.

Dr. Hall complains to General Estcourt, Adjutant General, of baggage animals picketted near hospital tents of 3rd Division. Recommends proper latrines to be dug, and earth to be thrown in daily. Dead animals and offal to be buried. Rags and loose articles to be collected and burned. Soap expected, and when it arrives men to be compelled to wash themselves two or three times a week at least.

To Quartermaster General, recommending animals to be properly buried—present method defective. Earth to be thrown into latrines daily, or a bushel of quick lime daily for each. Offal, dirt, rags, and old clothes to be collected daily and burnt. Highly objectionable site of Barrack huts at extreme of Balaclava pointed out, and neighbouring Turkish graveyard. Worst consequences might be expected in hot weather.

The huts were proceeded with, notwithstanding this representation, but spotted typhus having appeared among the troops in them, they were abandoned.

January 28, 1855. Crimea. Dr. Hall. Sanitary condition of Camps.

Calling attention to dirty condition of men. Weekly inspection of men's tents and persons to be made and certified.

February 17, 1855. Crimea. Dr. Hall. Memorandum. Dirty condition of Men.

Dr. Hall to Dr. Hume, Principal Medical Officer, 3rd Division, directing Marquee Hospitals to have the walls lowered daily, weather permitting, on account of sickness and fever. Medical Officers of Regiments to cause filth to be removed from tents of sick. Tents to be struck, and interior purified by exposure to air. Filth near Hospitals and Tents to be collected daily, and burnt or buried. Graveyards near Hospitals to be discontinued.

February 21, 1855. Dr. Hall. Sanitary Measures.

To Quartermaster-General, requesting removal of dunghill near Balaclava General Hospital. Same date, represents crowded condition of Camps of 44th and 50th Regiments.

March 1, 1855. Dr. Hall. Removal of Dunghill. Crowded Camps.

Requests permission of Lord Raglan to appoint Board of Health, "to inquire into diet, water supply, accommodation of sick and well, clothing, duty and locality of the Army, and to report on the best means of remedying defects."

A very proper proceeding, but too late by five months. The two Civil Commissions for "remedying defects" were already at work at Scutari. The evil consisted in there having been defects to remedy.

March 8, 1855. Dr. Hall. Appointment of Board of Health.

Represents to Quartermaster-General the necessity of ventilating huts in a manner pointed out.

March 14, 1855. Dr. Hall. Ventilation of Huts.

To Quartermaster-General, objecting to site of Land Transport Camp, close to Hospital huts of the 4th Division.

March 14, 1855. Dr. Hall.

Land Transport Camp. Same date. Dr. Hall. Memorandum. Crowded Hospitals.

Points out crowded state of Hospitals, and fixes numbers not to be exceeded.

March 15, 27, and April 15, 1855. Dr. Hall. Camp of 79th and 93rd Highlanders.

Dr. Hall, in his weekly reports, points out to Lord Raglan that the health of the men in the 79th and 93rd Regiments was suffering from the locality of their camps, and recommends the former to be moved and the latter improved.

March 25, 1855. Dr. Hall. Report of Board of Health.

Dr. Hall sends to Lord Raglan the proceedings and recommendations of Board of Health.

By this date Sir John McNeill's Commission had been nearly a fortnight in the Crimea, and the Sanitary works at Balaclava carried out by the Sanitary Commission had been begun. The "defects" which the Board of Health had been summoned to "remedy" were being remedied in another way.

The general practical bearing of the whole of this matter may be summed up as follows:—

1st. Diet.—There is no representation from the Principal Medical Officer, with regard to the constitution of the Ration.

He never formally objects to the everlasting salt beef and biscuit. Not until he sends his report to the Adjutant-General, for December, 1854, in the beginning of January, 1855, does he even hint that the men had too much salt meat.

He makes no representation, at all adequate to the emergency, of the fact that the men could not cook their Rations for want of suitable camp kettles, although he alludes to the want, in a letter dated November 29, 1854, enclosing a letter of Surgeon Longmore.

He makes no representation about unroasted coffee.

In fact, as far as can be judged from the correspondence, he accepts the dietetic *régime* in use and says nothing.

Only after the men were attacked with Scurvy does he interfere to recommend lime juice and vegetables, for the cure of the Scorbutic tendency, which, under a proper dietetic system, ought never to have occurred at all, or, at least, to a very insignificant extent, in the Army.

The *cure*, not the *prevention* of Scurvy and its consequences, is the principle kept in view.

The necessity of fresh meat is never once alluded to, except for the sick, and, even for them, so charily that one can hardly say whether or not it was considered necessary. It is difficult to say whether the Army Medical Department has any function to fulfil in the matter of diet. Dr. Hall's recommendations or, rather, his absence of recommendations, would imply that it has not, while Dr. Smith's letter to Dr. Hall, of the 6th March, already quoted, would seem to imply that Dr. Hall was in some sense responsible for the bad dietary of the Army. And, again, when Sir John McNeill's Commission was about to proceed from Scutari to the Crimea, to investigate the whole matter, Dr. Hall advises a General Order which was issued, on the 10th March, 1855, summoning a Medical board on the subject, which confessed the defective diet of the preceding winter, made some good recommendations on the subject, and made, also, some recommendations no longer required. This is the strongest instance of substitution of *post mortem* investigations into the causes of death for recommendations and remedies, in time to prevent death, with which we are acquainted.

Some regulation is certainly required, making it the duty of Commanders of the Forces and Commanding Officers of Regiments to consult the Sanitary department which now, it is trusted, will soon be formed at the War Department, on the subject of diet, *not* after but *before* any mischief has taken place.

2nd. Clothing.—Similar remarks apply in this case.

It does not appear that any recommendations as to clothing suitable for the Crimean climate were made during the winter of 1854–1855. The documents are chiefly advertisements where to apply for clothing, such as it was. But there was no remonstrance as to the absolute necessity, in order to save the Army, of issuing for its use the clothing in store at Balaclava, within six miles of the ground where men were actually being frost-bitten for want of it.

3rd. Construction and Repairs of Field Hospitals.—The papers about this subject exhibit a want of foresight (presuming that it was necessary to exercise foresight).

Not till the 19th November, 1854, is there any demand for

other accommodation than tents, and not till the 26th November is there any recommendation for erecting hospitals.

There was sufficient representation about the General Hospital at Balaclava and its repairs.

After the beginning of 1855, the recommendations become more numerous and better-timed, and they continue so afterwards.

4th. Hospital Supplies, &c.—So far as one can judge, from the complaints made by medical officers, there was no preparation at all adequate in the way of Hospital Stores, Supplies, Medicines, &c., and the subject does not appear to have been intelligently considered. Not till the 3rd August, 1854, does the question of ambulances and sick transport seem to have occupied the attention of the Principal Medical Officer. There was no organization whatever. The prevailing system was simply supplying defects after they had occurred, forgetting that, in armies, defects and disasters go hand in hand.

5th. Scutari.—The documents about these Hospitals show only hopeless disorganization.

There are no recommendations as to remedying overcrowding, or defective ventilation,
defective hospital sewers,
defective burial of the dead;
a few as to cleanliness,
white-washing,
cleaning privies,
Hospital comforts,
cleaning a ditch and removing a rat-gut factory;
none as to cooking,
washing.

The only eight letters after Dr. Hall's visit to Scutari, in October 1854, offer no sanitary recommendation whatever. The whole history of our disaster lies here. The existing organization never contemplates such things at all.

The only possible way of dealing with the excessively bad sanitary condition of these Hospitals would have been to have had an independent and responsible Governor, with a competent sanitary Officer and sanitary Engineer on the spot at his disposal. It was simply absurd to look to the Principal Medical Officer in the Crimea for advice as to what the defects

were, or how they should be rectified. The melancholy part of it was that the sick paid the penalty.

6th. Camp Sanitary Arrangements.—There is no sanitary recommendation of any importance regarding the Crimea, in the Principal Medical Officer's correspondence, till the 24th of January, 1855, nearly four months after the Army took up ground before Sebastopol. What he then advises is good, so far as it goes, but insufficient. He never even alludes to the horrible and dangerous condition of Balaclava. The Board of Health summoned on the 10th March was an *ex post facto* proceeding. Such a Board ought to have been called at the opening of the campaign.

The recommendations made in Bulgaria were both better and better-timed.

The peculiar nature of several of Dr. Hall's documents suggests the following general remark. It would be very advisable if medical officers were to restrict their written recommendations solely to matters affecting their professional duties, unaccompanied by any opinion on purely military matters, with which, in fact, they have nothing to do. A medical officer ought to represent defects of all kinds involving the health of the troops, considerately, firmly, and respectfully to the Commanding Officer; but he steps beyond his sphere and detracts from the weight of his opinion when, like Dr. Hall, he reports the health of the troops as unsatisfactory, from fatigue, exposure, and many other hardships, but adds that these causes are "inseparable from a state of active warfare." Again, in reply to an urgent representation of Dr. Alexander, as to the condition of the men in the Light Division, Dr. Hall writes, on the 5th December, 1854, that "the duty is too severe for any human being to bear up against for any length of time," an opinion he was bound to express, but which becomes seriously weakened, as to its practical result, when he adds, "I suppose the effort is necessary and unavoidable, if we are to retain our position before Sebastopol." If the latter opinion afforded a sufficient reason for the sufferings of the Army, the Principal Medical Officer of the Light Division had, of course, no prospect of the state of the men being alleviated.

Dr. Hall's tone, even when the Army was perishing, is spo-

logetic. He notes, on the Adjutant-General's return* for December 1854, that "the ration contains too much salt meat, which is not used, in many instances, and the rice that was ordered to be issued has been discontinued," but, as if to apologize for the Commissariat neglects, he adds, "Perhaps for want of supplies," a point with which he had nothing to do. His duty was to have made ceaseless representations that the men were perishing from bad food and not to have made any apology for it. Again, in his note on the January return, he says "the health of the men would improve more rapidly, if the nature of the duty they are employed on admitted of more rest." What was this but to say that the men could not have more rest?—an opinion he was not called upon to give, for it was a purely military matter.

Were we looking upon this simply from the practical point of view, without regard to persons, we should say—The Principal Medical Officer fell short of his duty towards his men, whom he was there to care for, in order to excuse deficiencies in other departments, and to make defences for them which he was not asked for.

Generally, in reference to all points, the radical defect in the system *of recommending*, under the Army regulations, is, that it presupposes defect to be removed or deficiency to be supplied.

This may answer for people living in London, who have all kinds of artificers at their beck, at a moment's notice, and every description of supply in the next street.

But, with an Army in the field, the event is very different.

* With regard to this note on the Monthly Return of the Adjutant-General of December 1854, is it not usual, in matters of material moment to the health of the Troops, *specially to direct* attention to them, in separate communications to the Commander of the Forces himself?

In matters affecting the health of the Troops the *Adjutant-General* is not the person to address. *All* such matters should be between the Commander of the Forces and Principal Medical Officer. If the latter is satisfied with merely mentioning to the *Adjutant-General*, in a monthly report, a subject of such importance, he, and not the Commander of the Forces, fails in his duty, as the Adjutant-General may not even have observed the remarks in an ordinary return.

In such a case, defect or deficiency implies serious or perhaps disastrous loss, already existing.

The dietetic and sanitary recommendations, during the first winter, would hardly have been sufficient for health even in London, with all its facilities. The recommendations were defective, even if everything had been at hand.

Afterwards, the recommendations made by the Principal Medical Officer were better; but throughout it is taken for granted that the articles of diet advised are at Balaclava, which fortunately they were. Had they not been there, the second winter might have been as bad as the first.

If we trust to this plan, we may lose an Army at any time.

All articles of diet and clothing, and all sanitary arrangements ought to be considered at the very beginning, and everything decided and provided for, as far as human foresight can provide.

There is no other safe way of guiding an Army, and all history confirms this.

General Defects.

The very obvious defects of the procedure of the Army Medical Department, in reference to the Hygiene of the Army in the East, as exhibited in all this Correspondence and in the actual catastrophe, may, therefore, be summed up as follow:

1. The Department appears never to have been consulted about Rations, Clothing, or Sanitary measures.

2. With the exception of advice as to Clothing and ventilated tents, which was not followed, and as to peat charcoal, which was, the Army Medical Department appears to have tendered no advice on Sanitary measures, nor on Hygiene to the Horse Guards or War Department before, or during the first winter.

3. The Director-General sent no Sanitary instructions, nor any instructions as to the composition of Rations to the Principal Medical Officer of the Army.

The dates given show that the whole Dietetic system pursued in the Army is wrong; that, in fact, the feeding of the Troops was nothing but the merest hap-hazard, and that the result which did follow was inevitable after these conditions had been permitted to exist.

The Director-General never made any Sanitary suggestions with regard to the state of Scutari Hospitals, until after their condition had become matter of public complaint in England, and the Government had taken other means of remedying the evils.

4. The Principal Medical Officer never consulted the Director-General on any Sanitary subject, nor on the composition of Rations. He only recommended Vegetables and Lime Juice after Scurvy had appeared. He only stated that the Ration contained too much salt meat at a time, when the issue of fresh meat was 3 lbs. per man per month, and this six or eight weeks after Scurvy had appeared.

5. The Principal Medical Officer does not appear to have been consulted by the Commander of the Forces on the composition of Rations, or on any Sanitary subject.

6. The Principal Medical Officer was not consulted as to Clothing or shelter.

7. The Principal Medical Officer appears to have given no advice to the Commander of the Forces on any of these subjects, until the Army was suffering and exhausted, and when it was too late to obtain what was necessary.

8. The Principal Medical Officer issued no Sanitary memorandum for the guidance of his Medical Officers on the Army taking up ground before Sebastopol.

9. The Medical Officers were not consulted about Sanitary or Hygienic points by their Commanding Officers.

We are left to conclude either that the Army was so well provided that no such written representations were necessary, or that it was no part of the duty of the Medical Department to make such representations.

Yet, when we consider that it is not by wounds or in action that Armies have been cut off in the field, but by Epidemic Disease—that it is not on battles, but on epidemics that the fate of Nations at war has depended, should it not be considered that the Sanitary care of an Army is an essential part of strategy?

Methods followed.

The following are the methods which have hitherto been followed in Sanitary Administration.

1. "Ministère de l'Intérieur" (French).

I. In the French Ministère de l'Intérieur.

1. The "Ministère de l'Intérieur" has a "Conseil de Santé" attached to it. This "Conseil" has no administrative power.

2. The Minister submits to it any question of Sanitary Science to which he may require a reply.

3. The reply is furnished by the "Conseil."

4. The Minister is in no way bound to be guided by the reply.

5. Practically he is almost always guided by it.

II. In the French Ministère de la Guerre.

II. "Ministère de la Guerre" (French).

1. Sanitary questions are asked of the Army Medical "Conseil" by the Minister of War.

2. The "Conseil" has no power.

3. It is required to give voluntary advice without being asked.

4. Its advice may or may not be taken.

Of these two plans the first works well—the latter unsatisfactorily. The advice of the Army Medical "Conseil" is very often not taken, and the men are dissatisfied. They desire a change.

I. At the Home Office.

I. Home Office (English).

1. The Home Office has appointed Inspectors. These Inspectors make reports and recommendations with regard to questions submitted to them.

2. The Home Secretary, if satisfied, acts at once upon their Report

3. If not, he sends the Report back for further consideration, and acts when he is satisfied.

II. By the General Board of Health.

II. General Board of Health.

Administrative principle nearly the same.

The administrative principle of the Home Office is essentially good, and works extremely well, *vide* Interments' Act and others.

That of the Board of Health is not quite so good. But, perhaps, the true reason of its present difficulties is, that English people do attend to a Secretary of State, but ask,—Who is this Board of Health? And that the Board of Health has to assail not only individuals, but also whole communities.

III. By the Horse Guards.

III. The administrative principle of the Horse Guards is an admirable plan for shifting all responsibility till it is not known where it lies. If you treat your Director General like a school-boy, you will have a school-boy for your Director General.

The history of the Commission sent out by Dr. Andrew Smith before the War into Bulgaria and to Constantinople is a good illustration of the working of this system. It could end in nothing else but what it did end in.

The principle is very much like that of the French Ministère de la Guerre. It leads, however, to far more unsatisfactory results, *et pour cause*.

The mischief to the Public Service is produced in this way. Scientific men are placed in a position requiring them to give advice whether they be asked for it or not. *Other considerations not known to their department* are then acted upon. This is a certain way of destroying the sense of responsibility. Because what the War Department or Horse Guards ought to know from a Director-General is not only what he thinks, but what *they are to do*, upon any given point submitted to him.

Now, the Horse Guards write a letter, of which there are examples in this correspondence, thanking the Army Medical Department for its admirable advice, and stating that unfortunately it cannot be acted upon.

The consequence will be, that there will be *no* scientific men in the Department.

The Director-General should never volunteer advice, unless a regulation could be made that the Commander-in-Chief or Secretary of State for War should conform to all his advice.

It is obvious that this could not be.

Therefore it would appear as if it were a first principle of administration that the Director-General should give his advice upon such points only as are submitted to him by the Horse Guards or War Department, but never tender it. This fixes the responsibility—gives the Director-General materials for forming an opinion, and enables him to advise also upon what is to be done.

Nothing is so likely to destroy the efficacy of a scientific opinion as for a Scientific Department to send daily advice to a Department which is not scientific, on subjects in regard to which its advice is not asked.

This principle of not tendering an *opinion* does not extend, however, to *information*, which should be constantly supplied, at stated times, by the Director-General to the War Department.

The War Department ought not only to ask for a scientific opinion from the Army Medical Department, but also to ask What is to be done?—which is what the Home Office does; and the Army Medical Department ought to be able to indicate a course, the Secretary of State having the responsibility of following it or not.

This being the case, in the event of failure, the public would fix upon the War Department the responsibility of not having asked scientific advice; or, if this has been asked and given, upon the Army Medical Department the responsibility of having given bad advice; and a change would be made. Whereas now, the Director-General has only to say what he *himself thinks*; and the War Department has not to think whether it shall attend to what he thinks or not.

If it be said that the first fruits of following the above principle are Netley Hospital, it may be answered that this is exactly a case in point; for the War Department did exactly what the principle proposes, and the responsibility of failure has been fixed on the right man. But the Director-General is not as yet a scientific adviser, and no one has as yet thought of him and his officers as the Sanitary Consultative Board of the War Department.

This principle, again, of not volunteering advice, does not extend to an Army in the field, where the Sanitary Officer ought to tender advice to (as well as be consulted by) the Commander of the Forces, because much must be constantly known to him which cannot be known to the Commander of the Forces, who is, himself, as now on the ground as the Sanitary adviser is, and there is no time to be lost. This is not the case at home.

It is upon these principles that the following sketch of suggestions is made.

I.

1. The Director-General, in addition to any information and advice usually tendered by him to the War Department on matters connected with the *Hospital* arrangements of the Army, might, as *being consulted*, give the opinion of his Department in writing, on all matters connected with the Hygienic and

1. Director-General.

other arrangements bearing on the health of the Army, *whether at home or in the field.*

2. Director-General. 2. The Director-General might issue to the principal Medical Officer and Sanitary Officer of every Army on active service, a code of instructions on the Hygiene of the troops and on precautions for preventing disease.

3. Principal Medical Officer. 3. The Principal Medical Officer and Sanitary Officer of every Army in the field should send to the Director-General information on the Hygiene of the Army, with any recommendations for improving the service.

4. Principal Medical Officer. 4. The Principal Medical Officer or Sanitary Officer of every army in the field should, *on being consulted* by the Commander of the Forces, give his advice and opinion in writing on the composition of rations, clothing, shelter, sanitary arrangements and precautions for preventing disease, &c., &c.

Even where his advice is not requested, he should send in writing to the Commander of the Forces the fullest information on all these subjects, with any recommendations for protecting the health of the Troops.

5. Principal Medical Officer. 5. The Principal Medical Officer or Sanitary Officer of every Army in the field should issue instructions, regarding sanitary precautions, for protecting the health of troops, for the guidance of the Medical Officers.

6. All Principal Medical Officers. 6. All Principal Medical Officers should transmit to the Principal Medical Officer, or Sanitary Officer, full information in writing as to the Sanitary state of the Troops and Hospitals, and on matters affecting the health and physical efficiency of the men.

II.

1. Commanding Officer. 1. The Commanding Officer to consult the Medical Officer in matters relating to the health of troops.

2. Medical Officer. 2. The Medical Officer to give advice to the Commanding Officer in writing.

3. Commanding Officer. 3. The Commanding Officer to be guided by the opinion of the Medical Officer in matters relating to the health of troops; unless he considers it contrary to the interests of the Service, or incompatible with the operations in which he is engaged.

4. All such recommendations, with the reasons for rejecting them, if they be rejected, to be forthwith forwarded to the War Department. — 4. War Department.

5. Whenever Zymotic Disease appears in a Regiment, the Medical Officer should ascertain its causes, whether — 5. Medical Officer.

defective drainage,
overcrowding,
defective ventilation,
want of cleansing,
nuisances,
unburied animals,
bad water,
food,
defective clothing,
exposure or fatigue,
damp or wet ground, marshes, or other cause,

and should report the circumstances in detail immediately, to the Commanding Officer.

6. Such Report to suggest remedial measures; the progress of the Zymotic Disease to be reported day by day to the Commanding Officer, and any new precautionary measures recommended. — 6. Medical Officer.

III.

1. The Medical Officer to attend to the ventilation of Barracks and Huts; to see that the means of ventilation provided are not obstructed, and to report defects, with suggestions for removing them. — 1. Medical Officer. Ventilation.

2. Any offensive effluvia, occurring in a Barrack or Camp, is to be traced to their cause by the Medical Officer, and their cause reported for removal. — 2. Medical Officer. Effluvia.

3. The Medical Officer to make a daily inspection of the Camp of his Regiment, to see that it is in a good sanitary state. All defects to be reported immediately to the Commanding Officer for removal. — 3. Medical Officer. Inspection.

4. In taking possession of a town, the Medical Officer of each Regiment to examine the Quarters allotted to his Regiment, and represent to his Commanding Officer, in writing, any circumstances likely to affect the health of the troops—connected with the position. — 4. Medical Officer. Occupation of Quarters.

drainage,
cleansing,
ventilation or
crowding of the rooms.

5. Medical Officer. Billeting.

5. Also to examine carefully all houses where troops are billeted.

6. Medical Officer. Hospital Buildings.

6. The Medical Officer to make similar examinations in regard to all Buildings set apart for Hospital purposes, and report their condition, with suggestions for their improvement, to the Commanding Officer.

7. Medical Officer. Drainage, Ventilation, Walls of Buildings.

7. All buildings to be occupied for Quarters or Hospitals should have their drainage carefully examined—also their means of ventilation. Their walls and ceilings should be cleansed, scraped, and whitewashed, especially if the occupation is to last above a week or two.

8. Medical Officer. Cubic Space.

8. The smallest amount of cubic space which ought to be allotted for each man in quarters in occupied towns is 500 cubic feet, in temperate climates, and for Hospitals 1,000 cubic feet, in temperate climates. But, in either case, great attention must be paid to the ventilation.

9. Medical Officer and Quartermaster, Accommodation.

9. The Regimental Surgeon, together with the Quartermaster, should decide on the amount of accommodation which every building will afford, either for troops or sick. He should report the defects in ventilation, drainage, and cleansing, in the manner already mentioned.

10. Medical Officer. Epidemics.

10. Should Epidemic disease, especially Fever or Cholera, appear in a Barrack or Hospital, the inmates should be immediately removed and placed elsewhere, until the Building can be thoroughly purified and its sanitary condition amended, on the recommendation of the Medical Officer.

11. Medical Officer Water-supply.

11. Before selecting any source of water-supply, the Medical Officer shall carefully examine and report on the quality and amount of the water; and he should require that the water be delivered for consumption, as pure as it is at its source.

12. Medical Officer. Cholera.

12. The Medical Officer should watch over the health of the men, with a view of treating all classes of Disease at their earliest stage, especially Cholera,—for the arrest of which, in its premonitory stage, he should cause inspections to be made, so that all men, affected with Diarrhœa, may be brought at once under medical treatment, instead of being permitted to wait till they apply for it.

APPENDIX II.

TO

SECTION I.

Abstract of the Correspondence of the Divisional and other Medical Officers.

The following correspondence illustrates the working of the present system of Army hygiene, in divisions, during the War in the East:—

Dr. Alexander writes to the Assistant Adjutant-General, that Battalions had arrived, unprovided with field equipments, except Marquees; no medical comforts; sick have only one blanket; suggests application being made to Malta.	Gallipoli. April 15, 1854.	Dr. Alexander.
Writes the same day, to Principal Medical Officer, at Malta. Thermometer 28°, at night, "you may imagine what the sick in the field are suffering." "No Army ever took the field more provided."		
Writes to the same effect to the Director General.	Gallipoli. April 15.	
Dr. Burrell replies on the 17th and 18th. Sends 300 sets of bedding and 6 or 8 hospital tents. "You have half frightened me with the want of comforts."	April 18.	Dr. Burrell.
The "Touning" arrived at Gallipoli with some hospital stores.	April 22.	
Dr. Alexander applies to Assistant Commissary-General, at Gallipoli, for 50 mats for the Hospital, but did not get them.		Dr. Alexander.
Obtained 10 men to whitewash and clean buildings for Hospital.	April 24.	
Dr. Alexander "got possession of 400 odd blankets on the wharf, on my own responsibility," which he distributed to the hospitals.	April 16.	

April 28. Dr. Alexander.

He informs Assistant-Surgeon Smith, R.E., that "No medical comforts have as yet arrived from England."

May 1854. Dr. Mapleton. Scutari and afterwards Bulgaria.

During May and June, 1854, Dr. Mapleton made a number of recommendations to Lord Raglan, at Scutari, and afterwards in Bulgaria, as to early drills, relieving of fatigue parties, latrines, sale of bad meat, spirits instead of porter, or sour wine: bathing times, white coverings for caps; reliefs protecting sentries from sun; ration alternately beef and mutton; dress; medical officers to accompany camping parties. A number of these suggestions were acted on.

May 13. Dr. Alexander.

Reports to Sir George Brown on Hospital supplies, &c.

May 19. Gallipoli Dr. Forrest.

Dr. Forrest, at Gallipoli, complains to the Assistant Quartermaster-General of the crowded state of hospitals and distance of buildings, and suggests a bell-tent to be issued to each Regiment in the field.

June 2.

Dr. Forrest informs Assistant Quartermaster-General that the Surgeon of the 28th Regiment attributes sickness to working the men during the heat of the day, and proposes alteration of hours.

Same date—Complains of effects of drunkenness, and advises suppression of drinking-booths and regulation of canteens.

Aladyne. June 6. Dr. Alexander.

Informs Dr. Dumbreck, Principal Medical Officer, that he had signed Requisition for pailliasses, bearers, and medical comforts for 200 men of the Horse Artillery, "who have literally nothing." "Small-Arm Ammunition Brigade has no Medical Officer." No porter supplied to troops, although provided by Government, for want of transport. Could be easily sent.

Aladyne, June 10. Dr. Alexander.

Dr. Alexander strongly represents to General Airey the want of necessaries, medicines, and equipments, which will be experienced by the sick, should the Army advance: "the misery and wretchedness of the sick and wounded would be exceedingly great." Advises the stores at Varna to be brought up.

On referring this letter to the Principal Medical Officer, Sir George Brown notes that he does not approve of its tone, and that Dr. Alexander had better defer such suggestions and strictures until they are asked for.

June 11.

Dr. Alexander writes to Dr. Dumbreck, Principal Medical

officer, on the same subject. Dr. Dumbreck replies, on the 18th, that the supplies will be sent.

Dr. Alexander informs the General Commanding and Dr. Dumbreck of the first fatal case of cholera in the division. — June 17.

He informs Dr. Dumbreck, amongst other matters, that "many cases of diarrhœa are occurring among the troops, attributable to the want of vegetables, exposure to the sun, drinking bad country wine, and an insufficient breakfast." — June 18.

Dr. Matthew represents defects in Hospital at Varna, and want of Orderlies. The latter were obtained, the defects were never efficiently remedied. — June 19. Varna. Dr. Matthew.

Dr. Alexander to Dr. Dumbreck—Complains of drills during the heat of the day. On the 27th Dr. Dumbreck replies that the subject will be attended to. — June 24. Dr. Alexander.

Dr. Hall asks the result, on the 1st July, and, on the 3rd, Dr. Alexander replies that the early drill at five A.M., had commenced that day. — July 1. Dr. Hall.

Dr. Linton appoints Surgeon Cooper to take sanitary charge of the Camp of the 1st Division, and reports that he did his duty very well. He appends Mr. Cooper's recommendations, which are by far the best sanitary documents contained in the whole correspondence. — Aladyan, July 7. Mr. Cooper.

There is an excellent letter of August 1st, of Mr. Cooper, about camp and tent drainage, latrine arrangements, shelter from the sun's rays, &c. — August 1.

There is a similar letter from Mr. Cooper to Dr. Linton, on the 3rd August, reporting insufficient drainage, unwholesome latrines, manure heaps, &c. — August 3.

On August 5th there is an excellent letter from Mr. Cooper, stating that nothing had been done, and urging exertion. He shows clearly the local causes which were predisposing the men to Cholera. — August 5.

There is another similar letter, on August 6th, complaining of neglect of his recommendations, nuisances affecting the air, &c.; explains the proper method of constructing latrines. — August 6.

On the 7th there is another good letter, about early treatment of diarrhœa, and about an abominable adulteration of sugar with sand, used by the men, as a predisposing cause of Cholera. — August 7.

Mr. Cooper is one of the few Army Medical Officers, so far

as can be learned from the correspondence, who appears to have had an adequate knowledge of Army sanitary measures. These letters were addressed to Dr. Linton, but it does not appear what steps were taken by him to enforce Mr. Cooper's recommendations.

July 8. Dr. Linton. There is a medical memorandum from Dr. Linton, recommending men ill with diarrhœa to report themselves at once. Good, but not sufficient.

July 9. Smallpox in a certain village: men not to go there.

July 9. Dr. Alexander reports three cases of Cholera, at Derna.

July 18. Dr. Linton represents the sale of unwholesome wine.

July 23. Dr. Alexander. Dr. Alexander reports to the Assistant Adjutant-General seven cases of Cholera, in the Light Division, and recommends that the sale of country wine in the Canteens be discontinued, and also that stone fruit be prohibited. Reports, same date, to General Airey that Cholera is spreading, and that "the men look upon themselves as doomed if they remain here," as the Inspector-General has reported against it. Recommends removal of Camp, which was promptly done.

July 15. Dr. Hall. In the case of other camps removal was recommended, by Dr. Hall, with beneficial results.

July 24. Medical Memorandum. Dr. Linton. Dr. Linton advises precautions in regard to bathing. Advises that latrines continue to be covered with two inches of earth morning and evening; that manure, &c., be swept into pits and covered daily. Fruit to be prohibited.

Monastir. July 25. Dr. Alexander. Memorandum. Medical Officers to report to Principal Medical Officer twice a day on Cholera in their Regiments.

Monastir, July 27. Dr. Alexander. Dr. Alexander recommends to General Airey more open order in tents, and the removal of horses to a greater distance. Also writes to Dr. Hall, requesting that medical comforts be sent.

Same date. To General Airey. Cholera prevalent; meat defective in quality. Recommends an additional ½ lb. in the ration; good soap, with rice, daily; pepper, salt, &c.; to stop the sale of country wine and substitute rum.

July 30. Dr. Alexander. Dr. Alexander writes to General Airey, recommending flannel for the men.

On this there follows the remarkable correspondence, given pp. vi—xii, Appendix I. to this Section, between Dr. Hall

and Dr Alexander, about the supply of medicines and medical comforts to the Light Division.

It is in no wise surprising, even after reading this, when we compare with it Dr. Dumbreck's evidence before the Sebastopol Committee, of "there having been not the slightest vestige of the want of medical comforts," that the Home Government, being so misled, or rather so misinformed, by its responsible Agents, should have been utterly misled as to the state of its perishing Army.

Dr. Linton to Dr. Hall, about safe disposal of clothes of Cholera cases and burial of the dead, &c. — July 31. Dr. Linton.

Camp before Sebastopol.

Dr. Alexander to Dr. Hall. Cholera continues in Light Division. Nights cold. Tents wanted, without them force will soon suffer much. — October 2. Dr. Alexander.

Dr. Linton to Dr. Dumbreck. Cholera and Diarrhœa among the men, from damp and exposure. Tents are required. Men have had salt provisions for five days; should be avoided at present. — October 4. Dr. Linton.

(Tents could not be obtained.)

Dr. Linton appoints Staff-Surgeon Francis Smith, to superintend sanitary state of 1st Division Camp and to report, in writing. States Dr. Smith to have been most efficient, till he died of fever. No re-appointment appears to have been made. — October 12.

Dr. Linton appears to have been the only Principal Medical Officer who appointed Sanitary Inspectors, and his having done so deserved imitation.

Dr. Dumbreck informs Adjutant-General that scorbutic disease had appeared, and advises that vegetables be obtained. — October 24. Dr. Dumbreck.

Dr. Linton reports to His Royal Highness the Duke of Cambridge that Scorbutus had appeared although the men had fresh meat on almost alternate days; recommends vegetables or, failing these, lime-juice. — October 25. Dr. Linton.

This and the very interesting letter from Mr. Alexander of December 10, as well as many others, tend to show that the want of fuel and of places for cooking had developed scurvy among the men, even before the time of exclusively salt rations had begun. This is important, as an evidence of the imperative

necessity of good cooking arrangements, for the health of an Army, and of the consequence of eating "half raw rations," whether fresh or salt.

November 4. Dr. Alexander. Dr. Alexander requests Colonel Sullivan to have another blanket issued for the men of the Division: the present one is old, thin, and not warm.

November 10. Mr. Mouat. Mr. Mouat represents to Lieutenant-Colonel White the miserable state of the sick, under bell-tents, in want of warmth, clothing and other requisites.

States his letter elicited no reply, except some Turkish mats and tarpaulings, through the Principal Medical Officer.

November 11. Dr. Alexander. Dr. Alexander to Dr. Hall. "Hospital marquees were left on board transports, when we landed in the Crimea." Only one pack-horse had been allowed for panniers.

November 16. Dr. Tice. Dr. Tice applies for a ship for sick and wounded. On the 17th complains of the Hospital being crowded.

November 22. Mr. Mouat. Mr. Mouat to Lieutenant-Colonel White: States that a large number of men are suffering from relaxation of bowels who cannot be taken into Hospital or appear at morning parade. Complaint depends in great measure on exposure and nature of duties, at this inclement season. Want of proper clothing. Advises discontinuance of certain duties. Two men dying from effects of cold. Difficulty of obtaining fuel even for Hospital cooking. States this letter elicited a formal hint that the duties were military.

November 24. Dr. Alexander. Dr. Alexander writes to Colonel Sullivan and refers to his letter of the 4th about the blankets. Urgently repeats the demand, as the men are now suffering much from the weather, and much sickness attributable to cold and exposure. Wants camp kettles and large kitchens, to save fuel.

These remonstrances, as to the want of blankets, of camp kettles, and fuel for cooking, are urgently and more urgently and constantly repeated. Yet, not till January was there even one blanket served out to every man, although by the end of this month, Dr. Hall must have received the intimation from Dr. Smith of the large quantities of warm clothing sent out by Government for the use of the troops. Not till January, were the lost camp kettles replaced. Not till December, at different times, was fuel issued. Not till February was coffee issued roasted. Not till March was the supply of fresh

rent increased. From this period, and knowing these facts, as we do now, the correspondence is only harassing and heart-breaking to read, like some torment invented by Dante for the Infernal Regions.

November 24. Dr. Hall. State of Army.

The first indication of the sanitary condition of the Army having been the subject of communication between Dr. Hall and Head Quarters is in a reply given to a note from the Adjutant-General, on November 24th, expressing Lord Raglan's alarm at the fact, mentioned in the morning state, of there being 2,010 sick in camp, and asking if cases were sent away. Dr. Hall replies incidentally; "that the sanitary condition of the Army was alarming enough, and with the severe duty and exposure the men had to undergo at that inclement season, I had no doubt it would increase." "The prospects of the Army are miserable enough, and if we were to remain in the condition we were then in, there would be a small army indeed by the time the winter was over." He shows, that out of a nominal Army of 37,282 men, there were 2,160 sick present, and 6,843 sick absent; 9,003 in all; or about 25 per cent. of the force. Sick were taken to Balaclava daily, as far as possible. Regiments had been landed late in the day in heavy rain, and some of them, the 46th for instance, without tents.

It is a note-worthy fact, that 25 per cent. of the Army should have gone on the sick list without apparently having led either to previous remonstrance, or to the calling of a Medical Board; and that the subject is only mooted, for the first time, in consequence of the difficulty of getting the sick fast enough away.

But this was not the worst. In January 1855 upwards of fifty per cent. of the force under arms before Sebastopol were on the sick list, at the same time, or 12,025 sick out of 23,392 men, of which sick there were 4,158 present and 7,867 absent. Still no rigorous remonstrance. The unfortunate 46th, in addition to its being landed without tents, actually served, at one time, for six successive nights in the trenches. It was "nearly annihilated by sickness, in the months of November and December," and presented the apparent anomaly of losing more than its average strength.

November 26. Dr. Alexander.

Dr. Alexander reports to Dr. Hall that two men died from exposure in the trenches, and many were brought in suffering.

Recommends buildings being put up for Hospitals, cooking-places, and fuel.

November 26. Dr. Alexander. Makes similar representation, on the same day, to General Codrington. States men in one Regiment are ill off for boots, shirts, and warm clothing. If not remedied, sickness will increase and the mortality will be great. Again asks for blankets, fuel, and cooking-places.

November 29. Reports to General Codrington and to Dr. Hall thirteen deaths from Cholera. Encloses letter from Dr. Longmore, showing how the men will suffer unless protected, and their meals properly cooked.

November 29, 1854. Dr. Hall. In consequence of Dr. Alexander's letter of the 29th, Dr. Hall represents to the Quartermaster-General that "the want of camp kettles, fuel and blankets, as well as proper shelter for the men, is being severely felt just now in the whole army, and I cannot too strongly urge the necessity of these wants being supplied as speedily as possible."

It will be observed, that the administrative principle involved is that of representing wants and defects and not of foreseeing and providing for them, and that this was the principle by which the Army perished.

December 2. Dr. Alexander. Dr. Alexander to Dr. Hall. Former requisition for medicines inadequately complied with. Only 4 oz. of calomel and 4 oz. of opium sent for 630 sick of Cholera, equal to 3 grains for each patient. There must be more at Balaclava. Requests that the full amount of the requisition be complied with.

December 4 Dr. Alexander to General Codrington. Sickness rapidly increasing. Great mortality among the troops, from exposure, want of huts, cooking-places, fuel, &c. Again asks for blankets. Soldier has to consume his "miserable ration" half raw. Army will soon be rendered totally inefficient. Wants fuel, for obtaining something warm for the sick in Hospital, and for those brought in, in a state of collapse, from the trenches; also marquees and tents. A similar letter to Dr. Hall.

December 5. Dr. Hall. Dr. Hall says in reply, December 5th, "the picture you draw of the condition of the men is a melancholy, but, I fear, too true a one." Fuel and lights were issued to troops by yesterday's order. "It is not for want of representation matters are as they are at present." [Where are these representations,

and when were they made?] Sends explanation about calomel, &c. Asks how the Light Division has not got its supply of blankets, &c.

Dr. Anderson represents to Major Wood that sickness in the 9th Regiment is not owing to the ground, but to exposure to damp, &c. December 7. Dr. Anderson.

In reply to a letter from Dr. Hall, about the causes of sickness, Dr. Alexander says, Want of rest, exposure to cold and wet, harassing duties, insufficient nutritious food, no fuel for cooking, want of clothing (almost bootless) and in rags. Only one miserable worn-out blanket. Tents not affording protection, and for several days full of mud. December 19. Dr. Alexander.

The details are terrible. He shows how easily all might have been mitigated.

Rations have generally been—

1 lb. of fresh or salt meat
1 lb. biscuit.
1 oz. raw coffee.
1½ oz. sugar.
With rice or barley.
1 gill rum.

Rice only issued four days and barley one day during the month. Vegetables were in use during the former part of the month, as well as meat, alternately fresh and salt, for the latter portion salt only, not always full ration. Recommends huts for men, with cooking-places (tents are totally insufficient) fuel, utensils, clothing, blankets. If not supplied, fears army will shortly be totally ineffective.

Dr. Alexander sends suggestions to Dr. Smith and recommends— December 15. Dr. Alexander.

Separate medical transport, with all necessary field appliances, cacolets, medicines, Hospital Staff Corps. Principal Medical Officer to be limited to general superintendence. A Field Inspector to do Hospital-inspecting work, &c.

Staff-Surgeon Hanbury recommends to Dr. Smith lime-juice, in the treatment of Diarrhœa. December 17. Dr. Hanbury.

Dr. Hall sends a weekly state to General Estcourt, in reply December 19. Dr. Hall.

to a note from the Commander-in-Chief, in which he says, "The duty is so heavy, the exposure so great, and the supply of food and the means of cooking it so uncertain, that it is not surprising disease prevails so extensively among the men, particularly among the newly-arrived regiments."

December 22. Dr. Alexander writes to Dr. Hall, about fuel for hospitals.

December 25. Dr. Anderson. Dr. Anderson reports to Dr. Hall on the dilapidated state of a wing of Balaclava General Hospital.

December 26. Dr. Hall. Dr. Hall sends to Lord Raglan letter from Dr. Humfrey, about fresh vegetables, which he respectfully but urgently recommends. He says, "Fatigue and exposure, added to rawness and insufficiency of diet, will be sure to produce scurvy, though as yet very few cases of that complaint have been as yet returned."

December 29. Dr. Anderson. Dr. Anderson protests, to Lieutenant-Colonel Haines, against a transport camp and bazar being established near the Hospital.

December 29. Adjutant-General's Memorandum.

"HEAD QUARTERS,

"29th *Dec.* 1854.

"Memorandum.

"The Medical Officers in charge of the Sick of Divisions will report, daily, the quantity and description of medical comforts in their possession, and the issues they have made in the last twenty-four hours to each Regiment in the Division.

(Signed) "J. B. B. EYRE,

"Adjutant-General."

December 30. Reply of 4th Division.

"CAMP, 4TH DIVISION,

"30th *Dec.*, 1854.

"Sir,

"With reference to the Memorandum of the 29th December, from the Adjutant-General, directing medical officers in charge of the sick of Divisions to report daily of the quantity and description of medical comforts in their possession, and the issues they have made in the last twenty-four hours, to each Regiment in the Division, I beg to state that I have not any medical comforts in my charge and have never issued any to the Regiments in the Division, there never having been a depôt of medical comforts in the Camp of the 4th Division.

"The Surgeons of the Regiments are obliged to send to Head Quarters or to Balaclava, when in need of those or of medicines.

"I have the honour to be,
"Sir,
"Your obedient Servant,
W. C. Humfrey,
"Deputy Inspector-General of Hospitals.
"In charge 4th Division.

"The Assistant Adjutant-General,
"4th Division."

During the winter some amount of correspondence took place between Dr. Humfrey and the authorities, relating chiefly to deficiencies in transport for sick to Balaclava, and to the sufferings of the troops and sick in camp from want of shelter and supplies.

Dr. Alexander informs Dr. Hall that Scurvy has appeared and gangrene of the extremities. [This is what was called Frost bite.] — December 30, Dr. Alexander.

Dr. Anderson calls the attention of Lieutenant-Colonel Haines to the filthy state of that part of Balaclava occupied by the Turks. Fever among them. Also the fœtid mud at sick wharf emits malaria prejudicial to the health of the town. — December 30, Dr. Anderson.

Dr. Hall encloses to General Airey a letter from Surgeon Marshall, urging necessity of better shelter for the men, and pointing out the lamentable results of exposure. "I am quite convinced the consequences will be fearful, from the exhausted state the men are in." — January 5, Dr. Hall.

Dr. Fine, Principal Medical Officer, 3rd Division, to Sir Richard England.—Refers to Memorandum of Dr. Hall, urging Medical Officers to procure necessaries from Balaclava. States that they are totally without means of transport. Requisitions made are unattended to. Suggests that Lord Raglan be informed. Health of troops failing rapidly. Unless they are better housed, better fed, better clad, and less worked, the Division will be speedily annihilated. — January 6, Dr. Fine.

This and Dr. Alexander's letter of December 2, with others, upon the difficulty of obtaining medical comforts or medicines from Balaclava, for want of transport, and want of attention to requisitions there, are worth comparing with the letter of Dr. Humfrey, December 30, stating that he, too, has always been — Remark.

obliged to send to Balaclava, or to Head Quarters, for their medical comforts and medicines, having no depôt of such in the Division.

It is thereby proved that the 3rd, 4th, and Light Divisions, at least, if not all the Divisions, were dependent upon supplies which they had no means of procuring from Balaclava. And Dr. Hall's stormy denunciation of the "detractors" and attestation of the issues of supplies at Balaclava are not worth much, since it appears that this Balaclava had to supply all, or nearly all, the divisions, as also that the sick were suffering and nearly destitute of these necessaries, owing to the difficulty of fetching them.

January 6. Dr. Marshall. Dr. Marshall reports to Dr. Hall gangrene of the feet, from cold, in the 2nd Division.

January 10. Dr. Pine. Dr. Pine to Lieutenant-Colonel Colborne.—Shows deficiency of provisions. Men get food too late to cook it, before going to the trenches. Men have eaten their rations raw. Men coming from trenches get coffee only, because utensils will not cook meat and coffee at the same time. No transport. Sick cannot be removed often enough. Marquees have to be used as hospitals. Recommends increase of ration—by the substitution of roasted coffee for green—by addition of more rice, by vegetables, and by fresh meat. Recommends lime-juice—three meals a day.

January 10. Dr. Linton. For November and December. Dr. Linton writes to Dr. Hall and sends monthly summaries for 1854, in which he states the prevalence of disease in 1st Division to be attributable to duty, exposure, cold, wet, want of sufficient vegetables or lime-juice, want of protection from weather. 90th Regiment, under shelter at Kadikoi, has hitherto escaped. In the early part of November troops had fresh meat every other day, latterly salt meat alone. Little time for cooking. Fuel difficult to get; water distant; camp kettles lost or destroyed; weather wet, stormy, and boisterous. Everything wet—blankets, great coats, clothes. Temperature below freezing: no winter clothing, no shirts or stockings, no shelter. Men eat pork raw. Green coffee issued (January 10th), a ration "utterly useless." No transport. Our ambulance has turned out a complete failure. French ambulances most useful.

January 15. Dr. Anderson. Dr. Anderson reports to Dr. Hall the mortality among the Turkish troops, at Balaclava, imperatively calling for inquiry.

Suggests inspection of their burial-ground: bodies not properly covered. "We shall have a plague," if the part of the village occupied by the Turks be not cleaned.

Dr. Hume reports the Turkish tents, near his Hospital, as a nuisance, and recommends their removal. — January 23. Dr. Hume.

Dr. Anderson reports to Lieutenant-Colonel Haines imperfect accommodation for sick brought down for embarkation, and advises that better be provided. — January 23.

Dr. Anderson suggests to Colonel Harding to remove pedlars from vicinity of Hospital, &c., and a sentry to prevent nuisance. — January 24. Dr. Anderson.

Same date, reports to Dr. Hall men brought down labouring under frost-bite, without stockings or shoes, or anything to protect their feet.

These fearful cases of Frost-bite, so called, were brought down, thus bootless and stockingless, to Scutari. I have seen cases so frost-bitten up to the knee.

Dr. Anderson reports, to Lieutenant-Colonel Haines, overcrowded state of Medical Officers' quarters, in General Hospital, Balaclava. Same date to Dr. Hall, as to sick being sent down without previous warning. Hospital overcrowded. — January 25.

Dr. Hume, Principal Medical Officer, 3rd Division, reports, to Dr. Hall, that both sick and well are on salt rations. Commissariat officers cannot say when fresh meat will be again supplied. Troops stand in immediate need of fresh meat and lime-juice. — January 26. Dr. Hume.

A similar letter sent, on the 9th February, to Colonel Wood.

Dr. Linton calls the attention of the Assistant Quartermaster-General, 1st Division, to the great number of unburied carcases within the lines, and the filthy state of the Turkish camp. He repeats this, on the 1st February, in reply to a letter from the Assistant Quartermaster-General, stating that the camps were clean. — January 27. Dr. Linton.

Dr. Anderson reports to Dr. Hall two or three cases of Smallpox, among drafts on board ship. Has employed separation, disinfecting fluids, &c. — January 28. Dr. Anderson.

Staff Surgeon Roberts writes to Assistant-Adjutant General, 4th Division, about the dirty state of the ground near 4th Division Hospitals and the latrines. Fatigue parties were applied — February 3. Dr. Roberts.

for, with little effect. No method of making latrines or ensuring cleanliness, except by desultory action. A sanitary camp police wanted.

Gives reply from Assistant-Adjutant-General that the proposals were good but could not be carried out.

February 9. Dr. Hanbury. Staff-Surgeon Hanbury writes to Dr. Hall on the influence of diet on the diseases of the army.

Also, same date, about Hospital latrines.

February 10. Dr. Hume. Dr. Hume to Lieutenant-Colonel Colborne.—Reports tents of 28th Regiment worn out and admitting water. About 100 sick are disposed in some such tents. Recommends other accommodation.

February 11. Dr. Hanbury. Dr. Hanbury reports to Dr. Hall that fever is prevalent in Balaclava Hospital, and that Dr. Hall's suggestion for ventilating the wards had not been carried out. This was done afterwards.

February 12. Dr. Hume. Dr. Hume, writing to Lieutenant-Colonel Colborne, objects to a proposal which had been made to use the best tents for sick. Advises a ship being sent to Constantinople for tents and transport. If this is not done, the whole Division will be placed in danger.

Same date, Dr. Hume receives reply about the salt provisions. Commissariat had been directed to supply lime-juice and live cattle expected daily.

Same date. Dr. Hume reports to Dr. Hall that the sick of the 3rd Division, 1,500 in number, had been on salt provisions for five days. Only eleven bottles of lime-juice.

February 12. Dr. Alexander. Dr. Alexander applies to General Codrington, for a daily issue of fresh meat, for hospitals.

February 13. Dr. Hall. After the sufferings of the winter were well nigh ended, Dr. Hall writes to Lord Raglan, informing his Lordship that "Diet is a question of so much importance to the welfare of an army" that he recommends the appointment of a Committee, "to take into consideration the present mode of rationing the troops in the Crimea, to see if any and what changes can be effected in improving it."

February 16. Dr. Anderson. Dr. Anderson reports to Lieutenant-Colonel Harding twenty dead bullocks in the Harbour; carrion lying along the beach near the entrance. Suggests tugging dead animals out to sea.

February 17. Dr. Hanbury. Staff-Surgeon Hanbury states to Dr. Anderson that Pur-

never had reported that there was no fresh meat obtainable for sick in Balaclava Hospital, and protests against it.

Staff-Surgeon Roberts reports graves want covering with fresh earth. — February 17. Dr. Roberts.

Dr. Anderson writes to Dr. Hall about fresh latrines for Hospital. — February 19. Dr. Anderson.

Reports crowded state of "Timandra," with Croats on board. — February 23.

Dr. Hume to Lieutenant-Colonel Colborne.—Recommends a daily police to collect, burn, or bury filth and rags round the hospitals. — February 24. Dr. Hume.

Mr. Mount reports to Major of Brigade, Cavalry Division, imperfect burial of horses, near the Camp. Strongly represents danger to health; advises covering carcases with powdered charcoal, lime, and earth. — February 25. Mr. Mount.

States result to have been that camps were inspected. Four dirty camps cleaned and suggestions carried out.

Dr. Anderson again reports the case of the "Timandra:" eleven cases of fever on board. — February 27. Dr. Anderson.

Dr. Alexander calls the attention of General Airey to unburied horses, near his Division; advises latrines to be covered up, and very great attention paid, daily, to the cleansing of the Camp. — February 28. Dr. Alexander.

Staff-Surgeon Hanbury suggests whitewash for roofs of hospital huts, to protect them against the sun. — March 6. Dr. Hanbury.

Dr. Linton.—Memorandum to Medical Officers, to see to removal of camp nuisances. — March 8. Dr. Linton.

Dr. Hall recommends Lord Raglan to appoint a Board of Health, to consider "the sanitary state of the Army," as to "diet and water, accommodation for sick and well, clothing, duty, and locality." — March 8. Board of Health.

It is worthy of remark that this is the first Board of Health called for by Dr. Hall. By this date the whole mischief which such a Board might have prevented had long been done.

By this date, also, the Commission of Inquiry into the supplies of the Army, and the Sanitary Commission for removing sanitary defects, were both at work at Scutari.

Of what possible use could therefore this Board of Health be at such a time? A more perfect illustration of *ex-post facto* proceeding can hardly be conceived.

March 6 Dr. Roberts. Staff-Surgeon Roberts proposes sinking wells for water.

March 7. Staff-Surgeon Roberts proposes raising sides of tents and emptying them, for ventilation.

March 10. Dr. Anderson. Dr. Anderson recommends to Dr. Hall whitewashing the roofs of hospital huts.

March 11. He advises the "Severn" to be cleared out.

March 13. Reports General Hospital crowded with sick, sent down without warning.

March 13. Represents to Lieutenant-Colonel Harding the filthy state of the beach and the encampment behind the cattle wharf.

March 17. Requests hospital sentries.

March 17. Dr. Hasbury. Dr. Hasbury reports to Dr. Hall fever in Balaclava General Hospital from overcrowding and among the Orderlies. Encloses letter from Mr. Archer on the subject.

March 27. Dr. Roberts. Staff-Surgeon Roberts reports to Adjutant-General, 4th Division, that graves want fresh covering; Regimental tents unequally occupied; want of tent ventilation—advises raising the sides. In reply, attention was ordered to be given to ventilation, but General Campbell states Mr. Roberts took the hint as to the measures he recommends from what he had seen done in the Division.

March 31. In his Quarterly report, Staff-Surgeon Roberts states that, during the previous winter, he many times found meat not eaten, for want of water to cook it, the men not being able to fetch it: also from want of fuel. Found three days' rations in one tent uncooked, for want of fuel. Both fresh and salt meat were so found. On the 27th January Private Gallagher had not eaten his rations for a month. A number of similar instances of uncooked rations. Meat buried that was not cooked. Want of water. Men's persons had been covered with vermin.

Of what possible use could it be to poor "Private Gallagher," and to "a number of similar instances," to report, so long afterwards, that they had not been able to eat their rations, two months ago?

July, 1857. Dr. Roberts. Writing in July, 1857, referring to his reports, Dr. Roberts says, "The reader of these pages will see that there was no sanitary discipline observed in our Army in the Crimea, at the time referred to."

These abstracts, continued up to the end of the first winter and the arrival of the Civil Commissions, show the operation of the existing Army Regulations in Divisions and Regiments. The representations made by the Divisional Medical Officers, as to the deplorable condition of the Army, and the causes from which it was perishing, are urgent enough. The practice followed by the Principal Medical Officer in this matter appears to have been that of representing the miserable state of the Army mainly by sending other people's letters to the Military Authorities. The entire want of system and of uniformity and efficiency in practice which the whole correspondence discloses is very striking. Under such a sanitary *régime* what hope was there for the Army? The only use which can be made of the evidence is as a warning. It shows clearly that any future Army, situated as the Army of the East was situated, would perish as it perished, unless a sweeping alteration be made in the whole administrative arrangements bearing on the health and efficiency of the troops.

With proper administrative arrangements, such representations should have been almost, if not altogether, unnecessary. And, wherever it is necessary to make them, such necessity ought to be taken as indicating neglect of duty on the part of some one. But, to trust to such representations as a means of preserving the health and efficiency of an Army is simply to sacrifice the Army. The amended Regulations should clearly fix the responsibility as regards the nature and amount of rations and clothing, shelter, sanitary arrangements, and hospital equipments.

PREFACE

TO

SECTION II.

It is now well-known that a large element in the mortality during the winter of 1854–55 was the loss of life on board the Sick Transports between Balaclava and Scutari.

The sick, from the landing in the Crimea, September 15, 1854, to the end of January, 1855, were brought to Scutari in 50 Transports, some of which were sailing vessels and others steamers.

The sick were received on board, and sometimes detained for several days before the vessel sailed. The voyage for sailing ships was usually six days, and for steam ships under two days: but the average time the sick were detained on board was eight days and a-half from the time of their embarkation at Balaclava till they were disembarked at Scutari. The numbers of those who died on board are variously stated, but they are probably, in every instance, understated.

It appears, that about 13,033 sick were embarked during the four and a-half months, of whom about 976 died. This is a mortality of no less than seventy-four and a-half per 1,000 in the short space of eight and a-half days. When we reduce this proportion to the proportion of deaths per annum, we find that, had the embarkation of sick gone on for twelve months at the same rate of mortality, no less than 3,182 men would have died out of every 1,000 embarked; in other words, the whole population of the Sick Transports would have perished on the Black Sea upwards of three times.

74½ per 1,000 Mortality of Sick on board Transports for 4½ Months.

The following Table gives the monthly details of this catastrophe.

ARRIVED AT SCUTARI.

1854. Months.	Sick embarked awaiting at Scutari during the month.	Died on Passage.	Deaths per 1,000 embarked.	Deaths per 1,000 on mean troops at Scutari.	Deaths per 1,000 per ann. on total Sick Transport. Sept. 15, 1854, to Jan. 31, 1855.
Sept. 15—30.. ...	3167	311	78		
Oct.	567	15	26·4		
Nov.	2261	162	54·3		
Dec.	2656	236	85		
1855.					
Jan.	2902	262	90	531	
	13,493	976	74·5	198*	3182
Feb.	2278	41	19	427	
Feb. 25 to Mar. 17	1087	5	4·7	315	
Mar. 18 to April 7	860	4	4·6	144	

Upon a voyage no longer than from Tynemouth to London, there died 74 out of every 1,000 sick embarked, during a period of 4½ months.

The loss in individual Transports was much greater than this average. The "Cadmus" embarked 420 sick on Sept. 23, 1854, and disembarked them at Scutari on Sept. 29. During the six days the sick were on board, there died no fewer than 114 men, being 26⅞ per cent. of the total number embarked, or in the incredible ratio of 16,160 per 1,000 per annum.

1. Either Transports unfit for Sick or Sick unfit for Voyage.

1. In considering what possible causes could have led to such a calamity, we can but come to one of two conclusions.

Either these Sick Transports were in a condition utterly unfit for sick as regards their Sanitary state, or sick were shipped in a condition utterly unfit for such a voyage. From the imputation of one neglect or the other we cannot escape. We have positive evidence that the Transports were, many of them, unfit for the purpose. They were overcrowded, badly ventilated, not clean, and not fitted up for the reception of sick. The attendance on board was also deficient. The superficial space, allowed in these Transports, was fixed by a Board of Inspection formed at Balaclava, December 12, 1854, at 6 ft. by 2½ ft. for sick and 6 ft. by 3 ft. for wounded men. The

* Viz., from October 1, 1854, to January 31, 1855.

height between decks varied from 6 ft. to 8 ft. In one instance alone was it 8½ feet, and in one other 9 feet in some parts. We know, on the other hand, that many cases of Choleraic Disease were put on board, and, as might have been expected, great was the mortality in consequence. Those who were brought alive alive often arrived in a state of collapse, only to die.

It has been usual to refer the terrible episode of these Transport Ships to the condition of the sick in camp as the cause. The cases, it is said, were bad cases, *therefore* they died in large numbers on board the Transports and in the Hospitals at Scutari when they arrived there: *therefore* the occurrence of the catastrophe at Scutari and on the voyage was unavoidable.

It is, however, too late, and men know too much for such an apology to be accepted now for this sacrifice of the soldier. If the cases were so severe, the worst that could be done with them was to ship them in unwholesome Transports for the "polluted" Hospitals at Scutari. To have begun by putting Ships and Hospitals into a Sanitary state fit to receive the sick—to have kept the cases which it was unsafe to move at Balaclava—this, it would seem, would have been the more practical conclusion to be drawn from the above as to what ought to have been done.

The sick could but have died at Balaclava. But the Principal Medical Officer himself has shown that cases which were fortunately so bad as to be unfit for removal, in February 1855, suffered only a fifteenth part of the mortality which, had they been sent to Scutari, would have been their fate.

We do not allude, of course, to those times of which the sailing of the Caduceus may have been one, when, an Army being on the march, it is imperative to remove the sick, however perilous to them such removal may be; but, at such times, how much more imperative is it to have good Sanitary conditions on board the Transports!

2. Mortality at Scutari did not fall with that on board Sick Transports.

2. During February it will be seen that the character of the cases from the Crimea improved. The per centage of mortality upon those embarked on board the Transports fell from 80 to 19 per 1,000; but the mortality at Scutari rose, viz. from 321 to 427. And even, during the three weeks ending March 17, when the mortality on board the Transports, which

had been above 74 per 1000 from Sept. 15, 1854, to Jan. 31, 1855, fell to under five per 1,000, the mortality at Scutari still maintained its fatal pre-eminence, and continued at 315 per 1,000, a far higher rate, indeed, than it had been for the four months ending Jan. 31, 1855, which was 198 per 1000.

8. Mortality on board Sick Transports per 1,000 of living landed.

8. If we take the Sick whom we received alive at Scutari, the dead being deducted, a still more fatal per centage presents itself, being of Deaths to 1,000 living disembarked, as follows:

Months.	Sick disembarked at Scutari.	Died on voyage of those embarked from the Crimea.	Deaths to 1,000 living landed.
1854.			
Sept. 15—30.....	3676	311	846
Oct....	352	15	27
Nov.	2319	162	374
Dec.	2450	226	88
1855.			
Jan.....	3640	262	198
	12,117	976	805

In the month of January we actually lost ten to every 100 who arrived alive.

II.

Notes on the Deficiencies of Sick Transport.

Facilities afforded for Sick Transport by the presence of a Naval Force.

When a Naval and Military Force act together, for operations on shore, it has been customary for the Military Force to borrow assistance from the Navy. And, in the late War, application was made to the Navy for transport of the troops and also for that of the Sick and Wounded.

Assuming that Hospitals existed at the base of operations and also at a distance from the base, there seems no difficulty in a member of the Quarter-Master General's Department being appointed to meet a member of the Medical Department, whoshould receive, at Head Quarters, Returns of such Sick and Wounded as were deemed capable of being moved, and for whom it was desirable that they should be moved to the General Hospital at the base, or to the harbour, with a view to embarkation. The portion designed for embarkation would be divided into two sections, those who are to be invalided home and those for the General Hospitals, at a distance from the base.

As this service became of greater importance, it would be almost a consequence that some ships should be fitted for the especial use of the sick, being retained for that purpose—some for the shorter and some for the longer voyage.

Surely the necessary detail of military and naval returns, of provisioning the ships, and the Statistics of embarkation and of disembarkation, ought not to be very embarrassing to those accustomed to them; and, in the case of ships fitted in England, it must be supposed that little could be wanting for the comfort of the Sick, either in dietary or fittings.

Extreme want, in the late War, of arrangements for using these facilities.

Yet, in the last war, the ample Hospitals of Scutari, Koulali, &c., being successively provided for the Sick, and supplemented by Smyrna and Renkioi, not to speak of the large Hut Hospitals of the Crimea, both Regimental and General, these preparations were neither made in the Crimea nor carried out on board ship, to perfection, even at the end of the war.

E. g., after the Battle of Alma.

It is notorious, although a large portion of the Battle of Alma was seen from the men-of-war, attended, as they were, by transports, that no assistance was asked from the Navy at first. Individuals only landed from the ships, to offer help.

When the Sick were taken to the beach, the most insufficient and contradictory orders existed for putting them on board, and many ships were over-crowded. Inadequate surgical assistance was afforded, and the first four or five ships brought the Wounded down in a lamentable condition.

After Inkermann.

Things were amended before the Battle of Inkermann. The Wounded were brought down in less numbers and far better provided for. But a difficulty in receiving them took place, and ships were detained much longer at anchor at Scutari than they had been performing their voyage. About Christmas 1854 four ships were gradually fitted, solely for the transport of the Sick.

And, through the energy of the Transport Agent, they were provided with every comfort, although the ships were not, perhaps, the best adapted for the purpose.

On the Return of Admiral Dundas.

About this time, the British Naval Commander-in-Chief went home, with three line-of-battle ships, anchoring, for forty-eight hours, at the Seraglio Point, at Constantinople.

As he only offered to take 100 Invalids home, and desired that they should be got on board, at a few hours' notice, none, it is believed, were sent, although it would

have been the greatest boon to Scutari, because it was the time of almost the greatest over-crowding.

So faulty was the combination between the Naval and Military authorities that the Sick came down without any notice, so that the Hospital could not be got ready for them. And ships were reported ready also without notice, so that the numerous forms to be passed through, before Sick and Invalids could be embarked, could not be perfected, and they sailed without their complete complement. General want of Combination, at Scutari.

This relates to Scutari.

In the Crimea the same description may be repeated, almost word for word, as applicable. One ship, in the autumn of 1855, when no especial hurry existed, and after the taking of Sevastopol, sailed with less than twenty Invalids, another without any. and in the Crimea.

There appeared to be no system of arrangement between the Quarter-Master General's Department, the Agent of Transports, and the Medical Department. And, although it was the intention of the Quarter-Master General to appoint a Deputy Inspector-General of the Army Medical Department, for this particular duty, viz., the collecting the sick and allotting them to ships about to sail, the intention was never carried out.

In the meantime, after Christmas 1854, some of the finest ships were appointed to this service, for each of which the hire amounted to from £2,000 to £3,000 per month—Government paying the coals.

As to the fittings, although they were tolerably good, no plan was adopted for changing the atmosphere between decks. And, in consequence, the "Great Tasmania," fitted in England for 500 sick, was sent away with 80 less than her complement, it not being thought safe to crowd more upon her lower deck. The fittings were re-arranged Fittings.

on her arrival in England, and a kind of "blower" added, to change the air on the deck, in which there were no port holes.

Failure of the Ambulance Waggons.

Whatever was arranged in England, and assembled at Varna, as to Ambulance, was either broken up when the Army moved or remained behind when the Battle of Alma was fought.

Two or three of the Ambulance waggons, the springs and construction of which gave little satisfaction, were used in the Crimea after the mud had ceased to be an obstruction. It is said that the Ambulance Corps of Pensioners enrolled was completely broken up.

During the mud, the Ambulance service was performed by Dragoon horses, pack horses and mules, and French cacolets and mules, lent to the British.

The few Ambulance waggons remaining were again organized for the trenches during the spring and summer of 1855; after June 1855, the cacolets were attached to the Land Transport, to whom the service of the Ambulance was made over. During the two assaults of June and September 1855, a General Hospital having been established in the front, the wounded had not to be carried above a mile.

These Deficiencies were not the Fault of the Medical Department.

As, according to the rules of the Army, the Medical Department is supplied by other Departments with Ambulance and with Transport for the Sick and Wounded, they were the victims and not the promoters of the confusion in the Land and Sea Transport.

In the autumn of 1855, a Regimental Medical Officer applied for Transport, to take his Sick down to Balaclava, but before it came, a period of a fortnight, the men were dead.

Evidence for the foregoing Statements.

The following evidence, taken from official documents, will sustain the above representations.

Cumming Maxwell *Report.*

"The question is, whether sufficient space was allotted to the sick and wounded soldiers on board the vessels in which they were transported. Although we are, from the want of the necessary data, unable to pronounce a confident opinion upon this point with respect to every ship, there are many as to which we do not hesitate to express our conviction that they were much overcrowded. Judging from the size of the 'Kangaroo,' and from the scanty information which we obtained from the junior Medical Officer on board,—the senior being dead,—we do not think that she was large enough to carry 400 sick men, besides 24 officers, suffering from cholera. We cannot doubt, also, that the 'Andes' and 'Colombo,' on their first voyage, and the 'Orient' and the 'Caduceus, were greatly overcrowded. Having come from Balaklava to this place in the 'Cleopatra' on her voyage in January, we think that she had at least 40 men too many on board on that occasion, and, consequently, that she was much overcrowded on her former voyage also. With respect to the vessels which have been represented to us by the Medical Officers in charge of them as too crowded, although we are not in a position to confirm their opinion with confidence, we have no reason to doubt the truth of their representations. We think, further, that whenever the men have been in fact limited to the space mentioned by Dr. Anderson as that which is allowed by the Board of Inspection* at Balaklava in its calculation of the number of patients which a vessel can properly carry, they have been overcrowded; and if that rule has been strictly observed by the Board ever since its formation on the 12th December, we must declare that every vessel which brought down sick and wounded men from the Crimea to Scutari subsequent to that date was overcrowded. The superficial space of six feet by two and a half or three feet appears to us too small even in the loftiest decks, and we think that the height between decks ought to be made an element in the calculation, even when the ventilation is most perfect. We must add, however, that in estimating the number of patients which a vessel can accommodate, mere measurements, whether

* "Three gentlemen, according to the evidence of Dr. Anderson, the present Principal Medical Officer at Balaklava, in estimating the number of patients which a vessel can properly carry, allow 6 feet by 2½ feet for sick, and 6 feet by 3 feet for wounded men."

superficial or cubic, are not the only legitimate elements of computation. The character and gravity of the maladies under which the patients are suffering, or the injuries which they have sustained, the length of time that they are to remain on board, the state of the ventilation, and the season of the year in which the voyage is performed—all these circumstances should be taken into consideration.

"The supply of medical attendance on board has not always been sufficient. It is impossible, indeed, to determine exactly, *à priori*, what number of patients may be properly attended by one surgeon. This number must depend upon the character of the cases to be treated: severe wounds, for instance, obviously exacting more time and care than trifling indispositions. Considering, however, the general nature of the cases, both medical and surgical, that arrived at Scutari during our residence at that place, we think that a surgeon could not give to more than 100 patients daily, even for a short voyage of two or three days, that degree of attendance which a patient should obtain from a medical man. When a larger number was entrusted to his care, we think that the supply of medical attendance was insufficient."

"Although we think it probable that men have occasionally had reason to complain both of the quantity supplied and the manner in which their food was cooked, we are disposed to attribute these faults to the want of order, rather than to the want of a due supply of provisions or medical comforts.

"The Table which we have set forth shows that a considerable space of time has on some occasions elapsed between the embarkation of the sick and the commencement of the voyage. It will be observed that many days elapsed between the first embarkation of sick and wounded on board the 'Echunga,' the 'Tynemouth,' the 'Shooting Star,' the 'Arabia,' the 'Edendale,' the 'Medway,' the 'Avon,' the 'Timandra,' and the 'Australian,' and the sailing of those vessels for their destination. This was owing partly to boisterous weather, but more generally to the fact that the sick were brought down to the harbour in small numbers daily, and the vessels were detained until they had received their complements. The 'Australian' appears to have been detained in discharging her cargo, which she was doing while the sick were being sent on board.

TABLE.

Names of Vessels	Tonnage	Height between Decks	Embarked on Board.		Known Deaths	Surgeons	Assistant Surgeons	Deficiencies.		Date of last Embarkation.	Date of Sailing	Date of Arrival	Date of last Disembarkation.	Days at Sea	Deaths
			Officers	Men				Embarked.	Fit for Duty						
Kangaroo	..	Ft. In. Lofty	20 or 24	460 or more	..	1	1	3	3	Sept. 15	Sept. 18	Sept. 21	Sept. 22	7	1
Dunbar	1809	..	..	460	..	..	..	..	..	..	Sept. 18	Sept. 21	..	..	22
Cambria	..	..	..	450	..	..	..	..	..	..	Sept. 18	Sept. 21	..	..	..
Vulcan	1775	6 6	10	443	..	1	3	..	3	Sept. 21	Sept. 22	Sept. 25	Sept. 25	4	18
Andes	1806	8 0	20	420 to 430	..	1	4	7	7	Sept. 21	Sept. 22	Sept. 24	Sept. 25	4	15
Columbo	2000	9 & 7 ft.	27	567	..	..	..	..	..	..	Sept. 23	Sept. 26	..	..	30
Arthur the Great ..	..	..	4	362	18	1	1	..	2 prisoners and 3 women	Sept. 22	Sept. 23	Sept. 26	Sept. 28	6	24
Orient	About 1000	About 6 ft.	4	238	40	..	2	..	..	Sept. 22	Sept. 23	Sept. 26	Sept. 27	5	32 or 33
Cadocca	1106	7 0	1	430	..	..	2	..	..	Sept. 23	Sept. 24	Sept. 28	Sept. 29	6	114
Courier	1000	8 0	5	285	1	..	1	..	7	Sept. 24	Sept. 25	Sept. 29	Sept. 30	6	16
Cornwall	..	..	6	276	..	1	1	†	†	..	Oct. 11	Oct. 14	..	..	6
Negociator	800	6 to 7 ft.	4	200	..	..	1	†	†	..	..	..	..	..	6
Lady M'Naughten ..	..	..	8	911	..	..	1	8	7	Oct.	Oct.	Oct.	Oct.	..	3
Australian	1400	6 7	10	173	20	..	2	12	6	Oct. 20	Oct. 27	Oct. 29	Nov. 5	10	8
Cambria	..	..	7	219	..	1	..	†	†	..	Oct. 26	Oct. 29	..	3	None
Eshunga	1806	8 6	9	132	..	1	1	13	All †	Oct. 17	Oct. 26	Oct. 29	Nov. 6	20	7

SICK TRANSPORT.

Table—*continued.*

Name of Vessels	Tonnage.	Height between Decks.	Enlisted on Board.		Boreas Pinnaces	Surgeons	Assistant-Surgeons	Ordinlies.		Date of first Enlistments.	Date of Sailing.	Date of Arrival.	Date of last Discharges.	Days on Board.	Deaths
			Officers.	Men.				Enlisted.	Fit for Duty.						
		Ft. In.													
Palmerston	1400	6 to 7 ft.	..	200	100	..	1	8	8	†	†	†	†	..	11
Tynemouth	1500	6 6	13	170	80	..	1	10	14	Oct. 27	Oct. 31	Nov. 2	Nov. 5	9	15
Shooting Star ..	1362	8 0	7	260	..	..	1	12	9	Oct. 19	Oct. 26	Oct. 29	Nov. 5	17	20
Columbo	2000	9 & 7 ft.	15	273	..	..	2	6	6	Nov. 5	Nov. 9	Nov. 10	Nov. 12	4	4
Sidney	1380	7 to 8 ft.	10	220	..	..	2	..	..	Nov. 6	Nov. 7	Nov. 9	Nov. 11	5	3
Talavera	960	7 0	6	172	..	1	1	8	2 or 3	Nov. 6	Nov. 7	Nov. 9	Nov. 10	4	10
Arabia	1022	7 0	9	264	..	..	2	6	6	Nov. 1	Nov. 7	Nov. 10	Nov. 13	12	4
Mauritius	1580	7 6	8	235	..	..	2	8	7	Nov. 7	Nov. 8	Nov. 10	Nov. 13	6	12
Andes	1800	8 0	19	220	..	1	2	12	12	Nov. 9	Nov. 11	Nov. 13	Nov. 15	6	8
Edendale	..	8 6	6	203	..	..	3	8	2	Nov. 8	Nov. 20	Nov. 22	Nov. 27	19	38
Medway	1800	7 6	20	235	..	2	1	12	8	Nov. 7	Nov. 20	Nov. 23	Nov. 24	17	23
Trent	1800	7 6	17	175	..	..	2	12	5	Nov. 23	Nov. 25	Nov. 27	Dec. 8	9	2
Avon	2070	6 6	18	278	..	..	4	24	18	†	Dec. 4	Dec. 6	Dec. 7	..	52
Sovereign	..	..	..	..	..	..	..	..	..	..	Dec. 4	Dec. 4	..	..	..
Gertrude	1316	6 9	1	249	..	1	1	20	Few	..	Dec. 6	Dec. 13	Dec. 14	8	39
Blundell	600	7 0	2	74	..	..	1	7	3	Dec. 3	Dec. 4	Dec. 20	Dec. 25	22	6
Cadiz	..	..	..	90	..	..	..	..	..	..	Dec. 15	Dec. 17	..	..	..
Cleopatra	1360	8 6	..	325	..	..	2	33	18	Dec. 11	Dec. 12	Dec. 16	Dec. 22	11	31
Ripon	..	7 6	..	242	..	..	3	21	21	..	Dec. 15	Dec. 17	..	..	14
Golden Fleece ..	2269	7 5 and 7 8	..	425	..	..	2	24	21	Dec. 15	Dec. 16	Dec. 18	Dec. 29	4	15
Venerable	1111	7 6	8	189	..	1	1	20	15	Dec. 3	Dec. 12	Dec. 20	Jan. 1	27	21

Table—continued.

Names of Vessels.	Tonnage.	Height between Decks.	Embarked on Board. Officers.	Embarked on Board. Men.	Russian Prisoners.	Surgeons.	Assistant Surgeons.	Orderlies. Embarked.	Orderlies. Fit for Duty.	Date of first Embarkation.	Date of Sailing.	Date of Arrival.	Date of last Disembarkation.	Days on Board.	Deaths.
		Ft. In.													
Victoria	1878	7 6	5	290	..	1	1	25	1	Dec. 10	Dec. 12	Dec. 20	Dec. 23	13	20
Brandon	763	6 8	1	150	..	..	2	12	4	Dec. 21	Dec. 22	..	Dec. 30	9	5
Gumelza	521	6 6	..	118	..	..	1	11	9	Dec. 11	Dec. 12	Dec. 20	Dec. 26	15	11
Ottawa	1200	7 3	4	139	11	..	1	16	15	Dec. 17	Dec. 20	Dec. 22	Dec. 28	11	13
Joseph Shepherd ..	630	..	..	68	..	..	1	8	4	Dec. 11	Dec. 12	Dec. 22	Dec. 29	18	12
Australian	1400	7 2	9	146	..	..	2	15	13	Dec. 22	Dec. 29	Dec. 31	Jan. 2	11	2
Harbinger	921	7 0	..	110	..	..	1	10	10	Dec. 28	Dec. 29	Dec. 31	Jan. 8	11	7
Jason	2700	8 0	4	152	..	..	1	10	8	Dec. 20	Dec. 31	Jan. 2	Jan. 8	9	12
Belgravia	..	..	4	207	..	2	..	..	..	..	Dec. 28	Jan. 3	..	..	38
Thames	..	..	..	115	..	2	..	..	..	..	Jan. 8	Jan. 10	..	..	..
Colombo	2000	9 & 7 ft.	6	235	..	..	2	20	20	Jan. 7	Jan. 10	Jan. 13	Jan. 18	11	27
St. Hilda	..	..	..	105	..	..	1	..	..	..	Jan. 8	Jan. 18	..	..	20
Niagara	1800	8 0	3	320	..	1	2	26	23	Jan. 13	Jan. 17	Jan. 18	..	..	11
Nubia	2200	..	..	294	..	2	..	30	30	Jan. 15	Jan. 19	Jan. 21	..	..	2
Brandon	763	6 8	1	154	..	1	..	15	15	Jan. 18	Jan. 20	Jan. 22	Jan. 24	6	8
Cleopatra	1500	8 6	4	298	..	2	..	30	25	Jan. 17	Jan. 20	Jan. 22	..	..	171
Shooting Star ..	1362	7 8	..	177	..	1	1	17	17	Jan. 4	Jan. 7	Jan. 20	Jan. 27	23	47
Pedestrian	1000	..	..	198	..	..	2	20	..	..	Jan. 13	Jan. 23	..	..	19
Golden Fleece ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11
Melbourne	About 2000	About 7 0	3	150	..	1	1	18	15	Feb. 6	Feb. 9	Feb. 11	Feb. 13	7	2

"The length of time between the first embarkation and the final disembarkation has been in many cases very great. In three instances it exceeded three weeks; in six others it exceeded a fortnight. It has amounted frequently to ten days, and has rarely been less than a week.

"The mortality on board has been very high. In the 'Caduceus,' out of 430 men, 114 died in six days. This vessel was filled with patients chiefly suffering from Asiatic cholera. In many other instances, however, the mortality, though not so great, has been nevertheless high, and this we believe is in some measure attributable to the length of time during which the men have been kept on board. We regret to add, that the rate of mortality on board continued high down to the end of January."

Upon a rough calculation it will be found that the Deaths are to the numbers embarked as 1 in 13, or about 8 per cent. But, in one instance, that of the 'Caduceus,' the Deaths were actually upwards of 1 in 4, in a number of 430, during a voyage of only six days. The total number of Sick and Wounded embarked for Scutari, between the Alma and the beginning of February, was about 13,000—of Deaths on board about 1,000.

"The number of orderlies sent on board to attend upon the sick and wounded has been almost invariably insufficient. Some vessels, as the 'Arthur the Great,' the 'Orient,' the 'Caduceus,' and the 'Sidney,' were sent to sea without a single attendant; while on board of others, such as the 'Kangaroo,' the 'Courier,' the 'Arabia,' the 'Columbo,' the 'Edenfale,' and the 'Palmerston,' the number sent was merely nominal, and utterly disproportioned to that of the patients. In but few instances has the number allowed by the rules of the service (one in ten) been sent, and in still fewer have all the men employed been fit for duty. Indeed a memorandum issued from head-quarters on the 18th October directed that the number to be sent on board transports should be 4 in 100; a number, in our opinion, wholly inadequate for the service on which the men were employed. It would be insufficient if the

ers had been in strong health, and accustomed to the arduous duties cast upon them; but they have been generally selected from the invalid depôt at Balaklava; and from bad health, and liability to sea-sickness, as well as from want of training, they have not been properly suited for their employment. In numerous instances they fell sick on board, and became, in consequence, an encumbrance instead of an assistance. Those who were fit for duty were, until December last, under no efficient control. The Medical Officer had no authority whatever over them, and had no other remedy, in the case of misconduct, than that of reporting them to the military authorities on his arrival at Scutari. A Military Officer, however, has been sent on board of all vessels which have sailed from Balaklava since the beginning of December. One or more non-commissioned Officers have also been sent with the orderlies, and we believe that order has been better maintained by this means. The power of the Military Officer is very limited, and might be extended with advantage.

"With respect to the supply of hospital furniture on board ship, we think that it has not been in general sufficient. A comparison of the number of mattresses and blankets supplied on board each vessel with that of the patients, will not, indeed, give, in our opinion, an exact measure of this deficiency; for we think that in slight cases, whether medical or surgical, the want of a mattress is probably not the legitimate subject of complaint with men accustomed for many months to sleep on the ground and under canvas.* In many cases, also, as in violent diarrhœa and dysentery, a mattress becomes unfit for use in the course of a few hours, and might properly be dispensed with. With all due allowance, however, for such cases, we are of opinion, after having inspected several vessels with sick on board, and become acquainted with the general character of the cases which have been brought down from the Crimea, that the supply of mattresses was in general deficient.

"The supply of blankets has in general been sufficient; for,

* Was then the disease, induced in the men by lying for months on the bare ground, to be remedied by continuing that to which they were thus accustomed?

besides the number which appears in the table, every soldier was provided, with rare exceptions, with his own field blanket, or two blankets."

"The supply of hospital utensils and the ordinary appliances for meals appears to have been almost uniformly deficient. Latterly this want has been to some extent remedied; but we think that, with few exceptions, the supply has not been equal to the emergency.

"The ventilation of the vessels has been almost uniformly dependent upon the scuttles and hatchways. During fine weather these are in general sufficient for the supply of fresh air, but in rough weather the scuttles must necessarily be closed, and then the ventilation of the decks becomes defective."

"It appears from the evidence of Dr. Hall that the vessels which carried the wounded from the Alma to Scutari underwent no inspection by the medical authorities of the army, with the exception of the 'Andes' and the 'Cambria.' Those two vessels were, at the suggestion of that officer, fitted up before the army sailed from Varna, to carry the wounded, in the event of the landing in the Crimea being opposed. They were fitted up as ordinary troop ships, and were properly provided with medicines, surgical instruments and appliances, and medical comforts. Two Medical Officers were sent on board each of these. This provision, however, proved wholly inadequate for the numbers who needed transport after the battle of the Alma. It was necessary to employ several other vessels for the same purpose, and these were not in any way prepared for such a service.

"The embarkation of the wounded appears to have been effected under circumstances of great confusion, and without the superintendence of the Medical Officers of the army. Dr. Hall says that he knew neither the names nor the numbers of the vessels employed, but that when a vessel was reported to him to be full, he sent two or sometimes three Surgeons on board to take charge of the men."

"The sick and wounded who are destined for Scutari are at once taken to the wharf, where a Medical Officer is in

* If this were so, the men did not bring, in general, their "two blankets" in with them to Scutari Hospitals.

attendance to see to their embarkation, and to afford medical assistance when necessary. The men are embarked in boats, under the orders of a Naval Officer, and put on board the vessels which have been prepared for their reception.

This duty was at first entrusted altogether to the Principal Medical Officer at Balaklava. On one occasion, we learn, boats were not ready for the reception of the sick. This arose, according to Dr. Tice, who was then Principal Medical Officer at Balaklava, in consequence of his not having received the verbal notice which had been sent to him by another Medical Officer of the intended arrival of patients. Except in this instance, we did not hear of any delay having arisen, beyond that incidental to the necessarily slow process of embarking a large number of helpless men in a limited number of open boats, and transhipping them to larger vessels. We think, however, with Dr. Anderson, that the practice of sending down to the harbour from 600 to 1,200 men together for embarkation, has endangered the lives of many, in wet weather, from the long exposure on the beach to which they were subjected."

Of those who thus died on the beach the bodies were thrown into the cemetery at the top of the harbour, at Balaklava, red coats and all.

"*H.M.S. 'Sphinx,' Constantinople,*
"*22nd January*, 1855.

J. C. Sahlen, Esq.

"Sir,—It is with unfeigned regret that I beg to bring to your notice a case of great distress, arising from not having proper means of conveyance for the sick and wounded from Balaklava to the hospital at Scutari, as suggested to you in a letter which I had the honour of sending you by the Honourable Mr. Chetwynd in December last. On our arriving here from Sebastopol with despatches, on the 15th instant, we were suddenly ordered away to the Black Sea, to look for No. 48 transport ('Shooting Star'), which had been left by the 'Colombo' in a distressed state a few days before. After running a certain distance, we found her, on the third day, some twenty miles from the Bosphorus. On visiting her to offer my medical assistance, I found the 'Shooting Star' had been from Bala-

klava twelve days, with 179 sick and wounded for Scutari Hospital, during which period the whole of these poor fellows were more or less lying about upon the bare deck, with but a single blanket under them, although the weather was bitterly cold. The deaths in the meantime had been 30. There was a military surgeon and assistant in charge, the former an invalid, the latter had dislocated his shoulder. Again I beg to suggest that, in this case, had there been such accommodation as a vessel similar to the 'Belleisle' could have afforded, these men would have been transferred to Scutari Hospital in thirty hours, instead of fourteen days altogether, with many a life saved, the single presence of a soldier before Sebastopol being of far greater value than perhaps is known in England.

"I have, &c.,

"Sir William Burnett, (Signed) J. C. Sabbes.
"*Director-General, Medical Department.*"

PREFACE

TO

SECTION III.

ABSTRACT OF THE SANITARY RECOMMENDATIONS MADE BY THE MEDICAL AUTHORITIES REGARDING THE HOSPITALS AT SCUTARI.

Dr. Hall writes to Major Sillery, requesting 10 Orderlies and a Fatigue Party of 15 men for the *General* Hospital, as, for four days, "the Hospital has not been properly cleaned, and a nuisance prevails, which may prove detrimental to the health of the Patients." — June 23, 1854. Principal Medical Officer to Commandant. Fatigue Party.

Dr. Menzies makes a similar application for a Fatigue Party. — June 23, 1854.

Dr. Menzies writes to Dr. Smith, describing the condition of the sick in the *General* Hospital, and the prevalence of Fever and Choleraic Diarrhœa within the building, and Bowel Complaints without it. He ascribes these partly to atmospheric influence, and "I should also think the very close, foul, and noxious air of the Hospital may, in some degree, predispose the constitution to the disease." He complains of a catgut establishment, about 70 yards from the Hospital, close to the sea, already reported "by the Officer appointed to make health inspections." A Board of Medical Officers condemned the establishment. Other sanitary measures were proposed for "cleaning one of the drains in the neighbourhood, and from which there is emitted unhealthy exhalations." [Was this the open ditch in the hollow?] Had reported to Commandant to have the evil removed, and had suggested a Garrison Police to prevent repetition of such nuisances. — July 4. Deputy Inspector General to Director-General. Nuisances.

July 8. Deputy Inspector-General to Director-General. Nuisances to be removed.

July 9.—Dr. Menzies writes to Dr. Smith that "steps are being taken by the Turkish authorities to have the nuisances removed."

July. Salt Provisions.

July.—At this date, such was the state of the Commissarial administration, opposite a city of 650,000 inhabitants, that Dr. Menzies was obliged to recommend salt provisions for the troops, as fresh meat was not obtainable, whereat Lord Raglan expresses his surprise. Dr. Menzies had adopted the notable expedient of feeding men predisposed to, or actually labouring under, Diarrhœa on salt provisions, by way of change. If these things were done in the green tree, what might we not expect in the dry?

July 6. Principal Medical Officer to Deputy Inspector-General. Nuisances.

July 6.—Dr. Hall writes from Varna to Dr. Menzies, expressing a hope that he would be able to have the catgut and drain nuisances removed. Lord Raglan had mentioned the former to the Turkish authorities. He asks, "by the way, was anything ever done about getting the pipes leading from the water closets cleared, as I notice you mention bad smells within the Hospital, which ought not to exist, if that had been done?"

July 22. Director-General to Deputy Inspector-General. Neighbourhood of Hospitals.

July 22.—The Director-General writes to Dr. Menzies, asking to be informed "what steps have been taken to improve the sanitary condition of the immediate neighbourhood of the Hospital at Scutari."

August 24. Deputy Inspector-General to Director-General. Nuisances removed.

August 24.—Dr. Menzies replies, reporting the nuisance complained of removed, *i. e.*, the catgut manufactory. The drainage much improved, the privies looked to, and thoroughly cleansed out. The air both within and without much improved. He will see sanitary measures, in future, strictly carried out.

[These measures, it will be observed, refer exclusively to the *General* Hospital.

The first notice of the sanitary state of the building, afterwards used as the fatal *Barrack* Hospital, occurs on Aug. 4, 1854, at which date it was occupied by troops.]

August 4. Dr. Anderson

August 4.—Dr. Anderson, who signs himself as "Sanitary

Superintendent," reports to Dr. Menzies that the privies in the south-west angle of the Barrack are in disrepair and contaminating the atmosphere in that part of the building, endangering the health of the Troops there. Soil tubes leading from upper stories burst and extreme compartment of privy on ground floor covered with filth in consequence—main sewer empty and dry at this part, showing obstruction in it—hydro-sulphuretted smell in neighbouring Commissariat vault—privies obstructed by matters thrown into them—represents the deleterious results to health.

to Dr. Menzies. Privies in Barrack Hospital.

Dr. Menzies represents this to Major Sillery, and states in a note that "steps were taken by the Engineer to remedy in some measure the evil complained of."

August 13.—Dr. Hall writes to Dr. Menzies from Varna, appearing of certain letters of his which do not appear. He states that Lord Raglan had "urged the propriety of your taking immediate steps for purifying by washing and whitewashing that portion of the Barrack which you propose occupying as an Hospital for sick and wounded. I would recommend you to put either sick or wounded into that part of the building where the 47th Regiment was quartered, as the drains and privies are out of order, the stench great, and the ventilation of the rooms indifferent." He agrees with Dr. Menzies as to the Hospital at Koulali being objectionable on account of its site.

August 13. Dr. Hall to Dr. Menzies. Lord Raglan's orders for Accommodation for Sick and Sanitary recommendations.

August 21.—In consequence of this letter of Dr. Hall's, Dr. Menzies addresses Major Sillery. He writes, having been instructed by the Inspector-General to prepare additional Hospital accommodation in the Barracks, and having arranged to occupy that portion of the building facing Constantinople, and half of the range towards the Sea of Marmora, "I request you will be pleased to give directions to have the rooms in each of these ranges (both stories) properly purified for the reception of the sick by having the rooms well washed out, and the walls and passages whitewashed with as little delay as possible."

August 21. Dr. Menzies to Commandant. Sanitary Instruction for preparing Barrack for Sick.

This letter is very important, as containing the sanitary instructions which the Principal Medical Officer on the spot considers it necessary to send to the Commandant for preparing a building for a Hospital.

Remarks.

It will be observed that no suspicion even had been occasioned by the dangerous state of the drainage referred to by Dr. Anderson, and ventilating arrangements were considered quite unnecessary.

So far from Lord Raglan, however, not having given due notice of accommodation for sick and wounded being wanted, he appears, in this instance, to have given it as early as August 13, five weeks before the Alma, and the only sanitary measures taken are suggested by Lord Raglan himself.

Interval of Three Months.

Three months, however, from August 13 to November 17, are wasted for every purpose, almost, of preparation for the army of sick and wounded about to pour in, before the half of that time is over; and this fatal delay was never recovered.

Warming the Hospitals.

On the approach of winter, it became necessary to consider how the Hospitals were to be warmed. Dr. Smith had asked for information on this point Nov. 9. And Dr. Menzies applied to the Engineering Department on the subject. A Board met, and a month afterwards, viz., Dec. 3, 1854, Dr. Menzies applied to the Purveyor, Mr. Wreford, to know what progress had been made. The next day, Mr. Wreford forwards a letter from Major Gordon, R.E., in which that officer states that the greater part of the Wards in the Barrack Hospital were provided with stoves, and that the number demanded for the General Hospital on the 16th ult., had been taken over that day. Major Gordon expects the whole number will be erected in about a fortnight (about Dec. 18), but as he was dependent on the Turks for doing the work, he could not be certain. It appears that the Turkish Government preferred erecting the Stoves themselves.

November 9. Dr. Smith to Dr. Menzies.
December 3. Dr. Menzies to Mr. Wreford.
December 4. Major Gordon to Mr. Wreford.

Stoves.

An incident in the correspondence at this period deserves notice.

Correspondence of Lord Stratford and Dr. Menzies.

Certain Stores, it appears, had been forwarded to Scutari for the Hospitals, which the Director-General presumed were sufficient. The usual incidents of war, however, soon proved that they were quite otherwise than sufficient. Dr. Hall had written to Dr. Menzies to prepare for an addition of 1,000 sick, and there being not Stores sufficient for this number, Dr. Menzies applied to Lord Stratford for 200 sets of Bedding from the Turkish Government—the

Ambassador having been authorized from home to provide liberally for the Hospitals in everything—and having communicated as to this authorization with the Principal Medical Officer. The Stores from Varna had not arrived. In making the application, Dr. Menzies informs Lord Stratford that there was then no want of anything (as though a prospective want were no want at all). Mr. Wreford states that the supplies so obtained "were of great assistance" in preparing for the event notified. Dr. Menzies informs Dr. Smith of what he has done, and Dr. Smith, instead of encouraging every effort which could be made at such a distance for supplying emergencies, expresses himself with something like displeasure at what has been done.

December 5.—Dr. Menzies, in spite of the notorious facts of the case, by way of excusing his imprudence to his superior, tells him that there has been no want of anything "throughout the whole of the trying period" (then why "trying"?). He says he applied to the Ambassador, not because he wanted anything, but because of "an excessive degree of anxiety."

December 5. Dr. Menzies to Dr. Smith. Apologises for applying to Ambassador.

Suppose any amount of want existed, would the Principal Medical Officer, after such treatment, be likely to apply again, although the Ambassador was empowered to spend any money on the Hospitals? One would think not. The fear of acknowledging any deficiency in the Department thus became the means of nullifying the benevolent intention of the Home Government in giving authority to the Ambassador to provide for the Hospitals.

November 17.—No further correspondence appears about the Hospitals till this date.

November 17. Dr. Menzies to Purveyor. Cleaning of Privies.

Dr. Menzies, in a letter to Mr. Wreford, Purveyor-in-Chief, the subject matter of which is a dispute about their respective jurisdictions, impresses on Mr. Wreford "the great necessity of having the privies at the Barracks put in proper order, and all other sources of impurity removed." If the pioneers do not exert themselves, he suggests "a non-commissioned officer to see that the strictest attention is paid to the orders given in keeping the Barrack Hospital privies in a proper state of cleanliness."

Notwithstanding this, these privies were, up to a period many

weeks later than this, frequently more than an inch deep in filth, which flowed even into the ante-rooms.

January 18. Dr. Smith to Dr. Forrest. Sewerage.

January 18, 1855—When the mortality in the Scutari Hospitals had excited the whole country, Dr. Smith writes to Dr. Forrest, then Principal Medical Officer at Scutari, stating that he had been informed by officers returning home "that the sewerage in and about the Hospitals at Scutari was very defective when the Army arrived at Constantinople." "I shall therefore be glad to be informed if it has since been improved to the extent necessary to ensure, so far as it is concerned, the health of the inmates of the establishment."

"If nothing appears to have been done, I request you will immediately represent the necessity of measures being at once adopted."

Burial Ground.

The condition of the Burial ground had also occasioned comment, and Dr. Smith writes to know its distance from the Hospital, the manner of burial and of conveyance for the dead.

This letter would arrive about the beginning of February, when the whole mischief was done, nine months after the Army had arrived at Constantinople, and little more than a fortnight before the Sanitary Commission was appointed.

February 9.

The letter was sent to Dr. Lawson, at the General Hospital, and he replies to it through Dr. Cumming, on Feb. 9, sending a sketch of the Hospital, burial-ground, and course of sewers. Sewers and pipes of privies, at General Hospital, require constant attention; the latter have been the "subject of consideration," and are now undergoing a process of cleaning which will be continued through the whole course of the sewers; describes burial-ground and manner of burial.

January 31. Dr. Smith to Dr. Forrest. Hospital Sheds.

January 31—Dr. Smith writes to Dr. Forrest, very properly representing the evil of the proposed construction of Hospital Sheds in the Barrack Square.

March 3. Dr. Smith to War Department. Same.

March 3—Dr. Smith requests the War Department that these buildings be removed, and regrets that any Medical Officer should have sanctioned them.

February 3. Dr. Smith. Charcoal.

Feb. 3—Dr. Smith informs the Under Secretary of State for War that charcoal had been sent to Scutari to aid in cleaning.

February 5. Dr. Smith to

Feb. 5—Dr. Smith writes to the Principal Medical Officer at Scutari, that he had been informed that the dead were impro-

perly removed and buried—if so, that a more distant burial place should be obtained, the dead conveyed in covered carts, and precautions taken.

Principal Medical Officer, Scutari. *Burials.* February 14. Dr. Cumming to Commissariat.

Dr. Cumming writes to Lord William Paulet, recommending that the Depôt be separated from the Hospital. When the new huts are occupied, our numbers will be increased far beyond what the sanitary condition of the accommodation admits of. Women and children insufficiently lodged. "We are, I fear, not merely inviting epidemics but tending to create them."

The sick, during the month in which this letter was written, were already dying at the rate of 415 per 1,000 on the cases treated, nearly as high a mortality as exists in cholera; yet nothing was recommended to arrest the epidemic disease already in the hospitals.

February 18.

Dr. Cumming proposes to Lord William Paulet to issue a ration of tobacco, and recommends the non-issue of pay to the men in hospital.

February 22.

Dr. Cumming writes to Lord William Paulet, recommending the removal of offensive rubbish from the Barrack Square, the daily and careful removal of decaying matter, and the filling up of wet and miry ground, on both sides of the Square.

Unremitting attention to the sanitary condition of the establishment, he says, is necessary. But he does not tell Lord William Paulet *what to do*, except to clean the Square.

General Observations upon the above.

There cannot be a moment's doubt as to the very defective nature of the whole Sanitary procedure, indicated in the above correspondence.

None of it was unnecessary, but, even if the measures had been all carried out, the Hospitals would still have been unfit for the sick.

Such as they are, the recommendations apply to two Hospitals only, the Barrack and General Hospitals, and there is not one which touches the defects at Koulali and Haida Pacha. At Koulali, the mortality was much higher than in any other Hospital, and yet nothing whatever is recommended for it.

It was desirable to have the catgut manufactory removed which was first applied for by Lord Raglan—to attempt to remedy the nuisance from the open ditch—to have the privies kept clean, (and generally speaking, by March, 1855, they were

clean)—to clean out the Barrack before putting sick into it, and to have its walls lime-washed, Lord Raglan being again Sanitary Officer in this matter.

But after all was done, the murderous Sanitary defects of these Hospitals remained untouched; and Death did his work well.

The defects and their bearing on the health of the Hospitals required Sanitary knowledge to discover and estimate, and practical knowledge to remove. The recommendations made by the Medical Officers were superficial, elementary, obvious to any one with a nose, such as any person would have made; but the defects so discovered were not those which had converted the Hospitals into pest-houses.

Even if they had been all discovered, was it the time to have set about the remedies, as the Sanitary Commissioners were sent out to do, after so many sick had perished?

The evil lay in not having such a Sanitary organization in the Army as would have caused every source of injury to be *removed*, before a single sick man was placed in any one of the buildings.

There is nothing in the education of the Medical Officer—nothing in the organization or powers of the Army Medical Department—nothing in the whole Hospital procedure—nothing in the Army regulations which would have met the case of these Hospitals. And were a similar necessity to arise again, especially after the lapse of a few years of peace, the whole thing would occur over again. This is the frightful consideration which ought to make us recall over and over again this experience—otherwise, let bygones be bygones.

Our General Hospitals have always been shambles for the sick. And men have come to recommend that none be ever formed again at the base of operations.

February 5. Dr. Mapleton to Mr. Peel. Recommends Sick to be sent home.

Dr. Mapleton, writing to Mr. Peel, Feb. 5, 1855, four months after his return from the East, dwells particularly on the state of the privies and drains of the Hospitals, but can suggest no remedy except bringing the sick home.

March 8. Medical Board, London.

And this was the opinion of a Medical Board, summoned by the Director-General at a later date, March 8.*

* See further Preface to Section I. pp. xxv, xxvi.

PLAN OF SCUTARI

SHEWING THE SITE OF THE

BARRACKS AND HOSPITALS.



March 23. Dr. Smith writes to Dr. Cumming at Scutari, calling his attention to the "notorious insalubrity of the site of the group of buildings constituting the Palace Hospital, at Scutari," during the summer and autumn months, and suggests their evacuation.*

Yet, in the face of this, after the works of the Sanitary Commission were completed, the mortality among the sick in Scutari Hospitals was little more than that among the healthy Guards at home.

Actual Facts, as they occurred at Scutari, to be compared with the above Recommendations.

The Scutari disaster was a separate problem and must be considered by itself. It was the case of thousands of sick removed 300 miles from the causes which had occasioned the sickness and exposed to another class of risks in the buildings into which they were received.

The buildings were spacious and magnificent in external appearance; far more so, indeed, than any military buildings in Great Britain; and several of them were, apparently, better suited for Hospitals than any Military Hospitals at home.

This merely external appearance was, however, fatally deceptive. Underneath these great structures were sewers of the worst possible construction, loaded with filth, mere cesspools, in fact, through which the wind blew sewer air up the pipes of numerous open privies into the Corridors and wards where the sick were lying.

The wards had no means of ventilation, the walls required constant lime-washing, and the number of sick crowded into the Hospitals, during the winter of 1854–55, was disproportionately large, especially when the bad Sanitary state of the buildings is taken into consideration. The population of the Hospitals was increased not only without any Sanitary precautions having been taken, but while the Sanitary conditions were becoming daily worse, for the sewers were getting more and more dangerous and the walls more and more saturated with organic matter.

Some slight improvements were made in the beginning of March 1855. But it was not till the 17th March that

* Dr. Cumming's not very logical reply to this is to be found p. xiii; and the *reply* to the *reply*, pp. xxi. xxii.

effectual measures were initiated for removing the causes of disease in the buildings, viz., by the Sanitary Commission. By the month of June the improvements were nearly completed, the proportion of sick had fallen off, and the hospitals had become healthy.

This is the whole history of the frightful Scutari calamity. Even from the very beginning of the occupation of these buildings in October 1854, and before the sufferings of the winter had begun, the mortality was very high, although the number of sick was small, indicating the unhealthy state of the buildings even then. Nothing was done to improve them. But fresh ship-loads of sick were passed into them. The mortality of course continued to rise. Still nothing was done. Then came the great Crimean catastrophe, and ship after ship arrived with sick in so exhausted a condition, that the foul air of those Hospitals was almost certain death to them; and accordingly they died, in the month of February 1855, at 415 per cent. per annum. So that, in twelve months, at such a rate, the whole sick population of the Hospitals would have perished four times. In February two out of every five cases treated died in the Hospitals of the Bosphorus, and at Koulali one out of every two. Well may this incredible mortality teach us a terrible lesson!

The reduction in the mortality, after the Sanitary works were begun, is most striking, and it falls eventually to less than a sixth part of what it was when the Barrack and General Hospitals were occupied together in October 1854, and to a nineteenth part of what it was in February 1855. Our General Hospitals have been so deplorably mismanaged in all our wars that the question has been raised as to whether it would not be better to do without them altogether. The experience of Scutari proves that General Hospitals may become pest-houses from neglect, or may be made as healthy as any other buildings.

These are the facts of Scutari Hospitals during the first year of our occupation. Nothing in the Sanitary recommendations we have been analysing, unless it be some suggestions made when it was too late, would have led us to suppose that there was anything seriously wrong in the Hospitals or that their defects had any share in the destruction of the British sick, who have given a name to these buildings in history.

ADDENDA ON THE SUBJECT OF THE NEED OF SANITARY REFORMS AT SCUTARI.

"Brigadier-General Lord WILLIAM PAULET to Lord PANMURE.

"*Scutari, 25 April*, 1855.

April 25, 1855. Letter from Lord William Paulet. Statistical and Sanitary Remarks on the Hospitals of the Bosphorus.

"My Lord,—I have had the honour to receive your Lordship's despatch, dated the 11th instant, and numbered as per margin, by which I am gratified to learn that you approve of the measures which I am adopting with a view to obtain an increased amount of Hospital accommodation.

"With reference to the desire expressed by you to be furnished with more detailed information upon this subject, I beg to observe, in the first instance, that as the members composing the Sanitary Commission, and other superior and competent authorities, had signified to me their intention of transmitting to you a minute report upon the condition of these Hospitals and their inmates, I abstained from making further comment, under the conviction that the subject would thus have greater weight than if it emanated from myself.

"I have much pleasure, my Lord, in reporting that everything under my command is progressing as favourably as I could wish. Sickness has very much diminished, and so has the mortality. In January last the number of deaths was 1,480, in February 1,254, and in March 424, every month showing a steady decrease over the preceding one. The average mortality at present is 5½ per diem.

"I have exerted myself in every way to add to the comfort and requirements of these Hospitals, and am enabled to state that every patient has now above 1,200 cubic feet of space; thus exceeding by 300 that recommended by the Sanitary Commission; while six feet is allotted to each bed from centre to centre. There is besides vacant accommodation for 2,000 beds.

"In addition to the wooden Hospital about to be erected by Dr. Parkes, in conjunction with Mr. Brunton, the engineer, Her Majesty's Ambassador has offered to place at my disposal, if necessary, the house at Therapia belonging to the Russian Embassy.

"I have made further provision at Kulali by converting its fine riding-school into a convalescent Hospital which is capable of locating 180 men. It lies contiguous to the Bosphorus, and has proved very healthy. I have, moreover, applied to the same purpose, the buildings formerly used as stables which, having now been completed make spacious and airy wards.

"It is gratifying to me to inform you that the temporary wooden sheds constructed within this barrack are in course of occupation, and are reported by the senior Medical Officers as answering, in an eminent degree, the purposes of convalescence, from the ample space and free ventilation which they afford.

"I am constructing a temporary barrack on the common, between

this and the General Hospital, for locating the depôt, and when completed, it will add materially to the Hospital accommodation.

"I would also add that the Medical Officers are deserving the greatest praise for the zealous manner in which they discharge their duties. The Orderly attendance is also satisfactory.

"I may confidently assert, as regards the general condition of these Hospitals, that they surpass in cleanliness and comfort any I have seen in England and elsewhere; and this opinion is corroborated by the various and enlightened individuals, both English and foreign who have visited them.

"I have continual applications from the private practitioners, officers, ladies, and nurses, for extra expenses, such as field-allowance, forage for horses, servants' allowance, &c., all of which, except their rations, I do not consider myself at liberty to sanction; and I beg to suggest that these expenses should be covered by the annual salaries of the individuals, which might be increased in proportion to the merits and abilities of each.

"I have used my utmost endeavours to carry out the suggestions made by the Sanitary Commission, most of which are already in course of operation.

"As regards this building, every window of which is open to the public thoroughfare, it is the depôt of the Army in the Crimea, and contains the stores, prisons, depôt stores of each division, the armoury, the offices, and Miss Nightingale's extensive establishment, all of which require necessarily the admission of a proportionate number of workmen, and all these render it more fit for a barrack than an Hospital.

"I have caused the Turkish hulk line-of-battle ship to be cleared, which I propose to retain in the event of a pressure, as a store, it being of no expense to Her Majesty's Government.

"The 'Bombay' convalescent transport-ship has also been cleared and given over to Rear-Admiral Grey.

"I have accommodation for 2,000 horses, to be stalled in buildings partly repaired and partly constructed for the purpose.

"I have had constructed stabling and barracks at Galata Serai, in Pera, near the British Embassy, to serve as a depôt for the Royal Artillery.

"I need hardly observe, my Lord, that besides this being the depôt for the Army in the Crimea, all steers passing and repassing here, and all officers and troops having to report themselves to me, and in most cases to be transhipped, my time is therefore fully occupied.

"Hoping these arrangements will meet with your approbation, and that this report is sufficient in detail,

"I have, &c.,
(Signed) "W. PATTEN,
"*Brigadier-General commanding Troops.*"

"Dr. A Cumming to Dr. Smith.

"*Scutari, 7 April*, 1855.

April 7. Dr. Cumming to Dr. Smith. Salubrity of Site of Palace Hospital.

"Sir,—With reference to your letter of 23rd ultimo, respecting the Palace Hospital, I beg leave to say to you, that nothing which has come to my knowledge leads me to think that the site is unhealthy, and since its occupation the returns show that disease has not been more prevalent there than elsewhere.

"Fever has been more or less rife everywhere, and every station, including Abydos and Gallipoli, and, as I am informed, Constantinople also, have suffered from it; and from this circumstance Medical Officers, confining their observations to their own locality, have, not very logically, pronounced it unhealthy.

"The states you receive are not altogether safe guides in this matter, because the greatest mortality generally occurs immediately, or two or three days after the arrival of sick, and it may happen that one Hospital gets more bad cases than another.

"The Hospital in question has had a large number of sick officers, who have arrived from the Crimea, and who occupy the kiosk, but only one death has taken place amongst them, and he was a recent arrival from the camp, and who, during convalescence, had a relapse and died. In my opinion, all the Hospitals here might, with equal justice, be pronounced unhealthy as the Palace. The ground it stands on is a shallow valley, and in rear of the buildings there are rather extensive gardens and vineyards, the whole apparently well drained by a small rivulet. In rainy weather, during the winter season, water to double lodges, from some of the ditches having been neglected, but at present the site is perfectly dry, and will, I conceive, remain so during the summer.

"A few of the Medical Officers doing duty there have, as well as those doing duty at the other Hospitals, had attacks of fever, although not to an extent to excite the least apprehension, but some of them had got alarmed, and wished to be immediately removed; a proceeding not very encouraging to the patients, and which I resisted: all are now well.

"The Turks, I believe, are considered not bad judges of sites, and had this been an unhealthy one, it is not very likely that the Sultan would ever have made it his residence.

"I have just returned from making an inspection of this Hospital (which is, by-the-by, in excellent order). The gardens are in full bloom, the vineyards are being put in order, and the little meadow in front, which has probably obtained for it such a bad name, is covered with wild flowers, and full of ants; an indication, I am inclined to think of the natural dryness of the soil.

"I have, *&c.*,

(Signed) "A. Cumming,

"*Inspector-General of Hospitals.*"

"Dr. A Cumming to Dr. Smith.

"*Scutari*, 15 *April*, 1855.

April 15. Dr. Cumming to Dr. Smith. Reply to Dr. Smith's Letter of Sanitary Observations (of which an Abstract is given at p. xxvi, Preface to Section I.)

"Sir,—I beg leave to offer the following observations on your letter, dated 23rd March last, noticing certain points connected with the localities and sanitary condition of the Hospitals at Scutari and its neighbourhood.

"1st. There is no ward at the General Hospital occupied as an Apothecary's Store; but as a central position appears to have been considered desirable for a Surgery, one has been so appropriated, as I am informed, ever since the Hospital has been in our possession.

"As soon as a suitable room can be obtained for a Purveyor's Office the present one will be given up.

"2nd. Anything defective in the drainage at the General Hospital is being remedied; some suggestions respecting the drains were made by Drs. Sutherland and Gavin, along with a civil engineer, some time ago.

"3rd. In my opinion much unnecessary importance has been attached to the burial ground; it is fully 100 yards from the Hospital, and situated near the edge of the cliff overlooking the Sea of Marmora. The graves are well covered, and are not shallow, and peat charcoal has been fairly used to guard against deleterious influences; the use of lime for this purpose is questioned.

"4th. I am at a loss to conceive what vermin can harbour under the flooring of the wards, some of which are of stone; fleas, I apprehend, do not, but, like bugs, reside near their feeding places. Turkish carpentering is so bad, and gaping beams so general, that it would require many months to remove this cause of complaint.

"5th. Previous, probably, to its being repaired.

"6th. The huts are now occupied by upwards of 200 convalescents, which diminishes by so many the numbers in the wards; this arrangement has been found very advantageous, and I should regret its being given up.

"7th. See my letter, 7th April.

"8th. No ill consequences can be detected as having arisen from this, but as other accommodation has become available at Kulali, the rooms over the stable have been partially dispensed with, and will probably soon be entirely given up.

"9th. The unsatisfactory state of the privies has been noticed by all, but no means have yet been found altogether to amend it. It is entirely, or nearly so, attributable to the careless dirty habits of the patients themselves; suggestions on this point were made by the Civil Engineer who accompanied the Sanitary Commissioners.

"I have omitted to mention that a new graveyard has been opened to the eastward, and at a greater distance from the Hospital. Both were visited by Drs. Gavin and Sutherland.

"I have, &c.,

(Signed) "A. CUMMING,

"*Inspector-General of Hospitals.*"

"Dr. A. CUMMING to Dr. SMITH, London.

"*Scutari, 16 April*, 1855.

April 16. Dr. Cumming to Dr. Smith. Sanitary Condition of Hospitals.

"Sir,—In acknowledging your letter of the 30th instant, respecting the prevalence of fever in these Hospitals, I have to acquaint you that every precaution has been taken against any morbific influences which may be supposed to exist, and due attention has been given to ventilation, lime-washing, and the use of deodorants.

"At present the Hospitals are by no means crowded; and, as respects this Hospital, much less so than the numbers on the states indicate, in consequence of about 200 convalescents being removed from the wards and corridors, and placed for some time previous to final discharge in the sheds in the Barrack-square.

"I may remark that although the site of these sheds is objectionable, they have the advantage of being roomy, are well-ventilated, and afford sufficient accommodation to enable me to separate the dormitories from the dining-rooms. They possess also a large reading or day room, and when we can get rid of the depôt, they will, I think, be found useful during the summer. As to encampment, there is unfortunately no tentage.

"Materials for hutting are now being placed on the common near the General Hospital, and I was informed by Captain Macdonald a few days ago, that they would be ready for occupation in a fortnight.

"I have, &c.,

(Signed) "A. CUMMING,

"*Inspector-General of Hospitals.*"

MONTHLY REPORT of Dr. CUMMING to Dr. SMITH,

dated 28 *April*, 1855.

April 28. Dr. Cumming to Dr. Smith. Monthly Report for March.

"The changes in the number of patients under treatment in these Hospitals during the month of March, as compared with those of the previous month, will be seen by the following numerical statement:

		Remained.	Admitted.	Discharged.	Died.	Remaining.
February ..	Scutari ..	4,165	1,595	2,339	1,027	2,595
	Kulali ..	434	795	65	302	861
		4,599	2,490	2,204	1,329	3,756
March	Scutari ..	2,595	2,385	2,475	421	2,384
	Kulali ..	861	450	362	134	815
		3,756	2,835	2,837	555	3,199

"Thus the numerical state of the Hospitals for March is much more favourable than during the previous month: during Feleuary, we had under treatment in Hospital 7,280, and during March 5,991; of the former number, 3,533 ceased to appear in the Hospital Books, of which 1,329 were deaths; whereas, during March, a nearly eqtal number of men ceased to be inmates of the Hospital, viz., 3,392; but of this number only 555 died, a difference in the number of deaths in the two months of 774.

"This great improvement is attributable to numerous concurrent causes; in the first place, the condition of the men admitted into Hospital from the Crimea has undergone a great inpeovement in comparison with that of the men who arrived in previous months. The cases admitted from the Crimea during March were either slighter in character than previously, or were men already convalescent from fever.

"The admissions into Hospital for diseases contracted at the station have not only been fewer in number, but very much less severe in type.

"The milder weather which set in early in March was followed by an inpeovement in the cases under treatment. The mortality at the commencement of the month, although diminished, as compared with that of the previous month, was still high. The beneficial effects of a change from severe to a milder temperature is not apparent (in returns) for some little time after the change had taken place, for obvious reasons, although the influence of the milder temperature begins to be felt by the patients and perceived by the medical men. Yet the effects of the previous severe weather remain for a certain time afterwards. The consequences of the change in the weather are only developed at certain periods subsequent to the time at which the change takes place. The same observation applies to other causes of severe disease which existed during the winter.

"The mortality in weekly periods, during March, was as follows:—

From 3 to 9 March - -	Scutari - -	120
	Kululi - -	58
	Total - -	178
From 9 to 16 March - -	Scutari - -	100
	Kululi - -	21
	Total - -	121
From 16 to 23 March - -	Scutari - -	77
	Kululi - -	28
	Total - -	105
From 23 to 30 March - -	Scutari - -	52
	Kululi - -	15
	Total - -	67

"Hence, although the more potent causes of severe disease and death which had been in force during the winter, had already passed away at the commencement of March, yet the mortality remained very considerable to a later date; the decrease in the deaths, however, during March, as shown by the above weekly numbers, is very considerable, and a comparison of the mortality in the last week of March with that of the corresponding period in the previous month, viz., 67 to 257, is very remarkable.

"The deaths from the 23 to 28 February.

Scutari	201
Kululi	56
Total	257

"The decrease in the mortality above adverted to, cannot be accounted for by a diminution in the number of patients in the Hospitals during the periods under consideration. This will be seen by a statement of the number of patients under treatment during the weeks of March, as follows:—

		Remained.	Admitted.	Total.
From 2 to 9 March	Scutari..	3,472	430	3,902
	Kulali..	836	135	971
Total		4,308	565	4,873
From 9 to 16 March	Scutari..	3,296	212	3,508
	Kulali..	875	64	939
Total		4,171	276	4,447
From 16 to 23 March	Scutari..	3,092	327	3,419
	Kulali..	847	182	1,029
Total		3,939	509	4,448
From 23 to 30 March	Scutari..	2,580	606	3,186
	Kulali..	979	16	995
Total		3,559	624	4,183

"Hence the diminution of cases under treatment has not been great, and the number of fresh patients—the admissions—which tend to increase the mortality to a much greater degree than the number of cases remaining in Hospital, from time to time, have been remarkably uniform during the periods under consideration, except during the second week, when the admissions sank as low as 276. The number of patients admitted during the last week of the month to the 30th inclusive, was greater than any previous week.

"The improvement in the sick may, perhaps, be attributed in some degree to the improved condition, sanitary and otherwise, of our Hospitals. The milder weather, among its other beneficial influences, permitted more free ventilation.

"Diseases of the bowels, including Dysentery, were fatal to 226 cases, while in February the number of deaths from the same class of diseases 681. Fever of all types was fatal during March in 164 cases. These occurred in the various Hospitals as follows:—

"Mortality from Fever during March.

"In the General Hospital	... ...	37
" Barrack	do.	70
" Palace	do.	11
" Stable	do.	6
" Turkish Hulk	... ...	3
" Bombay Ship	... ...	2
Total, Scutari	... ...	129
Kulali Hospital	... ...	35
Total, Scutari and Kulali	... ...	164

"The diseases which have come under our notice in the greatest numbers during the month have been: Fevers, continued, remittent, and intermittent, displaying a well-marked tendency to relapse; rheumatic affections, chiefly chronic, and, in a few instances, subacute; Scurvy in some cases pure, but in the majority existing as a complication, more or less serious, of other diseases, and frost-bite.

"The fevers contracted at this station were frequent during February, both among patients under treatment in Hospital, among the Hospital attendants and Medical Officers; but although many cases of Fever have arisen at this station during March, the type of this disease, as already mentioned, has been much less severe, and the disease manifested much less tendency to run into the low typhoid form, which was so fatal during the previous month.

"The most important and serious class of disease during February was that of the bowels, Dysentery and Diarrhœa. These diseases, although attracting much less attention during March, were still very serious and numerous. The Dysentery being of a most severe form, complicated in many instances with Scurvy, a complication of disease, than which nothing can be more intractable or more fatal in result. In the great majority of *post mortem* examinations, the large intestine presented all the anatomical evidences of old, extensive, and severe Dysentery mingled with scorbutic appearances.

"The ulceration, old and ragged, extended from the rectum, through the colon, to a variable extent, in many instances to the ileum, and in a few instances passed into the adjacent portion of the small intestine; in numerous cases the entire mucous membrane of the large bowel was involved, and in a few specimens the diseased action had penetrated through the other coats to the peritoneum.

"The number of men discharged from Hospital has been very considerable, viz., 2,838. Of these, 972 were deemed unfit for further service, at least for some time, in this country, or those who needed a change to the climate of England for a restoration to health. These men left this station in the following manner:—

Name of Ship.	Sick.	Wounded.	Total.
"Adelaide," steamer	129	44	173
"Indiana" "	223	45	268
"Tynemouth" "	198	15	213
"Chapeau," steam transport ..	122	12	134
"Julia" " ..	166	18	184
Total	838	134	972

"The state of the Hospital at the end of the month, in regard of the most important diseases remaining, and which will therefore appear in the following month, was extremely satisfactory.

"This will be seen by a comparison of the number of these diseases remaining under treatment at the end of February and March respectively.

		End of February.	End of March.	Decrease.
Febris CC.	Scutari..	709	652	57
	Kulali ..	213	191	22
Total		922	843	79
Dysentery and Diarrhœa	Scutari..	882	643	239
	Kulali ..	262	217	45
Total		1,144	860	284
Frost-bite	Scutari..	216	164	52
	Kulali ..	120	100	20
Total		336	264	72
Values Scbp.	Scutari..	353	64	89
	Kulali ..	6	3	3
Total		359	67	92

"In concluding this report, it will perhaps be satisfactory to compare the return with that from Smyrna during the same period.

"The Hospital there was opened for the reception of sick on the 15th February, and to 31st March 363 cases were under treatment; of these 371 were discharged, and 127 died.

	Treated.	Died.	Per Cent.
SMYRNA:			
Fevers	209	28	13·30
Dysentery and Diarrhœa ..	279	62	22·22
Scorbutus	137	13	9·46
Gelatio..	150	18	12·
SCUTARI:			
Fevers	1,607	129	7·55
Dysentery and Diarrhœa ..	1,447	160	11·05
Scorbutus	165	12	7·27
Gelatio	313	45	14·37
KULULI:			
Fevers	351	35	9·97
Dysentery and Diarrhœa ..	388	66	17·01
Scorbutus	96	1	1·04
Gelatio	144	20	13·88

"The return from Smyrna, however, embraces a longer period, by 13 days, than that from Scutari; but, on the other hand, the vessels which took the sick there from the Crimea touched here on the way. I deemed it advisable to disembark and admit into these Hospitals a great many of the worst cases, from 40 to 50 having been landed from some of the vessels, so that the comparison is made with every advantage in favour of that establishment; and as regards the Hospitals here, it must be added that fresh additions were made to them by frequent arrivals from Balaclava during the period, amongst whom were many in an extreme state of exhaustion, and who died soon after admission.

"(Signed) A. CUMMING,
"*Inspector-General of Hospitals.*"

Remarks.

These singular documents are well worthy of attention, and require a little treatise to themselves.

They are admirably calculated to draw out the most striking features of the Scutari case, when seen by the light which the sanitary operations going on at the same time throw upon them.

Sanitary Defects discovered.

These sanitary investigations established—

1. That the site of the Barrack and General Hospitals was good; that of Kulali not good; that of the Palace Hospital defective from the wetness of the ground. This last fact was admitted by the Inspector-General in the Cumming Maxwell Report, but is here denied.

2. That the vicinity of the Hospitals was far from clear, with the exception of that of the General Hospital at Scutari.

3. That the water supply was defective, but measures were being taken to improve it.

4. That the drainage was most defective, the drains and sewers being loaded with filth,—none of the sewers trapped,—no ventilating openings, except the tubes of the privies, which formed, in fact, the means of ventilating the sewers, the wind driving the sewer air into the corridors and wards.

5. That the ventilation was defective.

6. That, although the Hospital accommodation at the time of the visit of the Sanitary Commissioners could not be considered as inadequate, yet there was still overcrowding owing to the corridors being filled up with one, or, as in the Barrack Hospital, even with two rows of beds, and to the beds being too close and the cubic space allotted too small. This might have been prevented by a better distribution of the space.

7. That the walls and ceilings were not clean.

8. That the Burial-ground close to the General Hospital was overcharged.

Whatever recommendations had been made, little or nothing had been done to remedy these evils.

The Sanitary Commission—

Sanitary Remedies applied.

1. Drained the site of the Palace Hospital, and closed the worst wards in Kululi;

2. Organized a daily cleansing of the outskirts of the Hospitals;

3. Cleansed and deodorized with peat charcoal the latrines and sewers, and constructed flushing tanks to flush them.

4. Ventilated the Hospitals with plates of perforated zinc and wire gauze, and with foul air shafts in the ceilings;

5. Reduced the number of beds in the corridors to one row, fixed the distance between the beds at six feet from centre to centre, and allotted not less than 1,000 cubic feet of space to each bed;

6. Directed the constant use of lime-washing;

7. Regulated the burials and the burial-ground.

Scutari Hospitals, before and after the arrival of the Sanitary Commission, presented the same difference which existed between the Gaols of the last century, nests of Typhus Fever,

and Colonel Jebb's Prisons of 1857, the most healthy buildings in existence.

To inexperienced eyes Scutari buildings were magnificent. To ours, in their first state, they were truly whited sepulchres, —pest-houses.

By the Principal Medical Officer of the East it has been stated, that no difference in our mortality took place in consequence of the sanitary improvements in Scutari, and that the decrease which was actually observed was solely due to the improved character of the cases from the Crimea, as manifested by the decrease of mortality on board the sick transports. That this assertion is founded on error of observation, and ignorance of the case, is proved by the following returns, compiled from official sources.

TABLE No. I.

TABLE I. Under-statement of Mortality in Hospitals of Bosphorus.

	Total Sick Remained and Admitted.	Died.	Per 1,000.
SCUTARI.			
October 1 to November 4, 1854 ..	4,293	250	58
To December 2	5,349	267	50
SCUTARI AND KULULI.			
To December 30	6,471	393	60
To January 31, 1855	8,297	1,225	147
To February 28	7,259	1,329	183
KULULI.			
February	1,229	302	245
SCUTARI AND KULULI.			
Twenty-one days, ending March 17 ..	5,522	514	93
" April 7 ..	5,060	240	47
" " 28 ..	4,063	127	31
" May 19 ..	3,428	71	20
" June 9 ..	2,557	49	18
" " 30 ..	2,954	29	9
KULULI.			
Twenty-one days, ending March 17 ..	1,127	133	118
" June 30 ..	610	4	6½

The above is an illustration of a curious method of calculating the rate of mortality, which will be afterwards described. This method counts the cases remaining every month, or twelve times a year, and adds to them the cases admitted. So that,

in addition to the cases really treated, it obtains also fictitious cases, simply by counting the same man a certain number of times, that is, by counting the patients remaining twelve times annually, and adding them to the new patients admitted.

It is evident that, by counting the cases *remaining* at the beginning of *every* month, week, or oftener, the cases may be multiplied, and the apparent rate of mortality reduced to any conceivable extent.

The above table is, therefore, not given as any approximation to the actual mortality, but as founded on Official Returns, and an under-statement of the real rate of mortality. It is an illustration of the method sometimes practised, which gives an unfairly favourable estimate. For our purpose it is useful, as giving a view of the number of patients brought together under the Sanitary influences of the Hospitals at about the same time.

From it may be gathered the terrible sanitary fact, that an increase of sick, by only one-third, more than doubled the mortality per cent.

But, as time went on, and the sanitary evils of the Hospitals became intensified for the next sick population, by means of the unfortunate sick who went before, although the number of sick actually diminished by one-eighth, viz., in February, the mortality continued to increase by more than one-fifth.

In Kululi, the worst of all the Hospitals, during February, one out of every two cases treated died, and in Scutari and Kululi together two out of every five, in the same month, according to the true method of computing the mortality, *vide* p. xxviii.

It is to be observed, that after each arrival of sick a frightful increase of mortality occurred immediately, or two or three days afterwards, and chiefly, as far as could be ascertained, among the admissions, who stand such sanitary conditions less well than those inured to them. By Sir John Hall's own shewing, these admissions were cases of an improved character in February.

For mark the decrease in the number of deaths on board the sick transports, shewing that the improvement stated did take place in the character of the cases coming from the Crimea, while no corresponding improvement took place, as stated, in the mortality at Scutari, but the reverse.

Table II.

Period.	Sick embarked, arriving at Scutari during the period.	Died on Passage.	Deaths per 1,000 embarked.	Deaths per 1,000 on cases treated in Hospitals, Scutari.
1854. 1855.				
Sept. 15—Jan. 31 ..	13,003	976	74·5	195*
January, 1855	2,902	262	90	322
February	2,376	42	19	427
Feb. 25—March 17	1,067	5	4·7	315
March 18—April 7	960	4	4·6	144

II. Mortality on board Sick Transports and at Scutari compared.

And mark the two conditions to which Sir John Hall appeals as the causes of the reduced mortality at Scutari. Both of these we had in February, viz.:—diminution of numbers—improvement in the character of cases: yet, with both, the mortality rose.

For the Hospitals had been brought into that terrible state that the mortality could not but *increase* even upon these *improved* cases. A considerable reduction in the mortality of cases treated did take place in the first half of March upon that in February, but it still remained about what it had been in January, and more than half as much again of what it had been during the four months, October, November, December and January,—although the mortality on board the Transports, taking the same periods, had fallen to one-fifteenth of what it had been. It was not till after the Sanitary works had been carried out at Scutari, that the comparative safety of our men was secured.

Then, and not till then, the diminution of the number of sick by nearly one-half, reduced the mortality at all the Hospitals to one-tenth; at Kululi, where the objectionable wards had been emptied, to one-eighteenth.†

This statement will not surprise any one at all conversant with such matters in Civil life, where such facts and such causation have been long since admitted; but they are still denied in the Army.

In corroboration of the above, a statement, made by the

* October 1, 1854—January 31, 1855.

† This last estimate is taken from Table No. 1, where, as has been stated, the mortality is very much underrated.

Principal Medical Officer, himself, of the Army in the East, in the published despatches, may be quoted:—

March 2. Dr. Hall to Lord Raglan.

"Dr. Hall to Lord Raglan.

"*March* 2, 1855.

"... Out of 412 patients treated in the General Hospital at Balaclava, between February 18 and 24, only three casualties have occurred, which I think may fairly be termed a low rate of mortality, considering the class of patients that are generally sent in there for treatment, men brought down from camp, and found too ill to embark, when they arrive at Balaclava."

The above mortality is 12 per mouth, or 27 per 1,000 per month. If these men had been sent to Scutari in February, there would have died not 12 but 180—the deaths to cases treated at Scutari, in February, being 427 per 1,000, instead of 27 per 1,000, and from February 25 to March 17, 315 per 1,000.

And according to Dr. Hall's statement, these cases treated at Balaclava were kept there, because they were in a worse state than those who were sent down to Scutari.

Compare with this the facts mentioned in the Scutari Inspector-General's letters, upon which we are now commenting, viz., that "fevers contracted at this station (Scutari) were frequent during February, both among patients under treatment in Hospital, among the Hospital attendants and Medical Officers." And it will be seen how much disease was actually generated within the fatal Hospital walls of Scutari, not only during February, but even during March, when "many cases of fever arose at this station," although it "manifested much less tendency to run into the low typhoid form, which was so fatal during the previous month."

P. xix.

P. xix.

This is most important, for "typhoid fever" is well known to be pre-eminently due to foul air, arising from overcrowding and want of drainage; and, till the sanitary works at Scutari were executed, it appears, by Dr. Cumming's own showing, to have prevailed there.

Dr. Hall, himself, appears to have been fully aware of this. For, in a letter addressed to Dr. Smith, February 23, 1855, he states that he anticipates much more benefit by treating the sick at the Castle Hospital, Balaclava, than by sending them down

to Scutari. "At Scutari," he says, "the buildings are large, crowded, and difficult to keep well-ventilated. Fever has consequently made its appearance and proved fatal to many, both officers and men." It does not appear to have occurred to either Inspector-General that all this was preventible.

The Scutari Inspector-General, further, mentions the "frequent arrivals from Balaclava during this period," viz., March, "amongst whom were many in an extreme state of exhaustion, and who died soon after admission." Also, that he had "to disembark and admit a great many of the worst cases" (on their way to Smyrna) at Scutari—proving that, even then, although Dr. Hall retained "men found too ill to embark," "at Balaclava," yet either the voyage and the state of the Transports induced an increase of disease, or the state of Scutari Hospitals, always acting most fatally on fresh admissions, produced a rapid mortality, or both. Of Scorbutic dysentery, according to Dr. Cumming, there were "numerous" cases, "fatal in result," even through March. This may be another proof of the state of our Hospitals, as Dr. Hall tells us that the character of the cases from the Crimea was so much improved. But it may be that the effects of their winter diet would long be "fatal in result."

P. xxi.

P. xxi.

P. six.

An estimate of the Mortality in the Hospitals on the Bosphorus, as exact as can be now made, is here annexed:

III. Correct Statement of Mortality in Hospitals of Bosphorus.

TABLE No. III.

ANALYSIS of WEEKLY STATES of SICK and WOUNDED, from October 1, 1854, to June 30, 1855, in the Hospitals of the Bosphorus.

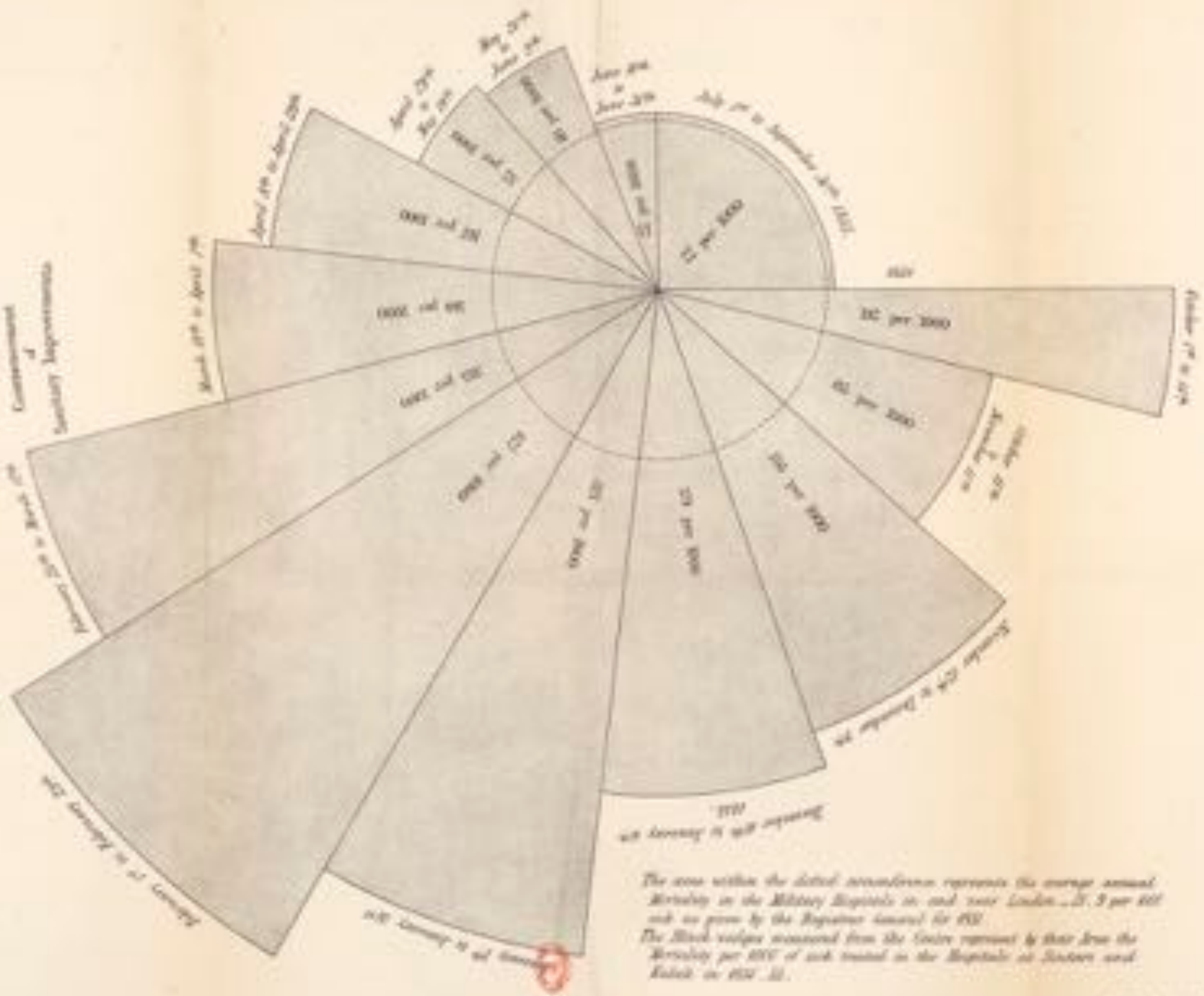
Date.	No. of Days.	Sick Population of the Hospitals (mean of weekly numbers remaining).	Cases Treated (sum of Admissions and Diseases, including Relapses).	Deaths.	Mortality.	
					Rate per cent. per annum of mean Sick Population.	Per cent. of Cases Treated.
1854. SCUTARI.						
Oct. 1—Oct. 14	14	1,393	590	112	146	19·2
Oct. 15—Nov. 11	28	2,229	2,043	172	101	8·5
Nov. 12—Dec. 9	28	3,258	1,944	301	121	15·5
SCUTARI & KULULI.						
Dec. 10 to Jan. 6, 1855	28	3,701	3,194	572	202	17·9
1855.						
Jan. 7—Jan. 31	25	4,520	3,072	986	319	32·1
Feb. 1—Feb. 28	28	4,178	3,112	1,329	415	42·7
KULULI.						
Feb. 1—Feb. 28	28	648	581	302	608	52·0
SCUTARI & KULULI.						
Feb. 25—Mar. 17	21	3,779	1,621	516	238	31·8
Mar. 18—Apr. 7	21	3,506	1,656	237	125	14·4
Apr. 8—Apr. 28	21	2,803	1,190	127	79	10·7
Apr. 29—May 19	21	2,018	1,350	70	60	5·2
May 20—June 9	21	1,504	990	45	56	4·6
June 10—June 30	21	1,442	1,266	28	34	2·2
Compare (*i. e.*, omitting the worst time, viz., February.) 1854. 1855.						
Oct. 1—Jan. 31 1855. 1855.	123	3,149	10,843	2,145	203	19·8
Feb. 25—June 30	126	2,501	8,073	1,020	118	12·6

Comparison with rate of Mortality in London Hospitals.

In order to estimate how excessive was the rate of Mortality suffered under the conditions of the first winter, and how low it fell under the sanitary improvements of the summer, we must compare it with that of our London General Hospitals. But the comparison is one entirely in favour of Military Hospitals, because, whereas, in these, every man unfit for duty is

DIAGRAM REPRESENTING THE MORTALITY IN THE HOSPITALS.

AT SCUTARI AND KULALI, FROM OCT^R 1ST 1854. TO SEPT^R 30TH 1855.



The area within the dotted circumference represents the average annual Mortality in the Military Hospitals in and near London ... 17. 9 per 1000 sick as given by the Registrar General for 1851.

The Black wedges measured from the Centre represent by their Iron the Mortality per 1000 of sick treated in the Hospitals at Scutari and Kulali in 1854 ... 55.

admitted, whether his case be slight or severe, in the London General Hospitals every case is severe.

Yet, we find, upon consulting the Registrar General's Returns, Vol. xiii, No. 8, p. 57, that, in 1851, in the 11 General Hospitals of London, the Mortality per cent. on cases treated was 7·6, the annual rate per cent. on sick population was 82. Even in the Fever Hospital, which might be thought to bear some comparison with the War Hospitals invaded by Epidemic Fever, the Mortality per cent. on cases treated was only 11, the annual rate of Mortality per cent. on sick population 110·5.* In the London General Hospitals, above mentioned, the highest rate of Mortality was at University College, being per cent. on cases treated 10·5; per cent. per annum on sick population 131·8. The lowest rate of Mortality was at St. Thomas's, being per cent. on cases treated 5·5; per cent. per annum on sick population, 53.

With rate of Mortality in London Military and Naval Hospitals.

Now let us take the Military and Naval Hospitals in and near London, and we find the Deaths to 100 cases only 2·4; the Deaths to sick population annually per cent. only 39—showing that, as above stated, the sick population in a Military Hospital at home is a very different one, in the character or severity of its cases, from that in a Civil Hospital, which will be seen in a still more striking light, when we consider that London at the Army ages is nearly twice as healthy as the Army in London, and suffers little more than half its Mortality.

The case therefore stands thus:—

		Mortality. Rate per Cent per Ann. on Sick Population.	Per Cent. on Cases Treated.
11 London General Hospitals†		82	7·6
Fever Hospital		110·5	11·3
Military and Naval Hospitals in London		39	2·4
Scutari and Kulali General Hospitals ..	during 4 months	203	19·8
	„ 4 weeks	319	32·1
	„ 4 weeks	415	42·7
Kulali	„ 4 weeks	608	52
Scutari and Kulali, summer, 1855		34	2·2

* And this is nearly as great as the mortality from Yellow Fever in the Tropics between the beginning and end of the epidemic.

† The mortality of the London General Hospitals is very much higher

In the London General Hospitals, therefore, 8 out of every 100 cases admitted die. In the Scutari General Hospitals, for several months, 33 out of every 100 cases admitted died. And at Kulali, during one month, above 50 out of every 100 cases admitted died.

In June 1855, again, when the Sanitary improvements were nearly completed, the Scutari rate of mortality fell to less than that of the London Military Hospitals, being 3½ per cent. annually on sick population, and 2½ per cent. on cases treated.

Curious Method of calculating rate of Mortality.

A singular Statistical problem is thus stated by the Commandant, for the official information of Her Majesty's Government, p. xi :—"Sickness has very much diminished and so has the Mortality. In January last the number of deaths was 1,480, in February, 1,254, and in March, 424, every month showing a steady decrease over the preceding one. The average mortality, at present, is 5½ per diem." This problem is much like the celebrated riddle, "Given the height of the mast, to tell the captain's name." *Not* given the numbers in Hospital, to tell whether there is a "steady decrease" in its mortality. The real fact, alas! stood thus,—there was an appalling *increase* of mortality, up to the end of February, reaching nearly 43 per cent. in that month, of cases treated, from 32 per cent., which it was in January. The numbers in Hospital had diminished. Up to March 17 the mortality, although diminishing from what it was in February, which would, indeed, had it continued, have swept away the whole Hospital population in three months, yet continued half as much again of what it was from October 1, 1854, to January 31, 1855.

A "mortality of 5½ per diem" does not sound alarming, certainly, but it is 1,877 per *annum*. The fact, however, is useless without the strength—1,877 Deaths on a strength of 8,000

than it ought to be—the sanitary conditions of the London Hospitals very, very much lower than they ought to be. The selection of severe cases cannot altogether explain this very high mortality. In drawing any comparison, however, between the mortality in Civil and Military Hospitals, it must be remembered that the ages of cases admitted into the former differ from the ages in the latter, and that the class of constitutions admitted into Civil Hospitals is much worse than the class admitted into Military Hospitals. Civil Hospitals ought, therefore, to yield a higher rate of mortality.

sick, which there was at one time, being a very different thing from 1,877 Deaths upon 3,000 sick, which there was at another time.

So incomplete was the information received by the Secretary of State for War.

Various returns will be given elsewhere (derived from official sources) of the mortality in Hospital. None of these will be found to agree. It is, indeed, impossible that accuracy of returns can be secured under our present system or no system. Discrepancy of Returns.

In these months of January, February, March, now under consideration, the variations in the returns of mortality are as follows:—*

	Commandant at Scutari.	Medical Returns.	Burial Returns.	Adjutant-General's Returns. *Infantry alone.*
January	1,460	1,225	1,473	1,193
February ..	1,254	1,329	1,151	1,261
March	424	555	418	587
Total ..	3,138	3,119	3,042	3,041

NOTE.—I may add two remarks, in parenthesis:—

(1) I am singularly at a loss to understand what is meant by the following paragraph, in the Commandant's letter, p. xii:— Statement in Commandant's Letter about "Ladies and Nurses."

"I have continual applications from the . . . . ladies and nurses for extra expenses, such as field allowance, forage

* The Deaths at Smyrna Hospital were 127, being from February 15 to March 31. This solves the difficulty of the excess of the Medical over the Commandant's Returns, supposing the Principal Medical Officer's Returns to contain these Deaths, during the above period, which, however, he expressly states they do not. But it increases the difficulty of explaining the excess of the Commandant's and Burial Returns over the Medical, during January; and it makes the similarity of the Totals quite inexplicable, excepting upon the supposition of last ground having been made up by different Authorities in different months.

for horses, servants' allowance, &c.; all of which, except the rations, I do not consider myself at liberty to sanction."

No such application was ever made to the Commandant by any of the "ladies and nurses" under my charge; and with regard to "extra expenses," both for patients and nurses, these were all privately undertaken. The sum of £9,587 12s. 8½d. was thus expended from private funds, of which Her Majesty's Government repaid £2,601 14s. 2½d. The salaries and wages of the ladies and nurses, their travelling expenses, outfits, and Regulation Dress were the only other items paid by the Government. For those expenses of the Nursing Staff defrayed by me in the East, not a halfpenny was ever advanced to me, with the exception of one credit of £1,000 and another of £1,500, granted me, upon my first going out, by Her Majesty's Government; the money afterwards was always advanced by me. The rations were issued by the Government, but at Scutari nearly all the "extras," including generally tea, butter, wine, &c., both for patients and nurses, which were issued by us, were provided by private funds. The annexed schedule will shew what was supplied to us by the Purveyor in the Barrack Hospital from November 1854 to December 1855, a period of fourteen months, which comprises all the time during which we issued "Diets" to the patients. The schedule includes all the Purveyor's issues to us, whether for these diets for patients or for rations for the nurses.

The Government was throughout most liberal in sanctioning these efforts of private enterprise; and nothing but thanks is due to them for their support.

It is only in refutation of an unintelligible assertion that this statement ever would have been offered.*

(2). The sentence about "Miss Nightingale's extensive establishment," as tending to fill up the "Barrack" Hospital, and with others, "requiring necessarily the admission of a proportionate number of workmen," "rendering the building more fit for a Barrack than a Hospital," is obscure.

"Miss Nightingale's extensive establishment," consisting of 40 women, was housed in the Barrack Hospital, in the same

* No mention is here made of the enormous distribution of private stores, independent of the above items.

space which, in corresponding quarters, was occupied by three Medical Officers and their servants, and in about the same space as was occupied by the Commandant. This was done in order to make no pressure for room on an already overcrowded Hospital. It could not have been done with justice to the women's health, had not Miss Nightingale taken a house in Scutari at private expense, to which every nurse attacked with fever was removed. The number was subsequently thinned by a part being moved into quarters in the General Hospital.

NOTE.

The tardy and irrelevant, and, so to say, out-of-date working of the Director-General's Department may be well illustrated by the following letter:—

DR. DUMBRECK to A. CUMMING, ESQ.

Army and Ordnance Medical Department,
18th May, 1855.

SIR,

Referring to the evidence of Miss Elizabeth Wheeler, page 329 of "The Report on the State of the Hospitals of the British Army," I am desired by the Director-General to request your attention to the system at one time apparently obtaining in the hospital under the immediate surveillance of Deputy Inspector-General of Hospitals Dr. M'Grigor, which permitted nurses to exercise their judgment and discretion in the selection of cases for the treatment of which stimulants might be applicable. This is a state of things calling for severe reprehension, and for your direct and stringent interference, should a recurrence of it be attempted in the hospitals under your superintendence.

I have, &c.

A. Cumming, Esq.
&c., &c.

(Signed) D. DUMBRECK,
for Director General.

Inspector-General Cumming, to whom this letter was ad-

dressed, was Head of the Commission by which the "evidence" in question had been taken. And, in consequence of this evidence, from which it appeared that the orders of a Medical Officer had been disobeyed, and his treatment misrepresented, the Commission had very properly judged it necessary that the "Sister" implicated should resign, which she did, with the entire concurrence of the Superintendent-General. Five months after she had left the Hospitals, the above letter was written. It was never communicated to the Superintendent-General at all. If it was no part of the duty of the Director-General to put a stop to such a contradiction of every maxim of medicine and of common sense as that of a "Nurse" giving "stimulants" to patients without the orders of the Medical Officer, why was the letter written at all? And if it were his duty to interfere, why was it done five months after the time, and why was it not done through the only person who could check any "recurrence being attempted," viz., the Superintendent of Nurses?

Return of Provisions, &c. issued to Miss Nightingale, Barrack Hospital, from November, 1854, to December, 1855, inclusive.

	1854		1855														Total.
	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.			
Meat, lbs.	—	7546	1775	9321	9915	9999	11622	13393	779	191	423	4424	483	417	826	1423[a]	
Bread, lbs.	—	1509	1826	1482	1766	970	2071	805	684	656	340	178	640	560	690	11684	
Potat. paste	—	818	964	710	933	833	634	304	164	632	472	240	321	313	905	7514	
Arr. grain	—	48	—	—	—	—	—	—	—	—	—	344	240	321	210	938	1620
Milk, pints	—	—	—	—	—	—	—	—	80	72	352	—	4	—	—	—	556
Fowls, No.	—	—	—	—	—	—	96	94	1	1	35	19	9	14	9	248	
Suger, lbs.	—	112	28	—	—	497	840	87	401	267	333	244	361	266	473	4663	
Potatoes, lbs.	—	833	21	—	—	—	320	—	326	300	454	327	470	403	529	3256	
Vegetables, lbs.	—	—	—	1101	1403	1222	171	600	450	427	300	448	320	120	470	7205	
Arrow root, lbs.	—	48	—	132	476	514	409	112	224	222	304	240	320	320	446	3229	
Sago, lbs.	—	—	24	—	80	72	—	8	—	—	—	23	—	—	—	240	
Barley, lbs.	—	—	105	141	472	448	122	32	72	110	90	23	14	30	20	1967	
Rice, lbs.	—	318	472	854	960	1320	1320	48	72	110	120	30	63	60	40	5717	
Oatmeal, lbs.	—	8	—	12	12	24	—	—	—	—	—	—	12	—	—	68	
Coffee, lbs.	—	12	20	30	12	42	48	48	12	12	6	6	9	—	13	270	
Tea, lbs.	—	8	—	—	—	3	—	—	—	—	—	—	—	—	—	11	
Brandy, bottles	—	18	14	24	—	—	—	—	—	—	—	—	—	—	—	56	
Marsala, bottles	—	—	—	—	—	18	42	—	—	—	—	—	—	—	—	60	
Preserved Potatoes, lbs.	—	—	—	—	—	—	—	56	—	—	—	—	—	—	—	56	
Essence of Beef, ½ lbs.	—	—	19	60	—	—	164	12	—	80	—	14	—	—	—	352	
Vinegar, bottles	—	—	—	—	1	—	6	12	6	4	—	—	—	—	—	29	
Oil, pints	—	2	18	24	—	—	—	—	—	—	—	—	4	32	64	146	
Sweetmeats, cases	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2	
Olive Oil, bottles	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1	
Soda Water, bottles	—	—	—	—	—	—	4	—	—	8	—	—	—	—	—	12	
Sugt, lbs.	—	14	—	—	84	—	60	80	160	87	32	44	77	32	86	772	
Soda, lbs.	—	—	—	—	—	—	32	—	—	—	—	—	—	—	8	40	
Candles, lbs.	—	60	44	132	84	—	—	—	—	72	82	60	48	100	200	872	
Lamp Cotton, balls	—	—	—	—	—	—	—	—	—	—	—	—	—	8	—	8	
Salt, lbs.	—	42	56	12	48	12	32	42	12	18	—	—	3	—	16	173	
Oranges, No.	—	—	—	—	—	—	1120	1232	2160	1064	36	—	—	—	—	6212	
Lemons, No.	—	—	—	—	—	—	—	60	3448	1232	324	84	48	100	24	4320	
Ice, lbs.	—	—	—	—	—	—	—	—	224	—	—	—	—	—	—	224	
Preserved Meat, lbs.	—	—	—	—	—	—	—	6	—	—	—	—	—	—	—	6	
Salt Soup, lbs.	—	—	—	—	—	—	—	—	—	6	—	—	—	—	—	6	
Butter, lbs.	—	—	—	—	—	—	—	—	—	—	36	44	16	80	40	216	
Flour, lbs.	—	—	—	—	—	—	—	—	12	—	24	36	48	40	40	200	
Cheese, lbs.	—	—	—	—	—	—	—	—	—	—	36	24	14	40	12	126	
Pepper, lbs.	—	—	—	—	—	—	—	2	—	—	—	2	—	6	—	10	
Mustard, lbs.	—	—	—	—	—	—	—	—	—	6	4	—	2	—	—	12	
Capers, bottles	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1	
Pickles, bottles	—	—	—	—	—	—	—	—	2	—	4	7	6	—	—	19	
Syrup de Groseis, bottles	—	—	—	—	—	—	—	—	1	2	—	—	—	—	—	3	
Corks, No.	—	—	—	—	—	—	—	—	100	—	100	100	—	—	—	300	
Gingerette, bottles	—	—	—	—	—	—	—	—	2	6	6	8	1	1	4	28	
Spirits of Wine, bottles	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1	
Bath Bricks, No.	—	—	—	—	—	—	—	—	—	2	—	—	1	1	1	5	
Rum, bottles	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1	
Vinegar, pints	—	—	—	—	—	84	—	—	—	—	—	10	—	—	—	148	
Milk, lbs.	—	—	—	—	—	—	—	—	—	—	—	15	21	—	16	52	
Apples, lbs.	—	—	—	—	—	—	—	—	—	—	—	—	12	36	48	96	
Raisins, lbs.	—	—	—	—	—	—	—	—	—	—	—	—	14	10	8	32	
Beans, bottles	—	—	—	—	—	—	—	—	—	—	—	—	4	—	—	4	
Mustard, lbs.	—	—	—	—	—	—	—	—	—	—	—	—	—	8	20	28	
Rice, lbs.	—	—	—	—	—	—	—	—	—	—	—	—	—	8	—	8	
Sherry, bottles	—	—	—	—	—	—	—	—	—	—	—	—	—	6	—	6	
Citron, lbs.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	
Spices, lbs.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	
Quinine, lbs.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	
Port Wine, bottles	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	
Cows' feet, No.	—	37	—	—	—	—	—	—	—	—	—	—	—	—	—	37	
Oatmeal, lbs.	—	22	—	—	—	—	—	—	—	—	—	—	—	—	—	22	
Lamp wicks, No.	—	110	—	—	—	—	—	—	—	—	—	—	—	—	—	110	
Salad, bottles	—	—	—	—	—	—	—	—	—	—	—	—	—	200	—	200	
Grapes, lbs.	—	—	—	—	—	—	—	—	—	—	10	—	—	—	—	10	
Raisins, lbs.	—	—	—	—	—	—	—	—	—	—	—	10	—	—	—	10	

[a] The greater part of these eggs, being worthless, was unsupplied to the Kulia Dirt Kitchens by private means. It appears from the Channing-Maxwell Report, page 41, which of the articles issued by the Purveyor were not good.

III.

Notes on the Causes of Disaster at Scutari.

What Proportion of the Mortality should be assigned to the conditions under which the men were Treated at Scutari?

With regard to Scutari, it appears that there is now no difference of opinion in acknowledging the colossal calamity which befell us there in the winter of 1854-55. At least, such is the assertion of the world *versus* that of three men.

Regarding the causes of this calamity, there is still some difference of opinion.

It is not, however, now the question how much may be assigned to the condition of destitution and exhaustion in which the patients were sent down from the Crimea, and how much to the five conditions which reigned at Scutari, viz.:—

1. Frightful overcrowding.
2. Want of ventilation.
3. „ drainage.
4. „ cleanliness.
5. „ Hospital Comforts.

But, if the men were sent down to Scutari in such a state as the Medical Officers allege, and allege truly, from over-work in the trenches, salt rations, insufficient clothing and shelter, how much more would such conditions as those which reigned at Scutari act upon them, how much more ought they to have been placed under such circumstances as would make the least call upon their shattered vital powers! Instead of this, bad air, bad cooking, want of cleanliness did their best or their worst to complete what bad food, bad clothing, over-work had begun. The

men had not a chance. As has been said of the Cavalry, so may be said generally,—

"Whatever was accomplished in the wars in which we have been engaged must be set down to the daring and discipline of our men, and the heroic examples of their leaders. They offered their blood in atonement of professional ignorance, and England accepted the sacrifice without taking a single step thereafter to avert so cruel a waste of energy, intrepidity, and patriotism."

Such conditions as those of Scutari must work with tenfold power on the exhausted constitutions submitted to them, with far more deadly effect than they would have done on any part of the civil population of London. And, again, the worst part of the civil population of London is never submitted to such conditions.

Three Facts in answer to this Question.

Three facts will corroborate this:—

1. The fact that patients from the Land Transport Corps were sent down in exactly the same condition in 1855-56, as all our patients in 1854-55, and did recover, under different conditions, in Scutari Hospitals.

2. The fact that, after each in-rush of patients in 1854-55, there used to be a frightful increase of mortality.

3. The fact that the mortality from Diseases of Stomach and Bowels was at Scutari as 23·6 to (in the Crimea) 18·3, or nearly 25 per cent. more.

But it is now impossible to assign to each cause of mortality its relative value. It would have been necessary, in order to do this, to have ascertained how, when and where each case of Disease originated, which was not done.

The Five great causes of Mortality at Scutari.

It is only necessary, therefore, now to add authentic and official testimony of each of the five causes assigned to the calamity.

1. Overcrowding.

1. Frightful overcrowding. Our Hospital Regulations assign 2 feet as the space to be assigned between each bed-

Dr. Christison, of Edinburgh, assigns as the minimum space for each patient, 9 feet from head to head, 10 feet from head to middle of ward, 14 feet in height. Guy's Hospital gives a space of from 4 to 10 feet between bed and bed; the London Hospital, 8 feet; the London Fever Hospital, 9 feet; King's College Hospital, 6 feet; St. Bartholomew's, 5 feet; the Naval Hospitals, 4 feet between the beds.

The following Hospitals give respectively:—

	Cubic Feet of Space per Patient.
London Fever	2,000
King's College	1,800—2,000
London	1,700
Guy's	1,300—2,000
St. Bartholomew's....	1,377
Lariboisière (at Paris)	1,686
Naval Hospitals.....	1,200—1,500
Military	500—700
N.B.—Barracks give only..	300—500

Dr. Christison is of opinion that 1,300 cubic feet of space per patient is enough; it requires ample ventilation to make it so. It never can be sufficiently repeated that the amount of cubic space is not so important as the ensuring a constant change of the air in that space. Not less than 2,000 cubic feet of air should be supplied to each Patient every hour.

It is obvious that, if the piling the cubic space on the top of the patients would answer the purpose, this may be done by placing them as close as possible in the open air, in which case any number of cubic feet may be obtained, arranged perpendicularly over the patient. But this does not answer the purpose. On the contrary, the front ranks

in a march are always the least distressed, those behind the most. And persons have died by suffocation in the open air, in a crowd.

Space between the patients, both between their heads and at the feet, is the essential; and, above 16 feet, the height does not much matter.

In the corridors of the Barrack Hospital, Scutari, scarcely three feet was allowed between foot and foot. Two persons could hardly pass abreast; and, transversely, between the bed-sides, although two feet is the meagre space allowed by regulation, this was not adhered to, and there was scarcely room for one person to pass.

By the Report of the Cumming Maxwell Commission, two of whom were Army Surgeons, it appears that, from Inkermann to December 19, nearly twice the legitimate number of patients was inserted, even in the narrow space allowed, viz., 2,000 instead of 1,220 patients.

On December 17, repairs were finished, just in time to open a whole wing to an in-rush of patients, which began that very day, and reached in seventeen days, altogether, the number of 4,000. Yet, notwithstanding this fortunate occurrence, the over-crowding from December 19 to January 27, was 2,200, in the space allotted to 1,600, in the Barrack Hospital.

Cumming Maxwell Commission.

"A similar comparison will lead to a more unfavourable conclusion in the case of the Barrack Hospital. From the battle of the Alma to that of Inkermann, it afforded room for only 951 patients; but the average number in the building during that time was 1,276. From the last-mentioned date until the 19th of December there was room for only 1,220, while the average number in Hospital during the same period exceeded 2,000. From the 19th of December to the 27th day of January, the accommodation was sufficient for 1,643 patients, but the actual average number, according to the weekly state, was 2,228. The addition of the eastern half of C. corridor made the total accom-

modation fit for only 1,704; but we regret to state that the Hospital has continued down to within the last few days overcrowded by about 400 patients."

February 23, 1855.

"Upon comparing the maximum number which the General Hospital can in our opinion accommodate, viz., 968 patients, with the numbers appearing in the weekly states of that Hospital, and which will be found below, we think that it was not over-crowded until the last week in December, and that, with the exception of one week in January, it has been over-crowded since that date."

NUMBER OF PATIENTS in the several HOSPITALS at SCUTARI at the end of the Weeks ending on the hereunder-mentioned Days.

Date.		General Hospital.	Barrack Hospital.	Haidar Pasha.	Stables.	Kulali.	Total Number of Sick, not including Hospital Staff.
1854.							
October	7	754	1,198	..	..	..	1,952
	14	694	1,174	..	..	..	1,868
	21	658	1,267	..	..	..	1,925
	28	620	1,242	..	..	..	1,862
November	4	860	1,509	..	..	..	2,369
	11	754	2,062	..	..	..	2,816
	18	907	1,958	..	..	..	2,865
	25	856	2,183	..	..	..	3,039
December	2	829	2,202	..	..	110	3,141
	9	748	2,176	..	..	179	3,101
	16	710	1,900	..	..	240	2,750
	23	957	2,434	..	..	289	3,721
	30	1,034	2,401	..	..	234	3,669
1855.							
January	6	1,008	2,287	286	..	254	4,341
	13	873	2,249	307	60	508	3,999
	20	1,006	2,179	304	60	508	3,545
	27	1,007	2,221	359	63	455	4,014

	Date.	[illegible] Hospital.	[illegible] Hospital.	[illegible] Hospital.	[illegible] Hospital.	[illegible]	Total Number of Sick.
Average Daily No.	February	969	2,043	488	707	908	5,115
"	Up to March 15	829	1,650	434	312	878	4,102

When we re-consider that the space allotted by the Regulations of the Service is only two feet between the beds, that the filling both wards and corridors with patients is, under the most favourable circumstances, like building* two Hospitals "back to back," and that it is without disputing such regulations and admitting such circumstances that the Hospital Commissioners are still compelled to declare the space actually given to have been not even in accordance with such regulations, but far below them—we think we may reiterate the term "frightful over-crowding" with, alas! no hope of contradiction.

Cumming Maxwell Report.

"We have allowed in the wards five feet per man, according to the Hospital regulations of the service, except where the height of the rooms does not give, with that superficial measurement, the cubic space of 800 feet per man. In that case we have determined the number which can be accommodated by allowing that amount of cubic space to each person.

"The corridors of the Barrack and General Hospitals are at present occupied by sick and wounded. Those of the Barrack contain two rows of beds, and those of the General Hospital have a single row. We think it much to be regretted that they should be so occupied, for such occupation is not only injurious to the ventilation of the wards, but deprives the patients of the place in which they can most conveniently take exercise during

Sanitary Report.

* "The wards and corridors being both occupied by sick, they could, in fact, be considered only as two Hospitals built back to back, with the foul air in each intermingling by the doors."

their recovery. Making all due allowance, however, for the great demand for hospital accommodation which has existed here during this winter, and for future contingencies, we think that not more than a single row of beds should, under any circumstances, be placed in the corridors; and our calculation proceeds on the supposition that each man in that single row has five feet in width allowed to him."

Hoping that never again may be seen "allowed in the service five feet in width to each man," or about two feet between the beds, and especially not in war time, especially not in war epidemics, when it would be far better for the men, were they treated in the open fields than in 'such Hospital space, we take leave of this part of the subject.

2. Bad Ventilation

2. With regard to the ventilation, scarcely anything had been done, up to the arrival of the Sanitary Commissioners, March 6, 1855, to improve its state in the Barrack Hospital, not even as much as breaking a pane of glass in the privies.

What they did shows its defects; and what the atmosphere was at night in that Hospital, especially in Corridor and Wards D, it is impossible to describe, or to remember, without wondering that every patient in them was not swept off by fever or cholera.

Report of Sanitary Commission.

Sanitary Commission Report.

"On entering the Hospital, the first thing that attracted our attention was the defective state of the ventilation.

"Excepting a few small openings here and there, there were no means of renewing the atmosphere within the Hospital. The large cubic space above the top of the ward windows always retained a considerable amount of hot and foul air for which there was no escape. There was not even an open fire-place connected with the building, and the wards were heated by stoves, the pipes of which passed through a small hole at the top of one of the windows.

"There was no communication between the wards and corridors in the majority of instances, except by the doors, and hence that free circulation and perflation of the atmosphere, so necessary in military hospitals was impossible."

"The upper parts of the windows in the privies and in the galleries connecting them with the corridors were at once removed, so as to allow the emanations to escape into the external atmosphere."

"The rooms are large and lofty, and have generally three windows, much too small for their cubic contents, and the heads of these windows do not reach to within five or six feet of the ceiling. The window space in the corridors is considerable, and the heads of the windows come up much closer to the ceiling. The different flats of the building communicate by large roomy stone staircases.

"To remedy the defective ventilation, the Commission recommended that the upper portion of the windows should in all cases be opened, and the current of air modified by the insertion of perforated zinc plates, louvre boarding, or otherwise, that adequate space for the escape of foul air should be provided as near as possible to the ceiling of each ward, and that the staircases should be used for ventilating shafts by openings being made through their ceilings to the roof."

The ventilation in the General Hospital was much less objectionable.

"Both wards and corridors were used for the sick, but the disposable means of ventilation were such that the Hospital could hardly be said to be over-crowded."

Vix., March 6, 1855.

"Permanent and independent ventilating arrangements, by perforated zinc panes in the windows and ventilating openings at the ceilings, were directed to be introduced for the wards, the same as those for the Barrack Hospital.

"The upper window sashes in the privies and galleries were directed to be removed, so as to prevent, as far as practicable, effluvia from entering the corridors.

"The General Hospital, like the Barrack Hospital, is divided longitudinally all round into wards and corridors; the wards

facing outwards, and the corridors facing towards the court-yard. But it differs from the Barrack Hospital in one important particular—namely, that the wards and corridors communicate not only by the doors but by numerous large lofty windows in the division wall, so that by proper management of the windows, by the introduction of perforated zinc panes, and by suitable ventilating openings at the ceiling of each ward, a thorough ventilation could be at all times secured."

3. Bad Drainage.

3. With regard to want of drainage, so much has been said, that a few extracts from the diary of the Sanitary Commission are all that is necessary.

"We found the whole of the Turkish sewerage belonging to the Barrack Hospital in a defective condition. The sewers and drains were badly formed, badly constructed, badly laid, and untrapped.

"It may be here stated generally, that all the buildings used as Hospitals were sewered. Turkish sewers are made of rubble-stone, or coarse brickwork. The bottoms are flat, rough, and uneven; there are no means of external ventilation, no means for cleaning or flushing, and the ends or mouths of the sewers at Scutari opened above the level of the sea, and were exposed to the action of the winds, which, in certain directions, blew into the sewer-end, and carried the foul emanations from the deposits within them through the pipe drains to the privies, and thence into the corridors and wards where the sick were placed. It was stated to us that a change of wind had been observed to be attended by an accession of fever cases from among the sick, and that existing fever cases put on a more aggravated form. We found that the winds to which these results were attributed blew in the direction of the open mouths of the sewers. These sewers were, in fact, cesspools of the most dangerous description, through which, and through the privies, the wind forced sewer gases directly into the wards of the Hospital.

"The exhalations escaping through the defective walls and covers of sewers, where they happened to pass close to or underneath occupied rooms, could in some instances be distinctly observed within the rooms, and there is reason to believe that

fatal cases both of fever and cholera arose from this circumstance among the inmates."

"In order to diminish, as far as practicable, the injurious emanations proceeding from the sewers and privies, it was directed that the outfall sewers of the Hospital should be extended, and a canvas cover placed over their mouths to prevent the wind driving the effluvia into the Hospital; that three openings for ventilation should be made in each main sewer, between the Hospital and the outfall, with a water-trap at each ventilator, and a man-hole for cleansing: water-tanks for flushing the sewers were also directed to be placed immediately outside the walls of the building. These tanks consisted of hogsheads, each having a large wooden valve, covering a pipe communicating with the head of each sewer. The inspector was directed to see that these flushing tanks were filled with water three times a day, and the valves opened by himself.

"All the privies, sewers, and drains, were directed to be thoroughly cleansed, and their contents deodorized and removed. It was further directed that peat charcoal should be freely used as a deodorizer for these purposes."

"The privies of this large building (the General Hospital) are situated in four square towers, built on the outside of the Hospital, instead of being within the square, as in the Barrack Hospital. One of the towers is situated at each angle of the main building, and communicates with the interior by means of a gallery opening into each corridor. The windows of these galleries were all closed at the time of our examination, and as the structure of the privies and the arrangement of the drainage were essentially the same as in the Barrack Hospital, the effluvia entered the corridors, and could be easily detected within them at some distance from the doors.

"This constituted the main sanitary defect of the General Hospital, but it was a very dangerous one, and neutralized, to a great extent, the advantages possessed by the building."

"On several occasions, both in the Barrack and other Hospitals, we saw the excreta of patients in utensils under the beds, instead of having been at once removed."

"The effluvia from the privies had free access to the corridors, and added materially to the impurity of the air."

"The first step taken by the Commissioners was to examine carefully the outskirts of the Barrack Hospital, to ascertain whether there were any external causes likely to affect the purity of the surrounding atmosphere.

"The site of the Hospital, as already stated, is open and airy, overlooking the sea on two sides, and on a third side facing the open country; on the fourth side it is contiguous to one extremity of Scutari, which, like all Turkish towns, we found to be in a bad sanitary condition. The paving was rough and badly laid, and the channelling very defective. The surface in many places was filthy, and had putrefying mud lying in hollows, and there were nuisances among the houses. The ravine to the south-east of the Hospital, contained offensive deposit, which tainted the air on that side of the building. There was some refuse, and several dead dogs lying close to the Hospital walls.

"The surface of the inner square was uneven, badly formed, imperfectly drained, and very dirty.

"Four detached buildings within the court-yard, one at each angle of the square, and communicating with the corridors, contain the privies. These buildings open into each line of corridors by two large doors, one on either side of the angle. By this arrangement each corridor in the circuit of the building communicates with the privies by eight doors. The privies consist merely of a marble slab with an opening communicating with a vertical pipe of red tile carried down into a drain at the basement of the building. The privies, and the galleries between them and the corridors, are lighted by a number of glazed windows, which we found were all closed, so that there was a direct communication between the sewers, which were loaded with filth, and the corridors and wards of the Hospital."[19]

"The Turks, as it is known to those who have travelled in the East, are remarkably decorous in their habits, and the necessaries on the side of these long Corridors were separated from the Corridor by an ante-room; the door leading into the ante-room was not opposite to that which led to the necessaries, so that it was impossible, even if the door had been opened, for anyone to obtain a view of those places. The Turks never use any paper, and therefore the soil-pipes were very small; but there were, as it is a part of their religion to

House of Commons Committee Evidence.

perform ablutions after using these necessaries, small taps on the left-hand side. When the army was at the Barracks in the summer, these taps were by the soldiers broken off, and in consequence the supply of water was stopped. When the Barrack was re-opened as an Hospital, no sufficient pains were taken to repair those pipes, or secure a flow of water; and the pipes soon choked up; and the liquid fæces, the evacuations from those afflicted with diarrhœa, filled up the pipes, floated up over the floor, and came into the room in which the necessaries were, extended and flowed into the ante-room, and were more than an inch deep when I got there in the morning; men suffering from diarrhœa, who had no slippers at the time and no shoes on, as this flood of filth advanced, came less and less near to the necessary, and nearer and nearer to the door, till at last I found them within a yard of the ante-room performing the necessary functions of nature; and in consequence the smell from this place was such that I can use no epithet to describe its horror."

The hideous state of the privies too truly described in this last extract, which refers to the Barrack Hospital, continued there, more or less, up to March, 1855, in which month it was still occasionally at once our crime and our punishment.

A farther misery, and the cause of much disease, was, in the autumn of 1854, the placing of tubs in those wards farthest from the privies (in the absence of utensils), to hold the excreta of from thirty to fifty patients, afflicted with diarrhœa and dysentery; it is easy to imagine the consequence of this frightful nuisance, and it often became Miss Nightingale's duty to see these tubs removed and emptied by a couple of orderlies, who carried one on a pole between them.

These tubs were, however, discontinued at a late period of the winter of 1854-55.

Sanitary Report.

"We directed the immediate removal of the excreta of the sick out of the Hospital."

This was, however, not done, not even to the last.

And, again, we wish to allude to the fact, that in no Hospital is there less discipline than in a military one. It is unquestionable that there can be no safety for the sick, especially for cases of typhus and bowel disease, if their excreta are allowed to stand for twenty-four, nay, even twelve hours in the wards, excepting in the most perfectly constructed close stools,—perhaps not even then; they ought to be carried immediately and instantly away and emptied.

Yet it was found impossible, from first to last, to induce the orderlies to do this more than once, as a practice, in twenty-four hours; should they have accomplished it twice, they thought they had done wonders.

I have seen a zealous Orderly Medical Officer when going his rounds, open every close-stool (when we had close-stools) and, finding every one full, call up the orderly, and make him empty them.

I have heard the rule made over and over again, always to empty them immediately; but if Medical Officers, Sanitary Commissioners, Hospital Officers, think that it was done, *i. e.* with any regularity or as a rule, they are mistaken.

And is it fair to ask Medical Officers, to see to these details of drudgery? My own belief, founded on much experience, is, that it can only be effectually done by a woman; it is done in the Civil Hospitals by her; it has been done in Military ones by her.

And here, homely and sickening as is the subject, I must pay my tribute to the instinctive delicacy, the ready attention of orderlies and patients during all that dreadful period; for my sake, they performed offices of this kind (which they neither would for the sake of discipline, nor for that of the importance to their own health, which they

did not know), and never one word nor one look which a gentleman would not have used; and, while paying this humble tribute to humble courtesy, the tears come into my eyes as I think how, amidst scenes of horrible filth, of loathsome disease and death, there rose above it all the innate dignity, gentleness, and chivalry of the men (for never, surely, was chivalry so strikingly exemplified) shining in the midst of what must be considered as the lowest sinks of human misery, and preventing instinctively the use of one expression which could distress a gentlewoman.

I return to the point, viz, that if it is thought that discipline in such matters as these is best enforced by Medical Officers and Ward Masters, it is a mistake. The Medical Officers should be strictly professional; the Ward Masters should enforce every rule except what pertains to the bedside of the patient; this last can only be done by women, not with their own hands, but by directing and training orderlies; it is an humble prerogative which no one will grudge them.

And now I take leave of this disgusting subject, only adding that, if it sickens us to read it, it was far more sickening to see it and go through with it, involving, as it did, disease and death to an unknown number of brave men.

Sanitary Report.

"Connected with this question of over-crowding, we may state, that we found a considerable portion of the Barrack Hospital in use as a Depôt. We considered that the presence of so many soldiers and other persons not necessary for the treatment of the sick, was a source of danger, from occupying cubic space within the building, and increasing the impurity of the air, from the defective privy drainage, of the truth of which opinion we had subsequently two striking confirmations.

"All the Hospitals had a water supply. That for the Barrack Hospital was found to be hardly sufficient in amount for so

large a number of sick. The water was not so pure as could have been desired, and it was received into tanks within the barrack square.

"Speaking generally, we were of opinion that the walls of the Wards and Corridors were not so clean as they might have been.

"There were false floors in the Wards, which had been used as sleeping berths for the Turkish soldiers, and which had the bedsteads of the sick placed on them. There were also box seats along the walls of the Wards, for the use of the soldiers. We were of opinion that there ought to have been no such inclosed spaces capable of collecting dirt and foul air within the walls, and that it would have been advisable to have removed the whole of this useless woodwork before the sick were put into the Wards, had there been time and means for doing so.

"We directed the frequent use of quicklime-wash for the purpose of cleansing the walls and improving the atmosphere in the Wards and Corridors. This we considered one of the most important sanitary precautions which could be adopted. Experience has shown that all porous substances, such as the plaster of walls and ceilings, and even woodwork, absorb the emanations proceeding from the bodies and breath of the sick. After a time, the plaster becomes saturated with organic matter, and is a fresh source of impurity to the air of the Ward. It hence follows that unless the walls and ceilings of Hospitals be constructed of absolutely non-absorbent materials, it is necessary, at short intervals, to use some application capable of neutralizing or destroying the absorbed organic matter. Of all known materials, quicklime wash is the best and cheapest for this purpose. Its effect in freshening the air in crowded wards and rooms is immediate, and it is one of the most efficacious agents for mitigating the virulence of epidemic disease.

"The following is a summary of the work done during the period of Mr. Wilson's inspectorship:—

Hand-carts or large basketsful of filth removed	5,114
Sewers and latrines flushed (times)	466
Carcases of animals buried	35

Weekly Abstract of Mr. Wilson's Diaries.

Week ending March 24.

"Thirteen men, on an average, employed in cleansing the surface of the ground in the vicinity of the Barrack Hospital and at Kulali, in removing the refuse, burying animals, &c. During the week there were collected and removed from the vicinity of the Barrack Hospital 202 hand-carts or baskets full of filth, rubbish, and offensive matter. Two tons of filth were removed at Kulali. The carcases of 15 dogs and 2 horses were buried, and the sewers of the Barrack Hospital were flushed three times.

Week ending March 31.

"The cleansing operations were extended to the General Hospital and Palace Hospital this week. The number of men employed was 20 on the average. The ground about both Hospitals, and that portion of the village nearest the Barrack Hospital was swept clean. A large sewer within the barrack square was opened, by order of the Commissioners, and 42 hand-carts of filth removed from it. The sewers connected with the privies were opened and cleansed, and 20 hand-carts of filth removed from them. A sewer at the General Hospital was also opened and cleansed, and 14 hand-carts of filth were removed from it. Water was carried to the flushing tanks, and the sewers at the Barrack Hospital were flushed nineteen times in the course of the week. The total filth and refuse removed from the vicinity of Barrack, General, and Palace Hospitals during this week, was 354 hand-carts or baskets full, and the carcases of 7 dead animals were buried. Peat charcoal was used in the cleansing operations.

Week ending April 7.

"The ground about the Barrack, General, and Palace Hospitals was swept as usual, also part of the village of Scutari; an offensive sewer at the Barrack Hospital was cleansed. The average number of men employed during the week was 25. There were 207 hand-carts or baskets full of filth removed. Water was carried to the flushing tanks, and the sewers and privies at the Barrack Hospital were

flushed twenty-one times. The Hospital at Kulali was inspected. Peat charcoal was used for deodorizing the privies. The ground round the Hospital was cleansed and the privies flushed.

Week ending April 14.

"The average number of men employed this week was 20. The ground about the Hospitals was swept as usual, and 215 hand-carts or baskets full of filth were removed. Water was carried to the flushing tanks, and the sewers at the Barrack Hospital were flushed nineteen times during the week. The carcases of 2 horses, a cow, and 4 dogs were buried.

Week ending April 21.

"Several large foul sewers were opened at the Barrack Hospital by order of the Commissioners; peat charcoal was applied to deodorize their contents, and above 100 hand-carts of filth were removed from them. The ground around all the Hospitals was cleansed. The filth and refuse collected and removed during the week, amounted to 417 hand-carts or baskets full. Water was carried to the flushing tanks, and the sewers and privies at the Barrack Hospital were flushed out twenty-four times. Peat charcoal was applied to the privies every day. A dead horse was buried. The average number of men employed during the week was 26.

"Similar cleansing works were carried out during the two succeeding weeks."

4. Want of Cleanliness. Deficiency in Washing.

4. We come now to the fourth cause of our disaster at Scutari—want of cleanliness.

(1) The Washing:

Dr. Smith's evidence upon the subject is as follows, in answer to the question—

A. Smith, Esq., M.D. 26 March, 1855.

8851. "Then the state of things which has been described, the absence of washing and so on, occurred while Mr. Wreford was there?—I must say that there was not an absence of washing. Not long ago I called upon him to show me what washing had been done, and he sent me home a return, show-

ing the washing that had been done for three months by contract, and the number of articles washed was very large; but I must say it was not what I considered sufficient for so large a hospital.

8854. "Did you observe whether that return included the early part of November?—I will ask permission to put the return in as evidence. I feel convinced that it did apply to that time; but it was done by contract, not in the hospitals.

. . . I was perfectly aware that females can see many things, in which there might be a deficiency of cleanliness and comfort, that men do not see, and even that men have no time to see; because the medical officers were overwhelmed with work—there might be a spot upon a sheet that a medical officer would not notice, and a woman would at once.

9504. "You thought that the hospitals were in that great state of cleanliness, that it would require the delicacy of a woman to find out the least dirt in the hospital?—I do not say that.

9505. "You spoke of a spot on a sheet?—I put that as an example. I spoke figuratively, and that a female would notice that when a man would not.

9506. You thought that there was no dirt or filth in the hospitals that would be readily noticed by men, and that there would on that account be an advantage in women going out?—I had no reason, from any communications that I had received, to believe that there was that state of filth in the hospital that it would be readily noticed."

In order now to form an idea of what Dr. Smith considers as a "very large number of articles washed," it is, of course, necessary to compare them with the number of men washed for. A Return is annexed.

"Returns showing the total number of sick and wounded treated in the hospital at Scutari:

Months.	Total treated.
During November, 1854	16,846
,, December, 1854	19,479
,, January, 1855	23,076

A. Smith, M.D. D.-General.

"13, St. James's-place, 20th March, 1855."

The number of sick treated, although manifestly incorrect, is taken from Dr. Smith's return, Sevastopol Committee, 2nd Report, p. 705, where it accompanies the number of articles washed, in the same return, apparently for the purpose of comparison, and the result is as follows, viz., that, in the month of January, when 23,000 men were treated in hospital at Scutari,

11,600 shirts,
10,600 sheets,
9,200 blankets,

were considered to be a "very large number of articles washed" for them, or 1 shirt to each 2 men, and less than 1 sheet and 1 blanket to each 2 men.

The total number of pieces washed is 31,000, or rather less than 2½ articles per man.

Yet this is the month in which the washing *reaches* the maximum of the three months under consideration.

At the same time, it is necessary to mention that the monthly "numbers of sick" returned as "treated in the Hospitals at Scutari," are the same as the monthly numbers in the return representing *not* the "sick treated in the Hospitals at Scutari," but the "total sick of Lord Raglan's Army."

Let us now take the evidence of the Cumming-Maxwell Report:—

Cumming Maxwell Report.

"Immediately connected with the subject of hospital furniture and clothing is the provision which has been made for the washing, both of bedding and personal clothing. This, we are of opinion, has not been satisfactory. At the General Hospital, indeed, eight or ten Armenians are employed for this purpose, and we have heard no complaints from the men there, except that they frequently get the shirt of another instead of their own from the wash; and this we may observe involves a greater evil than the mere loss of property. The

washing is effected without boiling, and without this process it is impossible to get rid of animal matter. Under such circumstances the exchange complained of is peculiarly objectionable. The washing of the bed linen is very badly done there, the sheets which return from the wash being frequently found in a more filthy condition than those which they are intended to replace.

"From the following table, which has been furnished to us by the purveyor, it will be seen that 7,824 shirts were washed at that hospital during the month of January, which gives to every man about two shirts per week. The number washed at the Barrack Hospital during the same period was only 3,887; and as the average number of patients in that building exceeded in January 2,200, all the men did not even get one shirt in a fortnight from the public washing establishment."

PALAIS-COMPIÈGNE

Return of Articles of Bedding, &c., belonging to the General and Barrack Hospitals, washed by the Contractors, &c., during the Month of January.

Scutari, February 8, 1855.

	General Hospital.	Barrack Hospital.	Total.
Palliasses	1,324	1,417	2,741
Bolsters	215	1,043	1,258
Blankets	3,254	5,954	9,208
Rugs	266	1,371	1,637
Sheets	4,344	6,797	10,641
Turkish Beds	..	11	11
Turkish Pillows	..	2	2
Turkish Coverlets	..	26	26
Turkish Sheets	172	23	195
Great Coats	..	367	367
Gowns, H. P.	..	329	644
Waistcoats, H. P.	..	189	440
Trowsers, H. P.	397	322	719
Shirts	7,824	3,837	11,661
Drawers	..	193	193
Cantoos	..	685	685
Bandages	..	811	811
Hair Beds	..	86	86
Hair Pillows	..	28	28
Flock Beds	..	40	40
Flock Pillows	..	44	44
Haversacks	..	133	133
Towels	1,447	85	1,532
Regimental Trowsers	..	182	182
Pairs of Stockings	7,824	..	7,824
Pairs of Socks	..	261	261
Nightcaps	..	97	97
Fine Shirts	..	4	4
Turkish Gowns	..	2	2
Pads	..	7	7
Ship Mattresses	..	7	7
Turkish Curtains	..	2	2
Handkerchiefs	..	2	2
Total Pieces	28,053	23,402	51,455

(Signed) Selkirk Stuart,
Purveyor to the Forces.

It is thus to be deduced from the above, that the deficiency of washing in the Barrack Hospital was much more alarming than at first appears. Because the articles washed for the Barrack Hospital were 23,400, for the General Hospital, 28,000, whereas the average of Patients in the General Hospital was under 1,000, in the Barrack Hospital over 2,200.

Dr. Smith's Evidence.

9512. "Did they state whether the linen was washed or not, or whether it was in good order?—The purveyor himself reported to me that the linen was washed. I have a letter here now to that effect.

9513. "What letter is that?—I have a letter dated the 12th of February; this refers back to November and December; it was written in consequence of my having written out on the subject:—'Sir,—I have the honour to transmit for your information the inclosed return of washing done by the contractors, &c., for this hospital during November and December, 1854, and January, 1855. I may here be allowed to state, that in no instance have I known application made at the clean linen store for a fresh supply, or for an exchange of bedding, in which the same was not instantly complied with.' That is from Mr. Selkirk Stuart, purveyor to the forces.

9514. "CHAIRMAN: Is that dated Scutari?—Yes; 12th February, last month, and it refers back to November, December, and January. I may say, that Mr. Stuart was the purveyor in charge of the Barrack Hospital; then here is another letter to me from Mr. Wreford, dated the 12th of February:—'Sir,—I have the honour to acknowledge the receipt of your letter of the 26th ultimo, inclosing a list of washing machines, &c., and to acquaint you that the "Eagle" arrived on the 9th instant, and the stores she brought out are in course of landing; the inclosed letter and return are the best reply I can give to your postscript; and to add, that I know nothing officially of the subsidiary washing establishment to which you allude, the necessity for which has never been made apparent to me." Then this is a return (producing the same, v. p. 103) of the washing done by contract (for there may have been other means of getting it done besides*), during the months of November, December, and January; there were during the month of November 4,832 pieces washed; during the month of December, 14,044 pieces washed; during the month of January there were 23,401 pieces washed. I will hand this return in. (The same was handed in.)"

* A glance at this Return, p. 103, will shew that it comprises all the washing done by Purveyor, whether "by contract" or otherwise.

Patterns delivered by A. Smith, Esq., M.D., 26th March, 1855.

Items of Washing Performed by the Contractors, &c., for Barrack Hospitals, Scutari, from 1st November, 1854, to 31st January, 1855.

	1854 Nov.	December, 1854.			January, 1855.			
	By whom Washed.							
	Soldiers' Wives.	Do. Children.	Do. Total.	Soldiers' Wives.	Do. Children.	Do. Total.	Soldiers' Wives.	Totals.
Pillowcases	394	161	490	..	712	705	..	2,462
Bolsters	209	129	359	..	564	504	..	1,754
Blankets	2,488	962	2,920	..	2,551	3,153	..	12,324
Rugs	251	81	497	..	694	677	..	2,200
Sheets	716	521	2,458	..	3,116	2,681	..	9,502
Turkish Beds	36	27	45	..	7	4	..	117
Turkish Pillows	2	30	..	..	..	2	..	14
Turkish Coverlets	32	1	52	..	1	25	..	111
Turkish Sheets	8	..	160	..	..	27	..	193
Turkish Gowns	..	..	..	..	1	1	..	2
Turkish Curtains	..	..	..	..	2	..	..	2
Great Coats	129	155	62	..	223	144	..	674
Gowns, IP.	6	11	138	..	120	209	..	484
Trousers, IP.	24	19	137	..	128	104	..	482
Waistcoats, IP.	2	1	91	..	79	110	..	283
Shirts	6	330	396	2,446	1,758	1,458	621	6,997
Drawers	..	8	23	41	82	111	2	267
Caftans	42	..	44	..	540	145	..	771
Bandages	13	..	110	74	12	764	35	1,217
Hair Beds	247	53	75	..	43	43	..	431
Hair Pillows	163	26	57	..	9	19	..	274
Flock Beds	48	5	55	..	23	17	..	139
Flock Pillows	4	..	29	..	17	27	..	77
Hammocks	17	..	9	1	2	119	..	148
Towels	..	..	3	44	18	63	4	132
Pairs of Socks	..	..	18	89	105	139	17	378
Night Caps	..	..	22	14	21	76	..	133
Pads	9	..	29	..	..	7	..	45
Ships' Mattresses	..	..	1	..	7	..	..	8
Handkerchiefs	..	..	..	..	2	..	..	2
Regimental Trousers	..	..	8	..	112	70	..	190
Russian Coats	..	..	4	..	..	..	..	4
Total Pieces	4,852	2,581	5,964	2,719	11,239	11,434	679	42,278
		14,044			23,402			

(Signed) Sellers Stuart, *Purveyor to the Forces.*

10th February, 1855.

Cumming Maxwell Report.

"The washing at the Barrack is done by contract, and not only is the quantity washed in general insufficient, but the washing is very inadequately performed; Miss Nightingale states, in her evidence in February, that she had seen 'blankets come back from the wash torn and covered with stains.' She added, that she had herself 'sorted these blankets when taking in sick, and been compelled to throw away the so-called clean blankets till they could be carried away and destroyed.' Mr. Stuart gave us a similar description of the washing at an earlier period. We must add, that we heard of some shirts having been brought into the wards on one occasion as clean, which were found on examination with lice upon them; and Dr. Calder states in his evidence the same thing with respect to blankets.

"With the view of meeting to some extent the want of proper washing, Miss Nightingale established a wash-house on the 30th November, which was provided with boilers, partly from the engineer office, partly from her own resources. The average number of articles washed weekly at that establishment during the month of January was 500 shirts and 150 other articles; but these figures, like the other returns which we obtained from the same quarter, do not indicate the whole extent of the evil sought to be remedied. We are glad to state, however, that washing, wringing, and drying machines have arrived from England, for the purpose of doing all the washing of these establishments."

Yet, after all this reporting, the Chief Commissioner being himself Inspector-General at Scutari, the establishment here promised, with its machines, did not come into operation till May 1, 1855.

Dr. Calder's Evidence.

". . . . . In the first instance—indeed, till a comparatively recent date, I had no sheets; even blankets were scarce. I had frequently difficulty in procuring them, the men often requiring a change—such as were bleeding, or with profuse discharge. When I asked for blankets, I was told none were to be had, in consequence of difficulty of getting them washed. Rugs were in want also, but not to the same extent. If we

had blankets we did not care so much for rugs. In more than one instance I had to send them back because they were filled with lice. These were isolated cases, and by no means general. Things were generally clean.

"For a few days I had considerable difficulty in getting hospital utensils, especially bed-pans. This was especially felt in the case of men with stumps or fractures."

Commissioner Maxwell's Evidence.

"13104. In going through the Hospital, did you notice the condition of the linen of the patients?—Yes.

"13105. What state was it in?—When I first arrived there, I found the men constantly without linen at all. I found them constantly without sheets, and I found them constantly with shirts of the very filthiest description; and I thought it so important a matter to look into, that one of the very first points to which we addressed ourselves was to ascertain what had been done for the washing of the hospital.

"13106. What did you find had been done in that respect?—We found that in the General Hospital the washing was done by a party of Armenians, eight or ten in number. There was a wash-house there, supplied with troughs, and the washing, as far as quantity was concerned, I never heard a complaint of. The men got their two shirts a week, but I frequently heard them complain that they did not get their own shirts. There was great confusion, and a man who sent his shirt to the wash was never sure of getting it sent back; naturally, therefore, those who had shirts were very often extremely reluctant to part with them. I have been told of repeated instances (though I never found it myself), of four or five shirts having been found under the pillow of a patient, because he was afraid that if they went to the wash, they never would come back, or that he would get others. In respect to the Barrack Hospital, I found that the purveyor, shortly after that establishment was set on foot, had entered into a contract with an Italian, or Levantine, of the name of Ottone; in that respect, I think, following the regulations that have been referred to: but that contract was broken repeatedly.

"13107. How was it broken?—The man did not wash the things, so the purveyor assured me. When I first examined

the purveyor, he told me that he was then about to enter into a contract with another contractor; and when I left, the washing of the Barrack Hospital, so far as it is done (I do not say that it is well done, very far from it), is done by those two contractors, Ottone, and a gentleman of the name of Parry.

"13109. What was about the average number (viz., of Patients in Hospital)?—In the Barrack Hospital, in the week ending the 4th of November, there were 1,560 patients; in the week ending the 11th, there were 2,062. On November the 18th, there were 1,958; and on the 25th of November, there were 2,183. I think that shows the average sufficiently.

"13112. Speaking generally, what should you say was the condition of the men with regard to their linen in the two Hospitals?—Generally speaking, I should say that they were in a very unsatisfactory condition.

"13113. Including linen sheets as well as their shirts?—Yes. The washing has been very badly done throughout, simply for this reason, that they do not understand boiling clothes out there, and in order to get rid of animal matter, it is indispensable, so I am assured, that the clothes should be boiled. In the next place, the men came down sometimes with vermin, and the vermin could not be got rid of unless the clothes were boiled. There have been cases in which shirts have been brought back from the wash with vermin; one was mentioned to me in conversation, of about a dozen shirts, I think, that were brought back into the wards of the Hospital with vermin upon them, although they professed to be clean."

Mr. Stafford's Evidence.

"7590. In what state were the clothes of these men?—The clothes of those men were swarming with lice, as thick as the letters on a page of print; and when I have been undressing the men, to put them to bed, when they had not strength to undress themselves, they have asked me not to come near them, knowing the state in which they were. My own clothes were never free when I was in the Hospital."

Abstract of Weekly States of Sick and Wounded from October 1 to January 31.

Date.	Officers.					Men.				
	Remained.	Admitted.	Discharged.	Died.	Remained.	Remained.	Admitted.	Discharged.	Died.	Remained.
1854										
1 to 7 October	70	3	..	1	72	2,277	61	403	67	1,868
8 to 14 "	72	23	9	2	84	1,868	207	295	48	1,732
15 to 21 "	84	12	20	..	76	1,834	356	151	29	2,010
22 to 28 "	76	8	47	..	37	2,040	350	370	56	1,964
29 Oct. to 4 Nov.	37	11	2	1	45	1,964	952	384	52	2,480
5 to 11 "	45	34	10	..	69	2,480	850	469	36	2,825
12 to 18 "	69	49	4	3	111	2,825	1,045	557	94	3,219
19 to 25 "	111	9	..	..	102	3,219	438	144	67	3,446
26 to 2 Dec. "	102	10	5	..	107	3,446	436	315	70	3,497
3 to 9 "	107	..	12	..	95	3,497	263	388	70	3,302
10 to 16 "	95	..	8	1	86	3,302	230	521	85	2,925
17 to 23 "	86	..	2	1	83	2,925	1,321	402	130	3,734
24 to 30 "	83	3	35	1	48	3,734	1,061	770	168	3,997
1855										
31 Dec. to 6 Jan.	48	16	6	1	53	3,997	1,044	397	249	4,425
7 Jan. to 13 "	53	18	12	..	60	4,425	727	444	277	4,431
14 to 20 "	60	16	8	1	67	4,431	667	346	270	4,482
21 to 27 "	67	29	30	1	65	4,482	1,243	394	274	4,467
28 to 31 "	65	29	16	..	78	4,467	619	127	165	4,794

R. W. Lawson, *Dy. I. Gen., P. M. O.*

Principal Medical Officer's Office, Scutari, *February* 1, 1855.

Upon all this evidence, it is to be observed that, whereas the great deficiency in washing chiefly relates to the Barrack Hospital, the total admissions are not given with regard to that Hospital separately. It is obvious, upon a moment's reflection, that the "average weekly number" of patients, although a fair way of judging in matters which refer to consumption, cubic feet of space, &c., does not give a fair statement with regard to washing; since a man does not eat or breathe in hospital after he is dead or discharged, but his dirty shirt or sheet, it is to be presumed, is not to be worn or used by his successor. And when the

state of the blankets and shirts, if any there were, of the men entering Scutari Hospitals from the Crimea, a remembered, too filthy for description, it is not to be supposed that the men were intended to be left in these.

"Two shirts per week" is a fair average per bed, if that bed be occupied by one inmate, but how, if it should be successively occupied by three or four in one week?

Yet the number of shirts washed for the Barrack Hospital in November, 1854, was 6 per month, for the whole of the Patients; of total pieces of all kinds, 4,858; the average number of patients being 2,000 after November 9.

Miss Nightingale never succeeded in washing more than 2,000 shirts per month in her small subsidiary washing establishment, a miserable number, even as a subsidiary, for so many. But it was intended to supplement the Barrack Hospital washing only, that of the General Hospital being, as has been stated, tolerably sufficient.

Filthy state of Floors, Walls, and Ceilings.

(2) Another evil, less apparent, but no less deadly, was the state of the floors, walls and ceilings of the Wards and Corridors. The former were, in many cases, so much out of repair, that it was impossible to keep them clean. The wooden divans raised round some of the Wards in the Barack Hospitals, on which the men were laid on their mattresses, were receptacles of filth underneath, and were a hiding place for rats, the smell of which was abominable. The walls were saturated with organic matter, from the long continuance of patients with Hospital gangrene, typhus fever, and every worst kind of Hospital disease within them; and lime-washing was very imperfectly practised till the spring of 1855, at first not at all. Bugs, lice, and fleas, were inexterminable. The men were allowed to bring in their blankets with them from the Crimea till February, 1855, which were unavoidably

covered with vermin, as there was no possibility of washing in the camp.

Yet Dr. Smith says in evidence:

"I have no proof, beyond Mr. Stafford's opinion, that disease was caused by any thing in the Hospitals."

And Mr. Wreford, Purveyor-General, writes to Dr. Smith, February 12, 1855:—

"The necessity for a subsidiary washing establishment has never been made apparent to me."

Had not the matter been too destructive of life, health, morality, and discipline, to be fit subject for a joke, one would be tempted to think that one authority at least had been in jest when he said that the use of the Female Nurses going out was to see "a spot upon a sheet." At that time, sheets were not, at least such as could be used.

Personal Cleanliness.

(3) With regard to the personal cleanliness of the men, it has been said elsewhere both how eager they were for it, and how impossible it was for them to attain it.

It may be added here, in confirmation, that the sum of the towels washed by the Purveyor during the three months of November, December, 1854, and January, 1855, for the Barrack Hospital, containing in those months 2,000-2,400 patients, was 132! and that no basins or soap were provided officially. Nor are either towels or basins to this day provided sufficiently in the British Military Hospitals, the men and Doctors being still expected to bring in their own, except one basin and one jack-towel to each ward. The stone-floored lavatories on the ground floor are still all that exists in our Military Hospitals.*

* In Barracks, till lately, the pump and the urine tube were all that soldiers had to wash in; some insufficient lavatories have been now, I believe, provided for the men in some Barracks.

One of the first purchases made by Miss Nightingale, on her arrival, was 200 Turkish towels at Constantinople. These were accidentally delivered at the Purveyor's Office at the General Hospital, and put into use by him among the patients there. She was of course too glad that this should be done among the patients anywhere, as the still greater want in the Barrack Hospital could be supplied in the same manner. She therefore never reclaimed them, and they were incorporated as Purveyor's stores.

But it might be as well to notice what, so late as February 1855, was the Return of Purveyor's Stores in use at the Barrack Hospital, a time when the patients averaged 2,043.

194 towels. No basins. 14 baths.

Return of Purveyor's Stores in use at the Barrack Hospital, Scutari.

Articles.	No. of each.	Remarks.
Palliasses	2,504	A certain number of article of bedding, dresses, towels, &c. at the wash, are not included in the numbers stated in this Return, although it may be said they are in use at this hospital, being required to keep the thing working, and supplying clean linen, &c.
Bolsters	3,338	
Blankets	4,956	
Sheets	4,410	
Rugs	4,300	
Boards	7,183	
Trestels	4,551	
Gowns	2,120	
Trowsers	1,953	
Waistcoats	1,540	
Towels	194	
Stockings	1,072	
Tin plates	1,110	
Knives and forks	674	
Spoons	233	
Chamber-pots	993	
Close stools	276	
Bed-pans	504	
Urinals	36	
Tubs	19	
Baths	14	

Barrack Hospital, Scutari,
February 12, 1855.

Sellier Stuart,
Purveyor to the Forces.

5. We have only one thing more to notice, as the fifth cause of the mortality at Scutari; and that is the want of Hospital comforts. 5. Want of Hospital Comforts.

This has been denied, will be denied again; a few official records are therefore annexed.

(1.) Bad cookery. The evidence annexed is that of Commissioner Maxwell:— Bad Cooking.

"With respect to the kitchen, I may state, that in the lowest floor of the Barrack Hospital there is a kitchen which is only used for a depôt; the Hospital has nothing to do with it. In the quadrangle there are two kitchens of considerable dimensions, one of which is used, and the other has never been fitted up, owing to some difficulty in getting coppers. P. B. Maxwell, Esq. 20 March, 1855.

"1302. CHAIRMAN.] Was there any difficulty in getting coppers in Constantinople?—I do not say there was any difficulty; I inquired why it was not so employed, and the answer from the engineer's department was that there was some difficulty in getting coppers.

"1303. MR. LAYARD.] Did you ever go into the bazaars at Constantinople?—Yes, often.

"1304. Did you never see any large coppers there?—I cannot say that I did; I may have seen them.

"1305. Do you not know that in every Turkish house there are large coppers?—They all cook in them. The other kitchen was fitted up as a Turkish kitchen, and was supplied with 13 copper boilers, containing about 50 gallons each.

"1306. Was that enough for the wants of that large Hospital?—For cooking the ordinary diets it was, but for cooking extras it was not enough. It was not at all adapted for cooking extras. To do that there were, I think, three or four supplementary kitchens attached to the Hospital; four supplementary kitchens have been constructed since we arrived there.

"1307. CHAIRMAN.] Had you any evidence while you were there of irregularity in cooking the food of the patients?—Yes, I noticed that myself.

"1308. What did the irregularity arise from?—I think it arose from a radically wrong system in the issuing and distribution of the food.

"13099. You thought that the system was wrong?—Utterly wrong, as it seemed to me.

"13100. In what respect?—In issuing the provisions for the different meals to the orderlies, and giving it to them to be carried out. The meat was taken, for example, raw to the kitchen by the orderlies, and there it was cooked; then the orderlies came back for it, and they had to carry it back to the wards and cut it up; all depended upon those orderlies. If the Committee will allow me, I will give a full account of it.

"13101. Did you observe that the food was not sufficiently dressed?—Sometimes it was done to rags, and sometimes it was insufficiently dressed.

"13102. Then do you attribute that to the system?"—Yes.

"13103. How?—I had better explain what the system is. The diets, ordinary and extra, are issued and distributed in the Barrack Hospital in the following manner, according to the evidence of Clifford, the steward; Hill, the cook; and Jennings, an orderly, whom we examined upon the subject. The Medical Officer prescribes daily in his morning visit the diet and articles of medical comfort which he thinks suitable for each patient for the following day. This diet-roll is, as we have already observed, submitted to the Surgeon of the division, who revises and returns it to the ward-master, in whose custody it remains until the following morning. At 6½ a. m. an orderly from each mess, which consists of about 25 men, attends at the purveyor's store with his diet-roll, and produces it to the steward, who delivers the quantity of bread required for breakfast, and at the same time makes a memorandum in his book of the number of full, half, low, spoon, and milk diets on the diet-roll.' That takes up a considerable time, and it is an inconvenient moment for the steward to make those returns when he is actually engaged in dealing out the bread. 'This is done because the book containing the diet-roll is not available after breakfast, being in use for marking the diets for the next day. As the number of orderlies thus engaged is necessarily considerable, an hour or an hour and a half is employed in this manner. The bread is delivered, not in portions, but in loaves. The tea is obtained by another, or sometimes the same, orderly from the kitchen. As soon as breakfast is concluded, that is, between 9 and 10 a.m.

the orderly returns to the store, and obtains from the steward the proper quantity of meat (which is weighed and delivered to him raw, and in bulk), bread and salt for dinner. This process engages the time of the steward till 12½ p. m., or even later. The orderly carries the meat to the kitchen, ties it up, puts a skewer through it, and marks it with a tally, for the purpose of distinguishing it from the numerous other messes to be boiled in the same copper. The men arrive at the kitchen for this purpose, in slow succession, from about 10½ to 1½ p. m.' How can any one expect regularity, or that the dinner can be properly cooked? 'While the ordinary diets are in process of cooking, the orderly goes to his ward, and as soon as the Medical Officer has finished his round, and no longer needs the book in which the diet-rolls are bound up, takes that document, and returns again to the steward, from whom he now obtains the due allowance of porter, which he forthwith distributes; he then returns once more, and obtains the other articles of extra diet, such as chickens, wine, lemons, eggs, arrowroot, sago, brandy, &c. By this time the dinner is cooked; and notwithstanding the tallies, and the best efforts of the cook to see that the messes are issued fairly, mistakes occur, and the diets of one ward are sometimes taken to another. According to the evidence of John Hill, the cook, the distribution of this meal, including soup, occupies an hour and a half. The orderly carries up the dinner on a round wooden tray, which he places on the floor, and then divides the meat into as many portions, assigning to each its due allowance of bone, as there are patients. To eat this meat the men are but imperfectly supplied with plates, knives, and forks; as soon as it is concluded the orderly goes for the extras which have been prescribed for the more weakly patients. They are now prepared by the cooks attached to the extra-diet kitchens; but before these were opened they used to be cooked by the orderlies themselves, sometimes in the kitchen coppers, but more commonly in their own tin canteens, and either in the house, or in some of the sheds in the barrack square, and not unfrequently in the stoves of the wards,' where I have found them constantly cooking. 'When the articles in question are cooked the orderly delivers to each patient all the extras prescribed for him for the day, without regard as to whether

the food is to be administered at one or several times; he then cooks his own dinner, and afterwards gets the ten of his mess'. This is the account which I have to give."

In speaking of the distribution of food, it is necessary to make one last remark on the want of discipline in Military Hospitals.

At Scutari, the food came up in messes to each ward, there to be divided either by the Orderly, or more often by the patients themselves. The practice was various. Sometimes the Orderly divided it upon his own bed, and the patients all ate it on theirs. The table in the ward, when one had begun to exist there, was generally covered, and the patients therefore rarely, if ever, dined there.

In the Barrack Hospital, it was at last attained, that convalescents should dine at a table in the corridors.

In one of the other General Hospitals, the Orderlies and Wardmasters, after they had brought up the patients' dinners, retired to eat their own. Many zealous Orderly Medical Officers always made a point of being present at the patients' meals, and seeing them properly distributed, and properly eaten at the table, if the patient were able to leave his bed, instead of on his bed. But this was never done as a rule even at that Hospital, without the intervention of the Medical Officer.

The meat is and always must be cold, before it is served to the Patients, both at the War Hospitals and at those Army Hospitals at home, which I have seen. For there are no means of keeping it warm.

I would suggest the following:—

That it should be always divided in the kitchen, which saves the (now) invariable scramble in the wards, upon a hot-water dish or table.* It may be also carried to the

* When discipline has been introduced into Military Hospitals, then it

wards, if there is far to go, upon hot-water dishes, for more precaution. It would then always arrive nicely served, instead of, as now, even if twenty minutes only elapse between the beginning of cutting up the food and its arriving at the Patient's hands, always cold.

Large hot-water tins were provided, by private means, at Scutari for carrying up the food, but were, I believe, rarely used.

(2.) Want of shirts and every kind of utensil for eating, drinking, &c. Want of Shirts and Utensils for Eating.

The annexed is Dr. A. Smith's evidence:—

"8827. Do you consider that, for the proper treatment of the wounded and sick in that Hospital, it was necessary that there should be linen sheets and linen clothing for the men?—Yes. A. Smith, Esq., M.D. 23 March, 1855.

"8828. Are you aware, and do you now believe, that they had at that necessary?—They had sheets* in abundance, and linen. I must explain, that about the year 1817 a new arrangement was established in the army: previously to 1817, every General Hospital was supplied, or the purveyor of every General Hospital was supplied, with what was called hospital clothing; that hospital clothing consisted of bedding, shirts, and stockings, and flannel shirts, and other things necessary to sick men in the hospital. That system, however, upon the idea that it would be more economical, was changed; and, instead of the purveyor being supplied with those articles, a regulation was issued that each soldier coming into hospital should bring his pack along with him, and in the pack he must take care that there were two shirts, a set of shoe brushes, a knife and fork, and spoon, and a certain number of other things; the two shirts, knife, and fork and spoon, shoe brushes, and whatever he was likely to

will be better to divide and weigh the food in the presence of the Patients, in the Ward itself, where there should be an oven, in which to keep the plates warm.

* They had virtually no sheets; for the sheets were of that excessively coarse canvas that the men begged to be laid in the blankets, which was accordingly done.

require for constant use, were removed, and placed under the purveyor for the use of the patients in the Hospital, instead of being, as formerly, provided by the Government; that system has continued to this moment; and, therefore, I had no means of providing shirts for the soldiers, because I had to assume that the soldier's pack would be brought with him to Scutari, and there his two shirts would be available for his use, as well as his knife, fork, spoon, &c. Those, under the circumstances of the case, were not forthcoming, there was, for a time, no doubt, a very great want of shirts; the moment I knew there was a want of shirts, I made a requisition for 60,000 cotton shirts, which were purchased and sent out.

"8829. When did you first receive that information?—I think about October.

"8830. You received that information in October?—Yes."

With regard to Shirts the Cumming-Maxwell report states:—

Cumming Maxwell Report.

"It will be noticed, upon examining Miss Nightingale's return of hospital furniture and clothing, that in the course of about three months that lady issued 10,537 cotton and 6,821 flannel shirts, of which only 400 and 400 respectively were obtained from the public store. Besides these, 11,291 more have been furnished from the purveyor's store between the 1st October and the 16th February. This enormous supply, co-existing with constant complaints of the want of the articles in question, needs explanation. Under ordinary circumstances, shirts form no part of hospital clothing. Every soldier is required to have three shirts, and these are used by him when in hospital, and are deemed sufficient in quantity. Upon the invasion of the Crimea, however, the men, as we have already mentioned, left, in obedience to orders, their knapsacks in the vessels which had carried them to Kalamita Bay, and many did not recover them for long after, and many did not recover them at all. The sick and wounded, who arrived at the hospitals immediately after the battle of the Alma, were, we believe, destitute of all clothing except that which was on their persons; and the majority of those who subsequently arrived from the Crimea have been, until recently, in a similar destitute condition. Even the shirts which

are found upon them on their admission into hospital are often in so filthy a condition that it is necessary to cut them off.

"Under these circumstances, it became necessary to provide them with shirts, and when they leave the hospital they are permitted to take with them the one actually in wear.

"On the other hand, it must be observed that a considerable number of the articles furnished by Miss Nightingale form no part of the ordinary hospital furniture. But further, confining ourselves to such goods as do, according to the hospital regulations, form a part of such furniture, the list must not be regarded as conclusive proof that the articles mentioned in it were invariably wanting in the stores, for goods have been refused, although they were, to our personal knowledge, lying in abundance in the store of the purveyor. This was done because they had not been examined by a Board of Survey. On one occasion, in the month of December last, we found that this was the case with respect to hospital rugs, and it is probable that this has not been the only instance of such an occurrence."

Major Sillery.

Major Sillery Evidence. Cumming Maxwell Report, p. 318.

"I was Commandant from the time the army left till within ten or twelve days. When convalescents or invalids leave the hospital, they come under my command. *Many of the sick and wounded men arrived with little or no clothing. From the want of any establishment for the purpose at this depôt, there is the greatest difficulty in supplying such men with necessaries.* There is a non-commissioned officer of each regiment here in charge of the men of his own regiment. It is the duty of that non-commissioned officer to meet the wants of the men if possible, getting the money for the purpose from the paymaster, who stops the amount from the soldier's pay. The corporal must get the shirts when he can. In the case of boots, which are a heavy article, there is more difficulty. We cannot get the regimental boots here. For men going up to the Crimea, we look very closely as to boots. Till the last draught we sent up about a fortnight ago, we generally got boots from the commissariat for men going up; but I do not know if we got any for invalids. Every man is examined before he goes to the Crimea or home, but not when he comes out of hospital. We endeavour

to complete the outfits as much as we can. This is done partly out of commissariat stores and dead men's effects. In the same way we give the red coatees of dead men.

We want a quartermaster's establishment,—a large store with necessaries of all kinds. The complication of accounts with so many soldiers of different regiments requires a large staff. In a regiment, a soldier who wants anything is supplied by his captain, who inspects him and draws the article wanted from the quartermaster's stores. Here we have no officer who discharges the duty of a captain."

The want of shirts, and indeed of almost all clothing, on the part of the men, being here proved beyond the possibility of dispute by the statement of almost every official, —in General Airey's short and pithy words, "the Army was almost without clothes,"—let us see what was the "enormous supply" which, as Commissioner Maxwell truly states, "co-existed with constant complaints of the want of the articles in question."

According to Dr. Lawson, the number of Admissions, Oct. 28, 1854, to Jan. 31, 1855, was 10,905.

The number of shirts issued from the Quartermaster-General's store was, up to 15th February, 4,387, a number equal to the men discharged from Hospital between December 5, the period when these issues commenced, up to January 31, viz., 4,349.

The Purveyor states that he issued from October 1 to February 15, 11,234 shirts, of which he says 2,500 were delivered to Miss Nightingale. Now, 800 only were delivered to her, as appears by the Extract from the Cumming-Maxwell Report, p. 356. The 2,500 she indeed made requisition for, but 800 only were received, because the rest were not forthcoming. Another example of the fallacy of requisitions as vouchers for receipt, although there is not the shadow of a suspicion of any dishonesty.

The 800 appear again in Miss Nightingale's schedule; therefore deducting from 11,234

2,500

8,734 remain.

Miss Nightingale issued from November 10, 1854, up to February 15, 1855,—

10,537 cotton shirts
6,823 flannel shirts

17,360

Of which 400 and 400 respectively were, as just stated, from Purveyor's store, deducting which, the issue from her own stores was 16,560.

Therefore, to 11,000 men admitted into Hospital were issued—

Shirts.
4,387 from Quartermaster-General
8,734 from Purveyor
800 ditto, through Miss Nightingale

13,921, or little more than 1¼ shirt to each man.

Up to December 4, it appears that the number found in patients' knapsacks was 22!

Surely, in Miss Nightingale's issues of 16,560 shirts additional, there can be found nothing extravagant or unnecessary, but, on the contrary, they must be thought even insufficient. For no mention is here made of the 2,000 men in Hospital on Oct. 28, 1854, or of the Admissions after Jan. 31, 1855, or of the great want of washing, which, of course, made a greater supply of linen necessary.

Cumming Maxwell Report, p. 272.

NUMBER of SUITS found in Patients' Knapsacks that are deposited in the Pack Store of the Barrack Hospital at Scutari.

Twenty-two.

SELKIRK STUART,
Purveyor to the Forces.

4th December, 1854.

Cumming Maxwell Report, p. 272.

RETURN of the NUMBER OF SUITS issued from the PURVEYOR'S STORES in the GENERAL HOSPITAL and BARRACK HOSPITAL at SCUTARI, from 1st October, 1854 to 16th February, 1855.

Issued	From General Hospital	From Barrack Hospital	To Kabak	To Balaklava Depôt	To Balaklava	Total	Remarks
From Store at General Hospital	4,203	..	..	512	1,000	5,715	
From Store at Barrack Hospital	..	3,019	558	442	1,500	5,519	
Totals issued	4,203	3,019	558	954	2,500	11,234	

Barrack Hospital, Scutari,
22nd February, 1855.

SELKIRK STUART,
Purveyor to the Forces.

Cumming Maxwell Report, p. 274.

ACCOUNT of CLOTHING received into QUARTERMASTER'S STORES at SCUTARI.

Date	Shirts	Drawers	Socks	Suits	Jackets	Boots	——
1854.							
Dec. 8	580	1,173	4,628	..	..	..	Received from Constantinople, purchased by Captain Wetherall.
16	2,588	1,817	4,397	..	..	..	
1855.							
Jan. 14	2,002	..	..	..	..	1,000	From Quartermaster-General.
„ 26	..	..	..	..	600	..	Purchased by order of Lord William Paulet.
Feb. 2	..	..	2,081	4,086	..	..	From Constantinople, purchased by Captain Wetherall.
„ 3	..	1,000	..	..	..	..	Purchased by order of Lord William Paulet.
„ 5	2,000	4,000	..	..	..	500	From Quartermaster-General.
Total	9,369	7,990	11,306	4,086	600	1,500	

of the above clothing there has been served out to the men of the General Depôt, and to invalids proceeding to England, since the 5th December, as follows:—

Shirts	Drawers	Socks.	Mitts.	Trousers.	Boots.	Blankets.
4,587	3,053	6,703	1,500	300	1,500	1,500

JASPER HALL,
Captain 4th K.O. Regiment,
Qr. Mr.

Scutari, 15th February, 1855.

The Store was established when the first articles of clothing were received, viz., on the 5th December, 1854, as above.

JASPER HALL, *Captain, 4th Regiment, Qr. Mr.*

With regard to all kinds of utensils, that there was a great want of these cannot now be denied, for it is proved by the Requisitions of the Medical Officers, an abstract of which is given, p. 149. A very insufficient Requisition for such was made upon the Ambassador, which was very insufficiently replied to.

Some further extracts are given, to establish not only the want of stores, but the great defect of system in issuing and receiving them, at Scutari. It will be proved—

1. That the system of Requisitions is a vicious one.

2. That there was a great want of store-room, and of all convenience for landing stores.

1. That the system of Requisitions is a vicious one.

Bad Effects of the System of Requisitions.

The Cumming Maxwell Report says—

Cumming Maxwell Report.

"In support of the practice of issuing upon requisition, it is said that these documents are necessary, or at least convenient, as vouchers to prove that the articles mentioned in them have been supplied; but we think that in this respect their value is worthless, because it must constantly be optional with the purveyor or clerk receiving the requisition whether he shall or not

draw his pen or pencil through those articles which he is unable to supply. In this respect a receipt by the recipient after the article has been furnished is of far superior value and effect. We think it right, after making this observation, to add, that we have not the slightest ground for suspecting that any such fraud as we have alluded to as of possible occurrence, has ever been attempted; but, in pointing out the evils of the system, we do not think it right to omit all notice of such a defect as this. For the reasons above set forth, we think that the practice of issuing on requisition is vicious, and should be limited as much as possible."

It is vicious both ways, for that which it has not, it pretends to supply, and that which it has, it does not supply.

Canning Maxwell Report.

"From the neglect to file those requisitions which are altogether rejected, coupled with the practice of never issuing articles except upon written demands, it sometimes happens that while wards are in want of articles, a quantity of these is lying in store, and might be had upon application. We found this to be the case on more than one occasion in the course of our inquiry. The following instance may be mentioned. It may be seen, upon reference to the list of furniture in the purveyor's store on 31st January, which will be found below, that there were on that day a number of boards and trestles in store, and yet, upon inquiring, a few days later, we ascertained that there were still wanting in the Barrack Hospital alone 289 bolsteads, viz. 142 in the first division, 87 in the second, and 60 in the third, to complete its furniture; while in Haidar Pasha a considerable number of patients was still unsupplied.

"It is not to be inferred that the surgeons neglect to make the wants of their wards known. This state of things is the result of the omission to make a note or memorandum, when a requisition is not answered, of the article demanded, and of the person demanding it—an omission which leaves the purveyor without the means of furnishing the goods when his store is replenished, but compels him to wait for a fresh requisition. We have been assured that steps are taken to give due notice of the arrival of goods which have been in demand; but we

believe that those steps have been very ineffectual. We have found that surgeons whose requisitions were not complied with when they were made, have remained long in ignorance that their demands might be supplied if repeated. On the other hand, the refusal which they have met becomes generally known, and requisitions for the article in question cease to be made. We believe that many deficiencies which have been at different times observed in the furniture of the wards is to be attributed to the practice of issuing only upon requisition, and to the neglect to supply at a subsequent time those requisitions which were not immediately answered.

Want of Store-room.

2. That there was a great want of store-room, and of the necessary conveniences for landing stores, owing to the dependance of Purveyor upon Commissariat.

December 25th.

MR. WREFORD.

Mr. Wreford's Evidence.—Canning Maxwell Report.

"Dr. Menzies showed me a letter from the Ambassador some six weeks ago, and in consequence conferred with me as to the expediency of accepting the offer which it contained. After deliberation, as we expected hourly stores from Varna, we thought it best to decline the offer. We had not then heard of the disaster that had happened to the "Courier," the vessel which had been sent to that place for the purpose of bringing them down. On about the 16th or 17th November, I was given to understand, the offer was repeated; and then we agreed to ask for certain utensils and 200 sets of bedding. The bedding was sent, but unfortunately in the wet weather. We had asked for the bedding, from having received a communication from Dr. Hall, to be provided for the reception of at least 1,000 wounded, who were already on their way to Scutari. The 200 sets of bedding would, I think, have sufficed, or, at least, would have aided us. We did not like to ask for more, because I thought it would have sufficed. The wet did not spoil the bedding, and it came in very useful. We got a few chairs and tables, also, for the officers' quarters. All these things were applied for by Dr. Menzies to the Ambassador. I had been to the Pacha of this place, and asked him to get me

the bedding, but they were obtained from the Ambassador. The offer of the Ambassador was not accepted for anything except those things mentioned—bedding, chairs, tables, and other things, of which I will furnish a list. Several of the articles have not yet been sent.

"As assisting Mr. Ward, I went to the bazaar to buy slippers. I passed several hours there, and could only get 50 pairs on that occasion. I have purchased altogether about 60 pairs. From an apprehension of running short, and to meet every possible contingency of non-arrival of ships, I purchased nearly 350 dozen of port wine from several houses in Constantinople. Nothing could be more timely, however, than the arrival of the supplies sent from England, both as to the time and the quantities sent. I have had great difficulty in getting stores landed here—not owing to the neglect of the Commissariat, but to the state of the elements. The Commissariat land for us. I know that our stores have sometimes gone to Balaclava, in consequence, I suppose, of improper stowage. It is the duty of the Commissariat to store for us, but they have not the means of storing. We are, to a certain extent, limited for storage in the Barrack hospital, but heavy bales are, I think, safe in the passage. There is a sentry there. It would be a great security if they were under lock and key.

"In England, the patient brings with him inventories in duplicate of his necessaries; one is signed by the pack storekeeper, and the other by the non-commissioned officer who brings the necessaries, and is attached to the man's kit. At the General hospital Mr. Ward has established the old practice of having a book with the man's name, and the articles written opposite.

"When I came out matters were in arrear. They are now working gradually, but slowly. We have by no means a sufficient supply of clerks. Our great work has been with the hospital stoppages. That involves an account with every individual soldier. The stoppage is 4½*d.* a day. The Principal Medical Officer gets a daily return of the number of the patients admitted, discharged, and died, and names of each patient. He adds up the whole, and forwards it to the purveyor.

Dr. Menzies.

Dr. Menzies' Evidence.

"... Did you give him that list?—I did.

"9819. When was that?—I think it must have been on or about the 14th of November.

"9820. Have you got it there?—Yes, I have; this is the list, with a note from Mr. Wreford, explanatory of the articles still wanting. This was sent in in November; but many of the articles were not supplied up to the 5th of January, when Mr. Wreford writes to me on the subject; I wanted to have some information as to the reason why those things had not been supplied.

"9821. Are the Committee to understand, that in the beginning of January you inquired why things that ought to have been provided in November had not been supplied?—I wanted to know what things he had got upon the requisition that was sent in about the 14th of November, and this is Mr. Wreford's explanation:—'Dear Sir,—I herewith enclose a copy of the list of articles which accompanied my letter to you of the 19th November, which was prepared in compliance with a letter which you had consulted me upon, then recently received from Lord Stratford de Redcliffe, offering his kind assistance to procure for the use of the hospitals here any articles of which we might stand in immediate need. I beg to add, that having occasion to call at Messrs. Black's a few days afterwards, in search of port wine, I was shown the original list, and my opinion asked as to the description of articles we required, which I gave, and further urged upon them the necessity of their being procured with as little delay as possible. Now I may mention that the mercantile establishment of Messrs. Black is one of the oldest and one of the most respectable in Constantinople, and consequently having large and extensive ramifications, and yet even they have been unable to complete this list, the articles having been sent in in the quantities and at the intervals stated, the whole being as yet far from completion; and I have been more than once informed at the house that they cannot get the people to work, and to find all the articles ready made is impossible. I mention this to show the difficulties that surround us here; for

if a merchant like Mr. Black cannot procure these things, how much less practicable is it for strangers to do so.' "*

[The following list was handed in.]

STATEMENT of ARTICLES RECEIVED, in accordance with a List to the ARRANGEMENTS, about the 20th or 21st November, 1854, from Mr. BLACK, and of those yet to be supplied.—2nd January, 1855.

DESCRIPTION OF ARTICLES.	Quantities Ordered	Received from Mr. Black on 20th or 21st Nov.	Received from Mr. Black on 2nd Jan.	Received from other sources	Received from Government Stores	Total Supplied	Still to be supplied
Hair brooms, &c.	200						
Turkish brooms, &c.	..	..	196	..	..	196	
Tin cans, 2 gallons	100	..	..	..	..	..	100
Bed-pans	200	..	..	15	15	30	170
Close-stool frames	150	..	..	..	26	26	124
Spitting-boxes	300	45	58	..	..	103	197
Mop heads	300	..	..	..	..	..	300
Mop handles	100	..	..	..	..	..	100
Hand scrubbing brushes	100	..	..	..	..	..	100
Tin plates	1,000	100	794	..	..	894	106
Drinking cups, plat: Goblets / Tin cup	1,000	283	419	..	..	702	298
Buckets (2 gallons)	100	..	..	..	..	..	100
Washhand-basins	200	197	..	..	..	197	3
Door-mats	30	..	25	..	..	25	5
Urinals	200	..	..	..	..	..	200
Spoons, iron	200	204	..	..	..	204	
Soup-ladles	40	..	39	..	..	39	1
Frying-pans	12	12	..	..	..	12	
Slippers	1,000	..	..	..	341	341	659
Woollen socks	2,000	..	..	..	2,000	2,000	

R. SOMERSET STUART,
Purveyor to the Forces.

Dr. Smith's representation of the case.

The representations as to the satisfactory state of Scutari Hospitals, given below, were exactly the same as those made to me when I left England for Scutari, October 1854, (including the singular and misleading expression, that "the Medical Officers would not object to" my

* How then were "these things" procured, in Constantinople, by others although also strangers?

"giving the men a nice drink of Capillaire Syrup,") *vide* p. 131; but, nevertheless, they seem to have been altogether at variance with even that evidence which had been already at this date, October 1854, received at home, and which tended even then to throw light upon the real state of the men.

Dr. Smith's Evidence.

"8785. Have you ever had any reports from Dr. Hall as to the insufficiency of the clothing of the men?—Not of the insufficiency of the clothing of the men after the winter clothing was issued.

"8786. Have you any such reports at all?—In a letter lately received from him, when I called upon him to explain the causes of the great sickness, he stated that the causes of the sickness had been very various that the men had been over-wrought and over-fatigued in the trenches, sometimes for 10, 12, and 14 hours a day, often up to nearly their knees in mud, and wanting any covering when they were away from duty, trying to get rest in the mere tents.

"8787. Have you had any reports either in those letters, or otherwise, of the insufficiency of the clothing of the men?—Not specific reports.

"8788. Up to what date have you any reports?—Dr. Hall informed me that the want of sufficient clothing was one of the causes of the sickness.

"8789. When did Dr. Hall's reports cease stating that the men were suffering from the want of sufficient clothing?—They have only ceased very lately; that is to say, he used to complain that the abundance of warm clothing which was at Balaklava, would have saved many men from sickness, if they could have got it up to the camp.

"8790. Has the Principal Medical Officer, Dr. Hall, been sufficiently consulted as to the state of the health of the army, and its fitness for the duties required of it?—I cannot exactly answer that question. I think that, looking at it as a medical man, he would probably have advised some little modification; but whether he was consulted or not, I cannot positively say.

"8791. Has he sent you any of the reports that he made to the Commander-in-chief as to the state of the men?—I think

that the only report he wrote to me was in answer to a letter in which I asked whether he had taken sufficient precautions to endeavour to get a proper place in which the men might sleep and rest in winter;—he stated, in the first place, that he had no knowledge till a very late period, that there was any probability of the men remaining in the front of Sebastopol during the winter, but when he did get that knowledge, he suggested that they should endeavour to imitate the practice of the Russians by digging places in the ground, and throwing spars over them, so that they might put earth upon them, and in that way gain a mode of shelter better than tents. But then the question came to be, would they be able to do it?

"8182. . . . It has been represented to this Committee by competent witnesses, who have themselves seen the facts upon the spot, that nothing could be so horrible or so disgusting, or in every way so calamitous, as the state of these Hospitals from the time of the arrival of the sick from the battle of the Alma, and for a considerable time afterwards. It has also been stated by Mr. Macdonald, the witness who was sent to distribute the charitable fund collected by the "Times" newspaper, that he applied to you upon the 5th of November, for a letter of introduction, and for information with respect to the state of the Hospitals in the East, and that you at that time told him that his mission was a very supererogatory one, and not required at all, inasmuch as ample means had been provided, and every precaution taken to supply everything that was necessary for the comforts and the care of the sick in the Hospitals at Scutari; what reports had you at that time from Constantinople, to justify that representation?—I had no reports to have justified me in saying anything else.

"8183. What reason had you to believe that the state of things at that time known to the public, or published to the world, was false?—In the first place, I was aware that I had despatched from this country ample provision for every want; and in the next place, it was considered by the medical authorities out there, that they had what was wanted.

"8184. CHAIRMAN: What evidence have you got of that last proposition?—I ought, to a certain extent to consult

upon the last part of what I said; when the medical authorities wrote to me to that effect, they were daily in expectation of receiving from Varna, all that had been left at Varna. When the army moved from Varna they left the entire equipment of their General Hospital behind them, and the Inspector-General of Hospitals gave positive directions to the authorities that remained, to forward everything directly to Scutari, where the sick and wounded would be sent. Those authorities made every effort that they could to do so, but they failed. The authorities at Constantinople, who were communicating with me, were also exerting themselves to the utmost of their power, to induce the transport department to send vessels to Varna to bring away the stores; and day after day were those efforts repeated, but without success; the supply had not arrived on the 10th of November; but I was not aware of that.

"8185. Mr. FLAGE: What letters or reports had you from those medical authorities at the time?—I had regularly letters by each mail, reporting what had happened.

"8186. Will you state to the Committee upon what grounds you formed that opinion, which you expressed to Mr. Macdonald that there was no ample supply of everything required for the sick and wounded in the Hospitals at Scutari?—What I expressed to Mr. Macdonald was this: he brought a letter of introduction, asking for an introduction to the Principal Medical Officer at Scutari; and I said I should be happy to give him one; his reply was, that as he was going on a special purpose of this kind, he would like to consult with me. I said, 'If you will state to me on what principle this fund has been raised, and in what way it is intended to distribute its monies, I will give you what information I can.' He did not immediately reply to that, and I said, 'Perhaps you may not yet have established a principle, therefore I will volunteer to give you what information I can.' I said, 'The Medical Officers of the army are held by myself and the Government responsible that every man in the hospital is supplied with whatever he requires for his welfare, irrelevant of expense; it does not matter what it is, if he requires it, the Medical Officer has the power of ordering it; on the other hand, the

Medical Officer is equally bound not to allow anything to be administered to a man in the hospital that can in any way conduce to his injury. Those two points are to guide the Medical Officers.' Then I said, 'Under those circumstances, and assuming as I do, that the Medical Officers are supplied with what is necessary for the first, and that they do not want to be supplied with what is necessary for the second, anything that you will have to distribute will be of a neutral description, that neither do good nor harm, but may please the palate of the men. For instance, a medical man knows best what is useful for the sick, and he will probably give barley water, in a case of fever, in preference to giving capillaire syrup (v. p. 127). I do not know that the Medical Officer would object to your giving the man a nice drink of capillaire syrup; such things, I think, you may give out advantageously, without being interfered with; but I think your main object will be to distribute this fund to the poor men who may have been discharged from the Hospital, and who may have many wants to be supplied which the Government are not in the habit of providing for. Let me give you one piece of advice, not to give them money, or else you will give them the means of obtaining drink, and only send them back to the Hospital.'

"8187. The department of the Government must have been under the same impression; the Duke of Newcastle stated the same thing to Mr. Macdonald, but that impression, or that opinion, must have been founded upon some report you had received; that what you have stated to be the duty of the Medical Officers had been performed efficiently, and that every comfort and every necessary had been supplied to the Patients? —I certainly understood that from the correspondence. The Medical Officer in correspondence with me, was every moment expecting arrivals from Varna, which would make them independent of everything.

"8188. The facts of the case have been represented to the Committee by two witnesses, Mr. Stafford and Mr. Macdonald, to be these: that there were very few beds; that the poor soldiers were brought down with scarcely any clothes, their clothes having been worn off their backs, were placed upon pailasses, and their clothes, or at least the remnants of them,

full of vermin, taken off their backs and put under the pallasses; that no washing had been performed in the hospital, nor the floor washed for six weeks; that no washing of linen had been performed; that there were no hospital dresses; that there was neither cooking, nor comforts of any kind provided; and as to the whole state of the Hospital, that it was pestiferous and infectious, the privies being in such a state that nobody could approach the place; this is the description that has been given before this Committee of the state of the Hospitals at that time. You state that it was the duty of the Medical Officers to have provided everything for the comfort and convenience of those Patients; can you tell the Committee how you account for the difference between the state of things as described to this Committee by some of the witnesses, and that which you supposed to exist at the time of your conversation with Mr. Macdonald?—It is difficult for me to say how it happened, because I must assume that what has been stated in evidence is correct. I can only say, that there was a very large proportion of stores left behind at Scutari when the army proceeded to Varna, and those stores must have been available for immediate use. Then the only way that I can account for their not having ample of everything is, that it had not been possible to move the transport department to bring from Varna, a distance of only eighteen hours, the articles absolutely necessary for the requirements of the hospital. On the 3rd of September, an application was made to have those stores forwarded down from Varna to Scutari; and I know from a letter that I received, that the Principal Medical Officer had not been successful up to the 10th of November in getting them down.

"5380. Supposing that to be the case, and supposing the state of affairs that I have described to have arisen, either from the want of transport, or the neglect of the different authorities when those hospital articles were at Varna, or from whatever cause this state of things arose, it was the duty of the Medical Officers to remedy this state of things by any means that they had in their power?—Yes, if they had the means; but the question is, had they opportunities of making immediate purchases to the extent necessary to supply an

equivalent to that which Varna would have supplied, had they been prepared to spend any amount of money.

"8190. To take a common illustration of that, the 'Times' Commissioner had no difficulty in purchasing shirts for the poor patients in the Bazaar at Constantinople; why then could not the Medical Officers, or some authority, have purchased those shirts?—I see no reason why.

Conclusions as to the Condition of the Hospitals at Scutari.

After all that has been stated, as to the

Overcrowding,
Want of ventilation,
" drainage,
" cleanliness,
" Hospitals comforts,

it will no longer be matter of surprise that the mortality at Scutari was so great. On one occasion, I remember our losing 39 out of 40 secondary amputations consecutively.

The Return below gives a melancholy corroboration.

Out of 44 secondary amputations of the lower extremities, 36 died!

ABSTRACT of the NUMBER of AMPUTATIONS treated in the GENERAL and SUPPLEMENTARY HOSPITALS from the 26th September to the 27th November, 1854.

Description of Amputation.	Primary	Result.				Secondary	Result.			
		Died	Under Treatment	Discharged Convalescent	Sent to England		Died	Under Treatment	Discharged Convalescent	Sent to England
Upper Extremities — Shoulder	6	1	5	...	...	...	...	...	...	...
Upper Extremities — Arm	63	2	54	4	3	15	4	9	2	...
Upper Extremities — Hand	1	—	1	—	—	1	...	...	1	...
Upper Extremities — Finger	1	—	...	1	—	...	...	...	...	...
Lower Extremities — Thigh	37	6	28	—	3	33	28	2	3	...
Lower Extremities — Leg	39	5	31	—	3	11	8	3	...	...
Lower Extremities — Foot	4	1	1	—	2	...	...	...	...	...
Lower Extremities — Toe	1	—	1	—	—	...	...	...	...	...
Resection of Joints	1	1	...	...	...	...	...	...	...	...
Total	151	16	121	5	9	60	40	14	6	...

Total Cases treated, Primary and Secondary ... 211

During November 1854 we had 80 recorded cases of Hospital Gangrene, and many, many more were unrecorded. The causes of Hospital Gangrene are well known.

Dr. Menzies' Favourable Report.

The Report below is only given to show that opinions, when substituted for facts, are of no value in enlightening the governing authority as to the true state of things, and may even represent a place where disease and death were being generated wholesale, as one to be "reported of favourably," and as "convenient for the reception of the sick and wounded." The one fact, however, relating to the drainage ought to have awakened the attention of authorities at home, as to the state we were in at Scutari.

GENERAL REMARKS ON THE PREVAILING DISEASES, &c. &c. IN THE BRITISH MILITARY HOSPITALS AT SCUTARI, FOR NOVEMBER, 1854.

"The prevailing diseases have chiefly been bowel complaints

in the form of diarrhœa, which merged into a chronic form, although not of a fatal character. Notwithstanding that the climate of Scutari had been generally speaking healthy during the above period, the weather had been very changeable, stormy, wet, and cold, which conditions must no doubt have tended to aggravate the affections to which I have alluded, and which have chiefly come from the Crimea.

"I have to report favourably of the buildings now denominated the General and Supplementary Hospitals, the former having been built for the purposes for which it was intended, but the latter as a barrack for troops, but which has lately been given over for the use of the sick and wounded of the British Army, reserving a small portion only for the troops and garrison staff. These buildings may be pronounced convenient for the reception of the sick and wounded, being roomy, well ventilated, and supplied with excellent water, privies, and other necessary conveniences. There are, however, no doubt various improvements required, such as the construction of an additional kitchen for the General Hospital, and a wash-house and dead-house at the Barracks. There is also required in both buildings appropriate rooms for the accommodation of the nurses who have recently been sent out by the Government, those occupied by them being much too small, and without conveniences for a separate cooking establishment, without which their efficiency must necessarily be impaired.

"Some parts of the General Hospital require repairs, some of the rooms being very leaky. The quarters for Medical Officers are also inadequate for the present number doing duty there. The drainage and privies are at times greatly out of order, and when the south wind blows there is a very offensive odour wafted up through the building from these reservoirs. It is my opinion also that the close proximity of the burial-ground which lies between the sea and the Hospital, may prove hereafter a source of unhealthiness in this locality. I beg to recommend that the site of the burial-ground be therefore changed, and no more bodies be placed in the immediate vicinity of the Hospital.

"DIET.—I have very little to say on this subject. Pro-

visions are supplied by contract. At one time the supplies for the Hospital were by no means of the best quality, but much improvement has of late taken place in this respect. The articles of diet are those pointed out in the Hospital regulations, and which are in my opinion quite sufficient.

"The extras and medical comforts are allowed to any extent considered necessary for the particular cases by the Medical Officers.

"With respect to the hospital bedding, we have been indebted to the Turkish authorities for a large supply for the General Hospital, during the time that our own bedding was deficient in consequence of its being detained at Varna, and what was left with us here being insufficient for the large number of sick and wounded carried at different times from the Crimea. The boards and trestels sent from England are too low for the comfort of the Patients, and inconvenient during surgical appliances to cases of severe wounds, to say nothing of their closeness to the cold stone floor of the corridors and some of the wards, and the insufficient ventilation necessarily inseparable from them. I have no doubt that iron bedsteads would be in every respect more desirable, and they would moreover give an appearance of order, cleanliness, and regularity to an hospital, and the expense would not, I presume, be great.

"DUNCAN MENZIES,
"*Deputy Inspector-General of Hospitals.*"

Lastly, we append two letters of the Hospital Commission to the Commandant of Scutari, which, however, were but little attended to, notwithstanding that they give but so small a portion of our miseries.

COPY OF A LETTER FROM DR. CUMMING, P. H. MAXWELL, Esq., AND P. S. LAING, Esq., TO LORD W. PAULET.

"My Lord, "*Scutari, January 20th.*

"Having recently received instructions from his Grace the Duke of Newcastle to report to your Lordship all practical alterations which we recommend with a view to the better

organization and working of the Hospital here, we hasten to submit for your consideration some points which have occurred to us in the course of our inquiry, and upon which we are all agreed.

"1. It appears to us that the first step towards the due organization of the Barrack Hospital would be the total removal of the depôt* from its precincts. As long as the building, which is now chiefly devoted to the accommodation of the sick, is partially occupied by duty men, convalescents, and a large number of soldiers' wives, and is consequently frequented by a variety of other persons, either connected with the canteen which is established in the place, or otherwise, we are of opinion that great difficulty will continue to exist in establishing order and regularity in the hospital.

"2. It appears to us that one of the most obvious defects in the organization of our hospital establishments, is the utter absence of a trained body of orderlies. The task which devolves on these men requires that persons of intelligence and respectable character, good constitution, and active habits, should alone be employed; and, further, that they should have undergone some training in their duties before they are placed in this responsible situation. Your Lordship is probably aware that our hospital orderlies seldom fulfil these conditions. In order to form gradually such a corps as we suggest, we would beg to recommend that the Medical Officers in charge of wards should be requested to report at once, and from time to time in future, to the Commandant, such of their orderlies as may be, either from ill-health, inaptitude, habits, or character, unsuited for their situation; that these men should be removed; that their places should be filled only by men, who upon due inquiry should appear to possess, as far as possible, the qualifications which we have mentioned; and that those who prove themselves duly qualified should not be removed except for misconduct or incapacity, but should be retained in their situation as long as their services were needed and useful.

* This was not effected till May, 1855. Consequently, this fruitful source of disease was left festering in the Barrack Hospital during the whole time of our greatest overcrowding.

"3. We would offer a similar recommendation respecting the election of hospital serjeants, wardmasters, and cooks.

"4. It appears to us extremely desirable that the clothing of every patient should, on the eve of his leaving the hospital, be inspected by a Medical Officer, and that every article of dress essential to his health should be supplied before he be discharged. This recommendation, if adopted, would necessitate the establishment of a clothing store in the hospital; but any inconvenience arising from the introduction of an additional element into the already complicated organization of our hospitals would be more than compensated by the beneficial effect which it would have on the well-being of our soldiers. Owing to the want of such a store, men have either been exposed to a recurrence of sickness from insufficient clothing, or have been permitted to carry away shirts, flannel waistcoats, drawers, and other articles of hospital clothing. This practice has, we learn, been carried to an extent seriously detrimental to the comfort of the sick in hospital, as it has been found practically impossible to supply the constant drain thus kept up on the purveyor's store.

"We have, &c.,

"(Signed) "A. CUMMING, I.G.H.
"Lord William Paulet, "P. BEXSON MAXWELL.
"*Commandant, Scutari.* "P. SINCLAIR LAING."

February 9th.

COPY OF A LETTER FROM DR. CUMMING, P. B. MAXWELL, Esq., AND P. S. LAING, Esq., TO LORD W. PAULET.

"My Lord, "*Scutari, February 9th.*

"In pursuance of our instructions from the Duke of Newcastle, to report to your Lordship all practical alterations which we recommend with a view to the better organization and working of the hospital, we beg to recommend that further hospital accommodation should be at once provided for the sick and wounded of the army.

"We are of opinion that the Barrack Hospital is at present much overcrowded. From calculations which we have made,

based upon the superficial measurement of the wards and corridors at present occupied by the patients, we think that not more than 1,913 men should be admitted into this hospital. The number of men, exclusive of orderlies, in the wards and corridors devoted to the sick is, this day, 2,107, and amounted, within the last month, to 2,400.

"The over-crowding is altogether in the corridors. It is much to be regretted that any patients should be placed in them, but we think that under no circumstances ought they to contain more than one row of beds. If the second row were removed, the corridors might still afford accommodation for 725 men. The wards may contain 1,188 more, making a total of 1,913, from which, if 192 orderlies—taking their number at the rate allowed by the regulations of the service—be deducted, it will appear that the wards and corridors now occupied as an hospital ought not to contain more than 1,721 patients,—about 400 less than the number actually in the building on this day. Our estimate is perhaps larger than it ought to be, when it is considered that many of the patients are suffering from fever of a very dangerous character.

"The General Hospital, the stables adjoining the Barrack Hospital, and the buildings at Haidar Pasha in our possession, are full. The hospitals at Kululi are already more crowded than they ought to be, and the huts in course of erection in the Barrack Square will not, we believe, suffice, when completed, to accommodate the number of men at present in excess in the Barrack Hospital.

"Under these circumstances, we deem it our duty to suggest to your Lordship the expediency of providing further hospital accommodation for the reception of any sick or wounded men who may be sent hither from the Crimea, and also of the large number who at the present time over-crowd the Barrack Hospital.

"We must add, that the crowded state of the barrack rooms in which the soldiers of the depôt and soldiers' wives are quartered is extremely injurious, not only to their inmates, but also to the sanitary condition of the hospital.

"The prevalence of fever at the present time renders it necessary that we should also earnestly recommend that your

Lordship should provide the Medical Officers employed in the hospital with quarters out of the building. Four Surgeons have died within the last month of fever caught in the hospital, and three more have narrowly escaped the same fate from the same cause.

"We have, &c.,

"(Signed) "A. CUMMINS, I.G.H.
"P. BESSOR MAXWELL.
"P. SINCLAIR LAING."

"Lord Wm. Paulet,
"*Commandant, Scutari.*

IV.

Resumé of the Evidence as to (1) the Crimea, (2) the Sick Transport, (3) the Scutari Hospitals in the Winter of 1854–5.

The Excessive Mortality was owing, 1, to the Sufferings and Privations in the Crimea; 2, to the Wretched Condition of the Sick Transports; 3, to the utter Unhealthiness of the Hospitals at Scutari.

Has it not been too sadly proved by the above evidence, that the excessive mortality in the winter of 1854–5 cannot be attributed to any one single cause, but to the combined action of three distinct and successive conditions?

1. The Army was ill-provided in the Crimea, and disease was generated there.

2. The Sick Transports were in a state fatal to the Sick, and absolutely unhealthy for all; and the Sick were from 6—27 days on board. Up to February 13, only one voyage appears to have been not longer than 3—only 1 of 5 days. Up to this date, eight per cent. of all the sick embarked from the Crimea perished on board between Balaclava and Scutari.

3. The sanitary state of the Hospitals at Scutari was such that the sick had not a chance. It appears vain to heap evidence upon evidence that this was so: if the evidence already given is not enough to make people believe it, "neither would they believe if one rose from the dead!"

The *per-centage* of Mortality in the Hospitals rose with the Number of Patients, but did not fall immediately with its decrease.

The Mortality per cent. rose as rose the number of Patients—a sure proof always of sanitary defects in the construction of the buildings. Mortality may be high from the state of the Patients admitted; but, if the *per-centage* be higher as the number of those Patients increases, then it proves that there is something destructive in the building itself. Now every admission of Patients at Scutari not only made every sanitary evil worse for these

Patients themselves, but for those who came after them. The consequence was that there was always an excess of mortality a little after each in-road of Patients, then a disproportionate rise. Increase.

Statistics tell nothing without conditions. But the whole history of Scutari may be read at a glance in our Statistical Records, an analysis of which I here annex, if we compare them with our conditions, which I have enumerated:—

ANALYSIS of WEEKLY STATES of SICK and WOUNDED, from October 1, 1854, to June 30, 1855, in the Hospitals of the Bosphorus.

Date.			No. of Days	Sick Population of the Hospitals (taken at weekly numbers)	Cases Treated (cases of Admissions and Discharges, including Deaths)	Deaths	Mortality. Rate per cent. per annum on Daily Population	Mortality. Per cent. on Cases Treated.
1854.	Oct. 1	—Oct. 14	14	1,993	590	115	148	19·2
	Oct. 15	—Nov. 11	28	2,229	2,043	173	103	8·5
	Nov. 12	—Dec. 9	28	3,258	1,944	301	121	15·5
	Dec. 10	—Jan. 6, 1855	28	3,701	3,194	572	202	17·9
1855.	Jan. 7	—Jan. 31	25	4,320	3,072	986	319	32·1
	Feb. 1	—Feb. 28*	28	4,176	3,112	1,329	415	42·7
	Feb. 25	—Mar. 17	21	3,779	1,621	510	235	31·5
	Mar. 18	—Apr. 7	21	3,366	1,650	237	125	14·4
	Apr. 8	—Apr. 28	21	2,803	1,110	127	79	10·7
	Apr. 29	—May 19	21	2,018	1,350	70	60	5·2
	May 20	—June 9	21	1,504	996	48	56	4·8
	June 10	—June 30	21	1,442	1,266	28	34	2·2
* Koshl, 1855.	Feb. 1	—Feb. 28	28	648	561	382	603	52·0
Compare (i. e. omitting the worst time, viz., February)	1854. Oct. 1	1855. —Jan. 31	123	3,160	10,843	2,145	208	19·8
	1855. Feb. 25	1855. —June 30	126	2,501	8,073	1,020	118	12·6

Note.—After consulting the best Statistical authorities, I find that the mortality of Hospitals can be compared in two ways, which mutually check and confirm each other: (1), by dividing the deaths by the mean "strength" of the sick in Hospital, and reducing the mortality to that which would obtain, were the time of observation a year. By this method, it will be seen in the Table I give, that the mortality in the Bosphorus Hospitals fell from

415 per cent. per annum in February
to 235 " " } in the three weeks ending March 17, 1855,
to 125 " "
79 " "
60 " "
56 " "
and 34 " " } in five successive periods of *three weeks* each.

By the second method the *deaths* are divided by the number of *cases treated*. Where the number of sick is stationary, the numbers (1) admitted and (2) discharged (including deaths) must be equal in a given time. The number of cases treated will be represented by the numbers either admitted or discharged, as they are equal. When the number of sick increases or decreases, the numbers admitted and discharged will differ; but the number of *cases treated* will, in all ordinary cases, be nearly represented by taking the mean of the numbers admitted and discharged. Thus, 6,751 Patients were *admitted* into the Bosphorus Hospitals in the 126 days, February 25—June 30, 1855, and in the same period 9,392 patients were discharged. The cases treated are represented by

$$\frac{6{,}751 + 9{,}392}{2} = \frac{16{,}143}{2} = 8{,}072.$$

As the deaths were 1,020, the mortality on the cases treated was 12·6 per cent.

By this method the mortality of the cases was at the rate of 31·5 in the first three weeks, and fell progressively

to 14·4
10·7
5·2
4·8
2·2

} per cent. of cases treated.

As 2,501 were under treatment 126 days, the days of sickness were

$$2{,}501 \times 126 = 315{,}126 \text{ days}$$

That is

$$\frac{315{,}126}{8{,}073} = 39 \text{ days}$$

to the treatment of each case on an average.

In the first period, the cases were under treatment about 49 days; in the last 24 days.

While the mortality fell from 31·5 to 2·2, the duration of the cases fell from 49 to 24 days.

At Koulali, the worst of all the hospitals, in February 1855, the mortality was 52 per cent. on all the cases treated in Hospital during that month! At Scutari and Koulali, it was nearly 43 per cent. during February on the cases treated!

In other words, had the rate of mortality at Koulali continued,—in two months the troops in Hospital there would have been swept away. Had that at Scutari and Koulali continued at what it was in February, in three months its Hospital population would have been annihilated; that is, the mortality there was 415 per cent annually, on the sick population,—at Koulali, it was 608 per cent. annually.

On comparing the cases treated with the rate of mortality, by the aid of the Table, it will be seen that the per-centage of deaths rose at the rate of more than twice the increase of Patients: that is to say that, when the Patients increased in number by one half, the mortality per cent. was double what it was before. We reiterate the words. It was not the absolute number of deaths which was doubled. It was the per-centage of deaths among the Patients, which became about 32 per cent. from 15½ per cent.

But, in February, when the *number* of Patients stood still, the *mortality* still continued rising by one-third of the per-centage!

Decrease after the Sanitary improvements and with the decrease in crowding.

Again, when the number of cases treated was diminished by one-fourth, the per-centage of mortality fell to about one-fifteenth. This was after the improvement of the sanitary conditions of Scutari, effected by the Sanitary Commission. We attribute one-half of the decrease of mortality to this improvement—the other half to the cessation of the over-crowding, and to the improvement in the condition of the Patients admitted.

It must not be forgotten that the evils arising from over-crowding, together with bad sanitary conditions, are an ever accumulating ratio.

If nothing is done to the drainage, every excess of Patients leaves it in a worse state for the next. If nothing is done to the walls of wards, the respiration and exhalations from Patients contaminate them with a still greater impregnation of organic matter for the next series of inhabitants. If nothing is done for the ventilation, the Hospital atmosphere becomes more and more fatal.

This is what took place at Scutari.

Now mark the decrease in terms of three weeks. In the three weeks ending March 17, the ratio of Deaths to cases

treated had fallen, at Koulali and Scutari, to 31½ per cent. In the three weeks ending April 7, at Koulali and Scutari, to 14½ per cent. In the three weeks ending April 28, at all the Hospitals, to 10·7 per cent. By May 19, to 5·2 per cent. By June 30, to 2·2 per cent.

The Sick Population of the Hospitals, i. e., the mean of the numbers remaining at the beginning and end, fell in that time from 3,800 to 1,400—the number of cases treated from 1,600 to 1,200. That is to say, that, while the mortality fell from 31·5 to 2·2 per cent. of cases treated, the duration of the cases fell from 49 to 21 days.

The Decrease of Mortality was not owing to one but to several causes.

It has been continually stated, and lately in evidence, by the Principal Medical Officer of the Army in the East, that the reduction of mortality at Scutari, *after* those Hospitals were put under good sanitary conditions, was due, not to these, but solely to the improved state of the Army in the Crimea.

Has it not been sufficiently proved that the condition of the Army in the Crimea, the condition of the Sick Transports, the condition of the Hospitals on the Bosphorus were all concerned in producing our fearful mortality? What more could we have of proof?

Put healthy men, sick men with good constitutions, sick men with ruined constitutions into buildings in the state of those at Scutari, during the winter of 1854–55, and there will be seen a certain amount of mortality among the healthy men, as was illustrated by that among our Orderlies and troops in Depôt, a greater amount of mortality among the sick with good constitutions, an excessive amount among those with ruined constitutions.

But what is it that we wish to prove? That it was no use trying to do anything for these poor disabled men, already condemned to death? Rather prove how much

more they ought to have been cared for and placed under the best conditions for recovery.

There was nothing new to history in the sanitary results of our campaign.

There was nothing different from the Irish famine fever in that among the starved Crimeans, except the strong scorbutic character impressed by the use of salt rations. There was nothing different from the old Gaol fever, familiar to us from Howard's researches, in the Hospital fever of Scutari, except that it was in a somewhat milder form.

Beautiful and "convenient" as were the buildings of Scutari to an unpractised eye, to one accustomed to look at gaols, hospitals, poor-houses, with a view to their sanitary condition, these Scutari buildings were, in their unimproved state, like the Gaols of old, pest-houses of Typhus Fever. The five conditions generating this plague have been enumerated above.

Let us not deny them, but let us set to work to ascertain what is the education, what the organization, what the system of Medical and other Departments, which will prevent the recurrence of such a fearful loss of life?

Note as to Hospital Kit.

After a narrative of the privations of the sick in the Hospitals at Scutari, one question naturally occurs. Independently of the neglect of repairs in the fabric and the want of medical comforts, why should there have been so entire a deficiency of such common articles as shirts, stockings, shoes, towels, or knives and forks?

Whose duty was it to supply these, and why was it not performed?

The answer is that it was not the duty of any one. No one of the officials attached to the Hospital was bound to supply them. The soldier himself was bound to bring them with him (from the Crimea) into Hospital (at Scutari).

What the Warrants of the War Department require the Soldier to bring into Hospital.

The warrants of the War Department, still existing, although their power was for a time overruled by General Letters, (these, however, but partially obeyed) require each soldier to use in the Hospital the following articles, which his kit contains—

ARTICLES GIVEN OVER TO THE MAN FOR HIS USE WHILE IN HOSPITAL.

Stock or Neckerchief.
Braces.
Shirts.
Waistcoats, Flannel.
Drawers.
Belt, Flannel.
Handkerchiefs.
Stockings or Socks.
Towels.
Shoes or Boots.
Brushes.
Blacking.
Knife, Fork, and Spoon.
Comb.
Pocket Ledger.

And this is the consequence of the General Hospital being nothing more than the copy of the Regimental Hospital, to which the soldier can easily bring his kit, out of his neighbouring Barrack room or tent, as the case may be.

He is thus expected to use his own knife, fork, spoon, comb, shirts, socks, towel, and though mess-can and soap are not specified in the List, if, in the late War, he did not bring these articles, he was without them.

These Articles the Purveyor refuses to issue.

The Purveyor, therefore, refuses to issue what appears a second supply of these and such like articles.

Some of these articles may be wanting in peace—the man can therefore only borrow from his comrades—or be supplied on stoppages; *i. e.*, at the soldier's expense.

The Soldiers at Scutari came with nothing.

But, in the late War, during the first winter, the soldier came into Hospital without his kit at all, sometimes abandoned by order of his Commanding Officer, sometimes lost on his voyage to Hospital, or its contents exhausted by the wear of the Campaign.

Many men came into Hospital with nothing on but a pair of old regimental trowsers, a blanket, and a forage cap. I scarcely remember a single instance, during the winter of 1854-55, of any of the articles enumerated in the list being brought into Hospital by the man, or being in his possession at all.

Supply from Private Sources.

On leaving Hospital, in some cases, at least after December 5, 1854, the clothing was supplied: but, during the man's stay in Hospital, the contents of his kit, as they could not be replaced under the existing warrants, were not supplied at all. Hence the great number of these articles supplied by Miss Nightingale (*vide* list,) beside the articles supposed not to be of necessity, and never mentioned in warrants, such as benches, tables, lamps, cans, &c. A restricted quantity of these things is however furnished at home by the Barrack-Master.

After the supplies of Miss Nightingale there were, however, small and inadequate requisitions replied to by the Purveyor, who appears to have been ashamed of carrying out his own refusal.

Although, on leaving, in some cases, as above stated, the clothing was supplied to the soldiers who had come in without, vast quantities were carried away by them for their Regimental use, which had been supplied by Miss Nightingale, as above, for Hospital use.

The extreme exigency of the service and the destitution

of the troops before Sebastopol, previous to the distribution of the winter supplies, made this necessary.

Although the destitution was notorious, and known to hundreds of Officers as well as to the men themselves, and although the articles were supplied on the requisitions of the Medical Officers, yet the Commandant, having no official report of the fact, never issued any official order upon the subject.

Thousands of articles therefore went through the Hospital to the Army, or to the men invalided home, which had their origin in private supply. And although that portion of this private supply, charged to the War Department, was repaid, other portions being derived from two well-known funds, yet the supply does not enter into any Report of the Commandant of the Hospital, and still less into any Regimental Report—whereby this supply which was patent to every one, as well as its cause, is ignored officially, and consequently may be made to appear officially as an act of unnecessary and ostentatious benevolence.

List of Articles Supplied Privately, upon the Requisition of Medical Officers.

An abstract of some of the principal articles thus supplied in the Crimea and at Scutari, upon the requisitions of Medical Officers, is therefore here annexed :—

Shirts (flannel and cotton)	.. ..	50,000
Pairs of Socks and Stockings	.. ..	23,743
Pairs of Drawers	.. ..	6,843
Towels	.. ..	5,826
Handkerchiefs	..	10,044
Comforters	.. ..	9,633
Flannel	.. yards	1,384
Pairs of Slippers	.. ..	3,626
Knives and forks	.. ..	856
Spoons	.. ..	2,630

Night caps		4,524
Gloves and Mits	prs.	4,545
Drinking cups		5,477
Tin plates		2,086
Basins, zinc, &c.		624
Dressing gowns		1,001
Air Beds and Pillows		232
Thread and Tape	packages	74
Lanterns, Candle Lamps, and Lamps		168
Preserved Meats	cases	253
Meat Biscuits	barrels	2
Isinglass and Gelatine	lbs.	148½
India-rubber sheeting	pieces, 325 yds.	26
Camp Kitchen Cooking Stoves and Canteens		55
Boilers and Stewpans		68

Tables and Forms,
Baths,
Soap,
Games,
Brooms and Scrubbers,
Bedpans,
Tin pails,
Combs, Scissors, &c., &c.,

were supplied with and without Requisition.

The above is independent of the Extra Diets, including Wine, and of the innumerable minor Surgical appliances, such as Arm-Slings, Bandages, Eye-shades, Old Linen, supplied as they were wanted. Both descriptions of things ought to be, and it is trusted always will be, in future, under the charge of women. These do not, therefore, strictly belong to our example.

Inference. The conclusion which must necessarily be drawn from this unhappily large example is, that the soldier ought to

be supplied with Hospital clothing and necessaries, and that his own kit should be placed under charge in a regulated Pack-store, there to await his recovery or death.

In the last event it would be, as now, sold, and the proceeds delivered to the Purveyor or Governor, for transmission to the Regiment, and from thence to the War Department, which answers the application of relatives.

Pack-store at Scutari.

Among the unhappily neglected Departments, the Pack-store at Scutari showed a greater confusion, perhaps, than any other. Hundreds of men's knapsacks were thrown into it, promiscuously, and lay for months unsorted—were, indeed, not unfrequently plundered. These knapsacks belonged partly to the Sick who came into Hospital, partly to those who died on the passage. Consequently those who could claim the knapsacks, whether the soldier who recovered, or the widow of him who died, had no means of discovering them in the confused heap. And it was not till April 1855, when thousands of men had gone away, that the Pack-store was reduced to order.

V.

Further Hospital History.—Notice of the First Employment of Female Nurses, of the Employment of a Corps of Male Nurses, and of the Arrival of the Sanitary Commission.

Commencement of the Employment of Female Nurses. Arrival of the First Female Nurses in November, 1854.

Miss Nightingale and her Nurses were sent out, October, 1854, by the War Office, and arrived November 4, the eve of the Battle of Inkermann. Quarters and Rations were assigned to them within the Barrack Hospital, Scutari, in pursuance of letters from the Secretary at War, and Miss Nightingale was furnished with Instructions.

It was not till March, 1856, that Miss Nightingale was put individually into General Orders. But no General Order has ever existed defining the duties of the Nurses in the various Hospitals to which they were respectively attached.

Subordination to the Medical Officers.

In the Civil Hospitals of Smyrna and Renkioi the number was fixed before leaving home, together with that of those serving in other Departments. With regard to Miss Nightingale's first party, the number admitted into the Barrack and General Hospitals, Scutari, was fixed by arrangement with the respective Principal Medical Officers of those Hospitals. But, nevertheless, the number admitted into each Division depended upon the Medical Officer of that Division, who sometimes accepted them, sometimes refused them, sometimes accepted them after they had been refused; while the duties they were permitted to perform varied according to the will of each individual Medical Officer, and each Medical Officer successively, and according to the amount of occupation of

Medical Officers and Orderlies, and according to the estimation in which each individual Nurse was held by each individual Medical Officer.

With regard to Extra Diets, Medical Comforts, and "free gifts," nothing was given by the Nurses, except by the order of the Superintendent, which order was consequent upon the Requisition of a Medical Officer and that only,—with some few exceptions.

The different reinforcements of Nurses sent to the Hospitals of Scutari were employed in the same manner.

With regard to the Nurses who subsequently went to Koulali, and to five Hospitals in the Crimea, they will be referred to hereafter.

The principle introduced by Dr. Meyer in the Civil Hospital at Smyrna—and afterwards carried out in that of Renkioi—was, that a certain number of Ladies should have the superintendence of a certain number of paid Nurses. This did not interfere with the action of the Male Orderlies, except by reducing their labour and their number. In each case the females were distinctly under the direction of the Medical Officers, and had more or less charge of the Extra Diets.

But the distinctions between Smyrna, Koulali, and Renkioi were, that the proportion of Ladies was very much restricted at the last place, and that at Smyrna and Koulali many were unpaid.

As regards the Nurses in the Bosphorus and the Crimea, they may be considered as one body, although distinctive characteristics will be hereafter described.

Instructions of the War Department, as to the Composition of the various Bodies of Nurses.

The orders of the War Department in October, 1854, which authorized Miss Nightingale to collect and take out a body of Nurses, without distinction of faith, of rank, or of being bound by vows or not, resulted in her leaving

England October 21, 1854. The female party to the number of forty embarked on board the "Vectis" at Marseilles, which carried also seventeen Medical Officers and Commissioners; which ship arrived at Constantinople November 4, 1854.

The rule laid down by the War Office was, that the Roman Catholic Nurses should not exceed one-third of the whole number. And there was an understanding that Miss Nightingale should be supplied with more Nurses, but only at her own autograph request. Each appointment was to be given under a War Office form, signed by the Director-General of the Army Medical Department, as was the case with those of the first party.

This party which, under the pressing orders of the War Department, was collected within a week, consisted of—

10 Roman Catholic Nuns of two different Orders, one cloistered, one not,
8 "Sisters of Mercy," of the Church of England, of two different Houses,
6 Nurses from St. John's Institution, under the Bishop of London,
14 Nurses actually serving in different Hospitals,
1 Mrs. Bracebridge, who undertook the Domestic Management,
1 Miss Nightingale, Superintendent,

40

and went out under the charge of Mr. Bracebridge.

The next party consisted of forty-six, which went out under the charge of Miss Stanley, Mr. Percy, and Dr. Meyer, and arrived December 15, 1854.

It was composed of

15 Roman Catholic Nuns,
9 Ladies,
22 Nurses.

—

46

This party was followed by numerous additions during the year, 1855, and the Female Nursing Establishment was only broken up with the return of the Army in July, 1856, the Superintendent leaving finally July 28, 1856. During this period, a great number had returned home from sickness and other causes. Nine died.

Besides the Nurses attached to the Army, a party of Female Nurses was attached to the Naval Hospital at Therapia, who arrived January, 1855, and left with the return of the Fleet.

Nature of their Duties and Employments.

As to the services of the Nurses, they were made use of, as before stated, by being distributed over the Barrack and General Hospitals, Scutari. The sick and wounded Officers in those Hospitals were placed in Officers' Quarters, and attended by their own servants. In Haidar Pacha, also at Scutari, a Pavilion was afterwards arranged for them, and they were withdrawn from both Hospitals. Except on special application, which occurred chiefly in the case of Medical Officers, Officers were not attended by the Nurses, till they re-entered the General Hospital in November, 1855, under certain conditions, viz., that they should be attended by Orderlies, not by their own servants, that they should be upon a diet roll, that the cases to be nursed by the Nurses should be appointed by the Medical Officer in charge.

A previous experiment had been made with Officers' Nurses at Haidar Pacha, which was terminated after a

very brief period, by the death of the Female Superintendent.

In the Crimea, on the other hand, as soon as the female element was introduced there, viz., in January, 1855, at the General Hospital, Balaclava, which was afterwards extended to five General Hospitals in the Crimea, the Officers were nursed by the Nurses wherever a Sick Officers' Ward was appointed them, and the whole of the Sick Officers' diets was cooked in the Nurses' Extra-Diet Kitchen, according to a Diet Roll.

Immediately on the arrival of the Nurses at Scutari, in November, 1854, extra diets were prepared by them for the patients, in the stoves which they had brought with them; and within a week a separate Kitchen was established adjoining their Quarters, with Civil Cooks. No Extra-Diet Kitchen had been before established in the Hospital. The supplies were given in answer to Extra-Diet Rolls signed by one or two Medical Officers.

From 600 to 800 Patients were supplied in this way for the first five months. Two other Extra-Diet Kitchens were successively fitted up, which divided the Extra Diets of the Hospital among them, with the exception of fowls and rice, which were always cooked in the General Kitchen. In July, 1855, these Extra-Diet Kitchens were closed, in consequence of M. Soyer having organized the cooking of Extra Diets in the General Kitchen, with all necessary appurtenances, as he did also in the General Hospital as early as April, 1855, and at Kouläli. It was, however, at least in the Barrack Hospital, never found to work so well to have extras cooked in the same Kitchen as the general diets.

In the Crimea, Extra-Diet Kitchens were organized in the General Hospital, in February, 1855; and at the

Castle Hospital, Balaclava, in April, 1855; *i.e.*, as soon as female attendance was incorporated into each respectively.

At the Castle Hospital, these extra diets were cooked in a shed during the whole summer. For, although M. Soyer and Miss Nightingale had planned an Extra-Diet Kitchen in May, and the Engineer Officer had undertaken it, yet it was not till November, 1855, that Miss Nightingale, on her return to the Crimea, was able to obtain its completion. The same was done at the Monastery Hospital of St. George's in the same month, and the following spring in the two General Hospitals of the Land Transport Corps, as soon as the female element was installed in each.

In all these five Hospitals, the extra diets were cooked by the Female Nurses, and issued in answer to the Extra-Diet Rolls of the Medical Officers up to the evacuation of the Crimea in June, 1856.

A portion of the materials for the extra diets at the Barrack Hospital, Scutari, and also in the Crimea, was found by Miss Nightingale's funds; on some occasions, because the supplies in the Purveyor's store had run short; on others, because they were of a bad quality; on others again, because the Purveyor declined to furnish the articles of food, although on the Diet Rolls of the Medical Officers, which Miss Nightingale then purchased in the market.

The second Purveyor-in-Chief, in May, 1855, placed the whole of the linen and small stores for the wards, arranged in divisions, under the care of the Nurses, as far as regarded the Barrack Hospital, Scutari. In November, 1855, they assumed the same charge, on a somewhat different footing, in the General Hospital; but in the Crimea it was arranged that the mass of the linen should be sent down to Scutari to be washed.

Where women form part of a Hospital establishment, the charge of the linen should evidently devolve upon them.

Occasions of their greatest Utility.

In conclusion, it should be recorded that the three periods when the Female Department gave the greatest proof of their utility, were 1. On the arrival of the wounded from Inkermann, at Scutari, November 9, 1854, and during the subsequent months when the Army suffered most from sickness up to April, 1855. After that time, a great many officials of every Department were added to the Hospitals at Scutari, a great decrease of sick and wounded took place there, owing to the improved health of the Army and the development of Hospitals in the Crimea, and a considerable accession of stores had arrived.

The second period of their usefulness was during the heavy summer work of nursing the wounded in the Castle Hospital, Balaclava, 1855.

And the third, when, in the Spring of 1856, in consequence of great sickness among the Land Transport Corps, there was a pressure upon the two General Hospitals for that corps, organized near Karani in the Crimea, by the excellent Principal Medical Officer, Dr. Taylor.

Principles for the Employment of Females in Military Hospitals.

Any one who has well considered the subject of Nurses and Hospitals, and had some experience, at home and abroad (experience extending to the employment of Sisters of Charity, Protestant and Catholic), will probably come to the conclusion that, when the nursing is applied not to Civil, but to Military Hospitals, the mode of nursing by Orderlies, who perform also the drudgery of Hospital Servants, should by no means be done away with. To take anything from the authority of the Medical Officers, or to reduce their responsibility, would never be contemplated by any one convinced of the paramount importance

of the promptitude of action resulting from unity of government. It remains, therefore, that female nursing, while entirely subordinated to the medical authority, should not be charged with the mere drudgery in the necessary cleansing and labour of a Military Hospital, but should be made capable of performing what may be termed "skilled" nursing, by a course of previous instruction, and should add to the niceties of female attendance, which have been found so grateful to the patient in all Civil Hospitals and in domestic life, a moral influence which has now been proved, beyond all doubt, to be highly beneficial to the soldier.

Miss Nightingale holding these convictions, having been compelled to leave England with a band of Volunteer Nurses of such various character, collected in six days, hoped that those who should follow would be primarily adapted to the office, and, if not accustomed to Hospitals, would have gone through probationary instruction.

Although, from the great difficulties presented by the diversity of character of those who went out first and of those who subsequently followed during the whole of the campaign, a stumbling block was added to the many difficulties at the very threshhold of the undertaking, yet nevertheless the withdrawal from the work of those who, from time to time, showed themselves incompetent, and the recognised system of discipline introduced, brought the corps of Female Nurses into such a condition as to enable them to continue the work throughout the campaign.

At the moment when the expedition for Female Nurses was determined upon, not only a great pressure existed upon the War Department, occasioned by the sympathy of the nation for the soldier, but a real desire to relieve his reported extraordinary wants.

An element of supply, the want of which was thus practically acknowledged, was then to be sought for—either in the religious world or the practical world, or in the class specially practised in nursing occupation.

But the religious world was divided into communities and free individuals; each class being again divided into Protestant and Roman Catholic (to pass over the distinctive shades of opinion of each). What with the conflicts of theoretical opinion (no practical experience existing on the subject), and the want of time for discussion when action was absolutely necessary, it ended in the representatives of each of these classes forming the first expedition; and afterwards, during the whole campaign, augmenting their numbers in something like similar proportions.

The rules for the governance of this corps (at once adopted), were that each should be considered according to efficiency or non-efficiency, due regard being had to special qualifications.

Those who showed themselves inefficient, or became so, were dismissed upon individual grounds, without any regard to the fact of their being members of any of the above mentioned classes.

As the (so-called) religious world does not afford a large proportion of its members, eager for practical life, and as the practical world, which is not remarkable for its benevolence, is busied in its own objects, the aspirants (on the occasion of the female expedition to the East) were to be sought in the following classes: members of religious communities under vows, and those not under vows, but both practically exercised, more or less, in the care of the sick; the professional portion of females engaged in the care of the sick; and lastly, those kindly, benevolent, uneasy, adventurous, and possibly enthusiastic spirits

whom peculiar individual circumstances leave open to such enterprises as may suit their taste.

Discipline, founded on actual efficiency in the service, and without respect of persons, was immediately adopted, and this necessarily occasioned the sending home of those who proved incompetent.

Sickness also interfered with the number who could be practically employed.

A primary principle of discipline was, that no interference with the regulations of the Hospital, or with the legitimate orders of the Medical Officers, should take place.

It was on the complaint of a Medical Officer that his treatment had been publicly misrepresented and his orders disobeyed, that the "Cumming-Maxwell Commission" thought it necessary to make such remarks that one of the "Sisters" was induced to resign, after accurate examination.

Upon the foregoing principles the Nurses, in some cases, performed larger duties, in assisting the Surgeons, than in others, according to the orders of the particular Medical Officer.

The system of requisitions by a Medical Officer was also accepted and acted upon by Miss Nightingale, who answered the requisitions of Surgeons, both for extra diets, medical comforts, and necessaries.

This system, bearing the technical name of "requisitions," required that everything for a patient should be asked for in writing, and that nothing should be provided in a ward, according to the judgment of an Officer, as to pre-known wants in that ward.

There were, however, exceptions to this, not emanating from Miss Nightingale nor from the Medical Authority, which need not be referred to.

Soldiers' Wives.

It may be added, that it was publicly stated in England, and even by those long acquainted with the Army, that the Nursing question could be easily settled by simply setting the soldiers' wives to nurse the soldiers. In fact, from ten to thirty women were permitted by the respective Colonels to accompany each regiment in the expedition to the East.

Six women per 100 men are "allowed" on foreign service, except in India, where twelve are "allowed." In war none. But the women, in the late war, having accompanied the troops to Gallipoli, made their own way on: and certainly the number was quite irrespective of Regulation.

The number of men to whom the Commanding Officer grants "leave" to marry and the period at which he grants "leave," depend on himself alone.

The number and selection of women, whether English, Scotch, or Irish, depend upon the good-will of the Colonel and the previous quarters of the regiment, for the Colonel permits the marriages, and the individuals are selected by lot who are to accompany the regiment; the previous quarters of the regiment, of course, determine the quality of the women.

It is therefore from this accidentally collected mass that the Nurses would be chosen.

Not to speak of the inconvenience of children, the bad qualities of these Nurses, viz., irregular life, ignorance, and want of education, either technical or practical, which prevents them from being good recipients of instruction, render them far inferior to well selected women; and their good qualities do not enhance their value, inasmuch as their kindness and feeling for the soldiers of their regiment, lead them to break every rule of the Hospital, and to bring the Patients money and indulgences.

How is a soldier's wife to be prevented from favouring "her Company," or her husband's Serjeant when in Hospital? And, if she is to be in communication with her husband, the matter will be still worse.

As the stay of such Nurses is dependent upon the marching of regiments abroad, or their desire to join their civilised husbands at home, they will be always in an unsettled state, and little dependent upon pay or promotion in their profession.

Wives, permitted in barracks, will be anxious to withdraw and rejoin the regiment according as their husbands become non-commissioned officers, officers' servants, or mess-men.

Commencement of the Employment of a Corps of Male Nurses.

Reasons derived from the necessity of the return of men to the army, and the proper care of the sick, who were deemed to require one orderly to ten patients, indeed Government to accede to the request for establishing a distinct corps of Male Nurses. After a delay, from January till August, 1855, a portion of the Medical Staff Corps was forwarded to the army in the East, having undergone a certain amount of drill under Captain Bunbury, at Chatham. On their arrival the Orderlies, who had been previously employed in the Hospitals, and whose places they were to supply, were gradually sent back to their regiments.

Arrival of the Sanitary Commission.

The Sanitary Commission arrived at Scutari on March 6, 1855, and instituted various improvements, already referred to, and to be noticed hereafter. They left for the Crimea early in April.

VI.

Some General Conclusions from the Hospital History of 1854-55-56.

Six Facts to be noticed in the Hospital History.

If we were asked to tell, in a few words, the story of the Hospital service of the late war, we should point out six facts closely connected with each other.

I. The accumulation of numbers of Sick and Wounded, for whom the accommodation, in Regimental Hospitals, was a mere nothing, and this was the only organization, such as it was, to dispose of them.

II. The entire absence of any previous system for forming General Hospitals, to accommodate these numbers, or of any Sanitary provision for the safety of such accommodation.

III. The exertions of individuals to overcome the difficulties arising from such a want, these persons being, themselves, necessarily, more or less unacquainted with the nature of the Service and struggling in vain with—

1. The total want of anything like organization, in the administrative branches of the Service.

2. The total want of trained attendants and subordinates.

3. The non-existence of Dispensers and Apothecaries.

At the commencement of the War there were three Apothecaries at Scutari: and, had there been but one store necessary for the whole Army, it would have been impossible to have done the work for that one.

4. The general want of co-operation, on the part of the Military branches of the Service.

IV. We should point out the length of time which elapsed before all these deficiencies were remedied, and

then, not by a change of system, but by temporary expedients and immense expenditure.

V. The manner in which the time and capacity of the superior Medical Officers were almost entirely absorbed by non-professional duties, the professional part of the work being mostly discharged by young and inexperienced men.

Even Dressers have been placed in charge of Wards.

The indiscriminate and lavish use of "extras" among their Patients, by these young men, was a just subject of complaint, on the part of the superior officers, instances being on record where more extras than two healthy men could consume have been prescribed for one sick one. If this were so, whose was the fault? We have said more of this elsewhere.

VI. The consequent disregard of the interests of Practice and Science in Medicine and Surgery, of the important duty of recording the experience of the War, and of the still more important and practical duty of giving Clinical instruction to these young officers.

Proved Insufficiency of the Army Medical Department.

In conclusion, what have been the results of the experience of the late War, as regards the Medical Service of the Army? and what have been the changes made during the War itself; and retained or not retained since its conclusion?

The results of the experience of the beginning of the War were—

To attest the insufficiency of the Army Medical Department, as then constituted, to provide—

1. A Medical Staff, numerically and professionally efficient, and properly organized for service in General Hospitals,

2. Efficient Purveyor's and Apothecary's Departments,

3. Efficient Ambulance and Hospital Attendance,

4. Sufficient Hospital supplies and accommodation,

5. (And most important) Sanitary measures in the field and Hospitals, at all in accordance with the knowledge of the age.

Changes and Expedients.

Various changes and improvements, in the constitution of the Departments, were accordingly made, and may now be regarded as under consideration—the question still pending, whether they shall be retained or not. Various temporary expedients, to supply the defects of organization, were also resorted to. Under this latter head may be placed the employment of the Sanitary Commission and the employment of Female Nurses, with means for supplying extra medical comforts.

Expedients.

Of the necessity of some permanent official department to exercise the functions of the Sanitary Commission, performed extraordinarily, we shall have something to say hereafter.

Sanitary Commission.

Female Nurses

With reference to the employment of women,—if, with a party of Female Volunteers so suddenly formed, acting under a plan of discipline adapted to the usages of Military Hospitals, the labours of Female Nurses could be carried on for nearly two years advantageously (as it is presumed) to the soldier, and without injurious disturbance to the Medical and Military Departments of Hospital Government, it must necessarily be admitted that the Female Nursing Element may be introduced into Military Hospitals in future, concurrently with a better system of Orderlies (now called Medical Staff Corps); the number of Nurses being restricted, and the

duties better defined. It must be added that it is absolutely necessary that the high character and respectability of the female must be maintained, both as to her personal and official conduct; and no motives of supposed utility should be allowed to require or lead her to do that which would lower her morally or officially.

Changes.

Of the improvements and changes in the constitution of departments, the principal are,—

I. During the War.

Medical Staff Corps.

1. The recruiting—we regret that we cannot say training, either then or since, of a body, sufficient in number though not in efficiency, of Hospital Attendants (Medical Staff Corps).

Transport Service.

2. The organization of a Transport Service, for the Sick and Wounded; though the Medical Staff Corps is expressly exempted from a portion, at least, of this Service.

Apothecary's Department.

3. The organization of the Apothecary's and Dispensing Department, which, however, has very nearly sunk back again, since the conclusion of the War, into the old Regimental system.

Purveyor's Department.

4. The organization of a more efficient Purveyor's Department, neglecting, however, the incorporation of persons specially qualified into the body thus raised, which consisted mainly, if not entirely, of War Office and other Clerks, skilled in book-keeping, copying letters, and the art of accounts, but wholly unskilled in Hospital organization, or even the knowledge of commercial business. This Department, therefore, failed (and fails still) to relieve Medical Officers, as much as is possible, from the non-professional duties which absorbed (and still absorb) the time of the higher ranks of the Medical Department.

Want of harmonious co-operation.

It is not within the range of probabilities that a Government should be unwise enough to leave to a time of future emergency the organization of these Departments, requir-

ing, as they do, to be in good working order, before the emergency arises. Every individual must be thoroughly acquainted with his own duties and with the modification of them required by a large establishment. But the utmost individual exertions can never lead to a satisfactory result, unless the various branches work together harmoniously. The want of this harmony of plan was the real secret of our failure, in the autumn of 1854.

It is necessary to say a few words on each of the subjects.

Want of Definite Distinctions in the various ranks of the Medical and, again, between the Medical and the Purveyor's Department.

1. The duties of the Medical and of the Purveyor's Departments are really, though perhaps not technically, so undefined that it is impossible to discover, for any practical purpose, to whom these duties belong. There is no duty assigned to any one rank of the Medical Department which we could not point out as having been systematically performed by some other rank. There is no rank which we have not seen performing the duties of some other rank: *e. g.*, in the Hospital Regulations the duties assigned to the Assistant Surgeon are merely those of Dresser, and not of a qualified Surgeon; he is to make up medicines, to dress certain sores, to fill up the Diet Rolls, for the Full Surgeon. But, in the War, the Assistant Surgeon, and even, in some cases, the Dresser, was in sole charge of from 60 to 100 Patients, and was in fact, though not in name, the treating Surgeon.

Again, there is scarcely any one of the Purveyor's duties which we have not seen the Surgeon performing; and, though fortunately the converse cannot be asserted, viz., that the Purveyor sometimes performed all the Surgeon's duties, we have known him to appropriate one, at least, of these, in exercising a veto, practically, though not nominally, upon Articles of Diet.

E. g., for months, at one General Hospital in the Crimea, the Deputy Purveyor-in-Chief supplied neither

foods nor eggs to the requisition of the Medical Officer in charge, although these articles were to be had and were actually procured in the market; and, on one occasion, the necessary brushes, &c., for cleaning and whitewashing the Wards, were refused to the Medical Officer in charge during a considerable time, although these articles were in store.

Diversities of System in the various General Hospitals.

Again, there was no uniformity of system in the General Hospitals. It was impossible to tell what the system was. In one, the Purveyor was nobody—in another he was everybody.

E. g., in one of the largest General Hospitals, the Principal Medical Officer, if about to receive a couple of hundred Patients, communicated in no way with the Purveyor: he communicated with the Orderly Medical Officer and with the Wardmaster. He did not say to the Purveyor "200 Patients are to be bedded and fed; when this is done, we will visit and prescribe for them." He sent a Medical Officer down to the wharf, to receive the Patients. He ordered the Orderly Officer and Wardmaster to have preparations made for them; and the first official information received by the Purveyor might be when the Nominal Roll was sent in to him the next morning.

Again, we have seen a zealous Medical Officer in charge of Wards get up at six o'clock in the morning, direct his Orderlies how to sweep, clean, air the Wards, &c. If he did not do this, the order (or rather the disorder) of things might be as follows:—

There might be four Orderlies to the Ward: not one was sweet; the Assistant Wardmaster might not come into his Wards till eight o'clock, and these Wardmasters were so frequently changed that they hardly knew their own duties. Each Orderly set to work in a different corner of his Ward, according to his own fancy, opened or

did not open the windows, as he thought best. The Convalescents, who ought to have got up and breakfasted at the table in the Ward, when there were tables (at first there were none) breakfasted in bed, renewing all the confusion in the Ward, and got up when everything was done. It had then to be done all over again. It was no one's fault, for these Orderlies were wholly unacquainted with their business. Their only idea of cleaning was raising as much dust as possible.

In some Hospitals a Purveyor's Clerk was sent round to "inspect" the cleanliness of the Wards; in others not. But he was only laughed at, if he came; for it was a kind of supererogatory work of merit, not duty.

And this brings us to the mention of an error which we think very generally prevails as to the discipline in Military Hospitals.

State of Discipline in a Military Hospital.

How our brave fellows distinguished themselves, by their unflinching regard to discipline, in the Crimean War, is too well known now to require a comment. We cannot feel respect and admiration for it greater than what it deserves; but the discipline among the Patients maintained by the Ward "Sister" of a London Civil Hospital is far stricter than any to be seen in the wards of a Military Hospital. Although she has to do with ruffians (often) over whom she has no power but that afforded by their temporary stay under her care, every man is in bed who is ordered to be in bed, and every man gets up at the time he is ordered to get up. We have yet to see the Military Ward where the Medical Officer invariably finds the Patients remaining in bed or getting up, the medicines taken, &c., as he has directed. In one instance, a shrewd Artillery Wardmaster hit upon the plan of writing a Nominal List, which was hung up daily, of the men who were to remain in bed and the men who were to get up, in

order that any officer entering the Ward might be able to verify their obedience. Perhaps there would be three nurses ordered to be up, twelve to be in bed; and three would be found in bed and the other twelve nobody knows where. On the other hand, many Convalescents will lie in bed all day who would be much better for being up.

Apothecary's Department.

2. In the Apothecary's Department, although loaded with checks and counter-checks, the only thing at which we never arrive thereby is the knowledge how a grain of medicine is really expended.

It can be traced, it is true, from the Apothecary's Store to the Surgery, but no farther.

After this, the Medical Registry is supposed to be the check, *i. e.*, the voucher for the expenditure of drugs, but it, in reality, none. Is it possible for a Medical Inspector to cast up the quantities in, perhaps, 1,000 prescriptions, and see whether the sum thereof tallies with the amount which has disappeared from the Surgery? This is supposing that the Medical Register is kept in such a way as the Regulations direct, which it is not. The Regulations direct that the quantities shall all be written down to the prescriptions. But, when a Patient is taking some medicine continuously, his "bottle" is ordered to be sent to the Surgery; perhaps, *e. g.*, instead of an 8 oz. bottle, one four times the size will be sent to be filled, and what then becomes of the check?

In the General Hospitals of the East, the Dispenser attended in the morning from nine till one and in the evening from eight till nine at the Surgery: in the intermediate hours, the Surgery was left in charge of an Orderly, who was sometimes present and sometimes absent: while the Surgery was sometimes locked and sometimes not. Hundreds of pounds worth of drugs might have been abstracted and sold, without any one being the wiser,

except in the knowledge that they were gone. It is true that, in some Hospitals, the Principal Medical Officer required the Dispenser to take stock every fortnight, and report to him. But this only informed the Principal Medical Officer that the medicines were gone somewhere. The Dispenser could not say whether a Medical Officer had made up his own medicines in the Dispenser's absence, which, of course, frequently happened; whether the Orderly had drunk them, or whether they had been taken for other than Hospital purposes.

When a man has the responsibility of stores, he must be in charge, *i. e.*, there must be no power of taking anything out of his stores without his knowledge. Careful Medical Officers would leave the Prescription they had made up, as a voucher for the poor Dispenser, of what they had taken. It would be easy to remedy this defect in our system of checks, at the same time saving trouble.

A Dispenser might be continually in charge in the Surgery, so that nothing could be taken or made up, without his knowledge.

And Medical Officers might, as they have sometimes been known to do, out of their own sense of integrity, make up monthly, in their Medical Register, an Abstract of the quantities of medicines used by them. It would be then but small trouble for the Medical Inspector to compare the sum of these Abstracts with the quantity expended in the Surgery.

In the Regimental Hospitals, under ordinary circumstances, the Regimental Chest of Medicines is replenished every six months. There cannot be much difference in the demand; the calculation of what ought to be used is easily made; and no change or criticism seems to be here necessary.

Medical Staff Corps.

The Medical Staff Corps has been formed and organized

for the service of General Hospitals; but the training of these men has been so defective that the material remains now almost as raw as it was at the beginning. Numbers have remained idle, at the Depôt at Chatham; numbers have been distributed in the Regimental Service, where the higher grades must remain ignorant of and unpractised in the duties of large General establishments.

Purveyor's Department.

The Purveyor's Department has been provided with a very numerous staff; but nearly, if not all, were Purveyor's or War Office Clerks, from the highest to the lowest rank, men well skilled in book-keeping, accounts, and copying letters, but entirely and necessarily deficient in the following indispensable specialities:—

The knowledge of buying and selling and of the markets of the world.

The Chemistry of food and its adulterations.

Cooking.

Washing.

Mechanics.

Building.

Engineering.

Sanitary science.

These things are insufficiently or not at all represented in the Purveying Department.

Its functions are, besides, so inaccurately defined that they varied in every one of the War Hospitals; and it was almost impossible to discover then, as it is now, at home, what they really were and are.

This Staff, also, is serving now almost entirely in the Regimental Hospitals of Garrisons and Camps.

Again, a few illustrations may be necessary.

A whitish liquid used to be issued to the Patients, at Scutari, under the name of milk, in which there was not a drop of milk. There would have been two ways of meeting

this:—either the Principal Medical Officer might have informed his Medical Officers that there was no milk and that they must order the Patients some other kind of diet; or a Purveyor's Clerk, if such there had been, who knew anything about the testing and adulteration of food, might have been appointed to test the milk and procure real milk.

Real milk was provided for the Patients, in some of the Hospitals, by Miss Nightingale, upon Medical requisition; and the Purveyor-in-Chief authorized her to obtain as much real milk as she could, which she did, in various ways.

If articles of food are to be provided by the Purveyor's Department, surely they ought to have the necessary knowledge to provide them good.

Again, we see daily, in the London Civil Hospitals, the most valuable practical improvements contributed by the Stewards, in the domestic and mechanical construction of their Hospitals, including the ventilation, sinks, water-closets, &c.

We have seen, in the East, a Principal Medical Officer his own Engineer, directing the Sappers and Miners.

Again, the Purveyor's Department is a kind of "parasite" upon all other Departments (as has been well said, by the Director-General, of his own Medical Department).

The Commissariat furnishes it with bread, meat, and fuel, for the Patients; the Barrack Department with every article of Hospital furniture; the soldier's kit furnishes its own contents.

The consequence of this is, that if, as constantly happens, the Barrack Department declines furnishing the article, although printed on its list, as not being in its possession, the Purveying Department has discharged its re-

sponsibility, by asking for it, and makes no farther exertions to procure it.

The Soldier, having no place to put his little articles in, when in Hospital, excepting under his pillow, brings in with him as few as possible. Under this pillow are often found his tobacco, his pipe, generally lighted, his clasp-knife, dirty shirt, spoon, and towel, if he has one; these are pulled out by the Medical Officer, who is obliged, for Sanitary reasons, to confiscate them for the time being, and hand them to the Hospital Serjeant, desiring him "to take them away," well knowing that neither he nor the Patient has anywhere else to put them.

One jack towel is provided for a Ward, upon which all the Patients wipe themselves, the Medical Officer last; unless he is "friends" with the Orderly, who then furnishes him with a clean one out of his own kit.

It is difficult, as has been said, to define what are the Purveyor's functions in Regimental Hospitals at home: for a few Contractors do easily the work for all England, and the Purveyor's Clerk does not even take the trouble to issue Extras daily to the Hospital Serjeant. The latter draws, *e. g.*, a dozen bottles of port wine at a time. This is, however, very carefully looked after. No peculation is possible.

Among the Purveyor's chief attributes in Regimental Hospitals at home, are the keeping the accounts of the Hospital stoppages, the cooking, all the Kitchen Attendants being under him (the washing is generally done by the Hospital Serjeant's wife), &c.

Why not make him, like the Steward of a Civil Hospital, find all supplies? The supplies when issued should be under the charge of a Superintendent of Hospital Attendants, such an Officer being far more necessarily responsible for the care of them.

Dispensers.

Dispensers were provided during the War for the Army, and employed in General Hospitals and with some Regiments.

These are nearly all now either employed as Storekeepers, or discontinued; and Regimental Hospitals are again without regular Dispensers.

In cases where three or four Regimental Hospitals are under one roof, they have each their separate Surgery, where the Hospital Serjeant, in most cases, makes up the Medicines. How great would be the saving, if there were one Surgery and one Dispenser to all!

Note to P. 170, on the Administration of Medicines.

In speaking of Hospital Discipline the extreme negligence in Military Hospitals, as to the administration of medicine, has been mentioned. The Patient really takes it or not, at his own discretion, unless given by the Medical Officer himself. This last seems almost to be intended, for, in the "Military Hospitals' Regulations," it is positively one of the Articles that medicines shall be administered twice a-day, as though this were a condition or quality of all medicines, to be taken twice a day.

In Civil Hospitals a Table of the Hours at which Medicines are to be given is hung up in every ward, which is the only method of enforcing discipline in this respect.

The example annexed is that used at Guy's Hospital, London.

The Hours at which Medicines are to be given.

When Ordered Every Four Hours.	When Ordered Four Times Daily.	When Ordered Three Times Daily.	When Ordered Twice Daily.	When Ordered Morning and Evening.	When Ordered Daily.
2 o'Clock Morning					
6 o'Clock Morning	6 o'Clock Morning				
10 o'Clock Forenoon	10 o'Clock Forenoon	10 o'Clock Forenoon	10 o'Clock Forenoon	10 o'Clock Forenoon	10 o'Clock Forenoon
2 o'Clock Afternoon	2 o'Clock Afternoon	2 o'Clock Afternoon			or at
6 o'Clock Evening		6 o'Clock Evening	6 o'Clock Evening		
10 o'Clock at Night	Bed Time			Bed Time	Bed Time

Nurses are requested to see that the Medicines are regularly administered, and to adhere to the above periods, unless specially ordered otherwise.

VII.

Detached Memoranda on the Operation of the Regimental System of Hospital Treatment.

Everybody who has a living remembrance of the great calamity of 1854 must ask, what were the operative causes, what has been done, and what remains to be done to prevent the recurrence of such a calamity, to provide, under all and any circumstances (for this is the question) for a sufficient Hospital organization?

Exclusively Regimental character of the English Medical System.

One of the operative causes undoubtedly was the exclusively Regimental organization of the Medical Department; and, while it remains such, there is every probability of a recurrence of the scenes of 1854, under similar circumstances.*

There are two or three men who devised and practically

* The system of medical treatment for the Army, previous to the War and again since the restoration of peace, has been entirely Regimental in its organization. There was, and as yet still is, only one Hospital which claims to be called General, namely, that at Fort Pitt: the Artillery Hospital, at Woolwich, which might be thought a second exception, is the Garrison Hospital, for the Regiment of Artillery. It should be added, that there is also at Dublin an establishment similar to that at Fort Pitt. Every other existing Hospital is strictly a Regimental Hospital. Uniformly with this system a Medical Officer, as soon as he enters the Army, is at once appointed to a Regiment, continues to serve as a Regimental Officer, except as in the one case above mentioned, of Fort Pitt, until he is removed altogether from direct practice and is transferred to the charge of a recruiting or other military district, with the duty of inspecting recruits or Regimental Hospitals; his functions being now almost entirely those of an accountant and registrar.

The attendance on the patients, according to the practice hitherto, has been given merely by orderlies, told off, at the rate of one for every ten sick, to serve this duty in the Regimental Hospital, in addition to one Hospital Serjeant per regiment, of whose duties more will be said hereafter.

When an expedition is sent out, the organization, in like manner, con-

set forth a good working plan of General Hospital organization; and, while these men are living, there would be no danger of a similar breakdown to that of 1854. But they did not instruct the Surgeons immediately below them, in their plans of working; and the latter remained in almost perfect ignorance of them.

The history of this is as follows:—

This character prevailed in the General Hospitals established during the late War.

When the usual Regimental Hospitals and small Medical Staff proved utterly insufficient during the late War, and large General Hospitals were established at various

times to be regimental. A Principal Medical Officer (of the rank of an Inspector or Deputy-Inspector) is appointed, with Staff Surgeons at the rate of one to each Division or Brigade, who act as Inspecting Officers over the Regimental Hospitals attached to the regiments of the Division or Brigade; every single regiment retaining, as in time of peace, its own special Regimental Hospital, which it is supposed to carry about with it, and to establish as it can, wherever it goes.

Preparations were indeed made for the establishment of a Hospital for larger numbers in the neighbourhood of Constantinople, and a building at Scutari was handed over to the British authorities for this purpose. The General Hospital, however, thus established at Scutari, retained many of the features of the Regimental Hospital familiar to the military medical man. Dr. Menzies, the officer in charge of it, declares in his evidence, "I have followed the general rules for Regimental Hospitals so far as I could." Sick and wounded men were certainly received indiscriminately from different regiments: in the place of the Regimental Surgeon, we had the 2nd class Staff Surgeon, or to serve in his place, the Assistant or Acting Assistant-Surgeon; and to inspect the whole Hospital there was a 1st class Staff Surgeon; just as in the army in the field there was a 1st class Surgeon to inspect the various Regimental Hospitals of a Division. With the medical treatment of the Patients in the General Hospital, this Officer had little more to do than he would have had if attached to a Division in the field, as Inspector of its Regimental Hospitals. In theory to the very last, the General Hospital, or General Hospitals, at Scutari, continued to be a congeries of Regimental Hospitals, and, at one period, it was actually such in practice. In fact, towards the end of the War, in the General Hospital (that which was first established and to which the others were superadded) the regimental arrangements were distinctly and purposely retained, and this Hospital simply admitted under its roof the several Regimental Hospitals of the cavalry, which had then been put into winter quarters at Scutari.

places, Medical Staff Officers were sent out to the East, who succeeded in bringing these establishments into a more or less creditable state; but they failed, as far as the strictly professional duties were concerned, in establishing a system or, at least, an improved and well-regulated system. The functions of the different ranks were not strictly defined, the individual liberty of officers was, generally, too carefully preserved, and the interests of science were disregarded.

Three defects of the System.

Of these three statements we may give a few illustrations.

Of the most interesting period of the Campaign there will be no Medical history whatever, *i. e.*, none of any value. The Medical Registers were not kept, nor would it have been possible to keep them, owing to their voluminous character; nor, had they been kept, would they have been of any use for Medical science; for the general routine of keeping the Registers is scarcely of any scientific value.

Absence of all Registration of Treatment.

About the beginning of the summer of 1855, a form of questions was prepared for the Surgeons to answer, and these answers will afford, when an Abstract is made of them, very valuable information. But no rule for practice was come to during the War. The principle which we heard constantly asserted, by more than one Principal Medical Officer, was that of making his General Hospital as much like a congeries of Regimental Hospitals as possible. And though this theory neither was nor could be systematically carried out into practice, it remained and does still remain their theory, and prevents, as it prevented, any attempt to devise a better and more practicable scheme.

Entire Independence of the Surgeons in charge of different Wards, as regards Practice and Rules of Treatment.

Each Surgeon in charge of Wards was as independent as though he had been a Regimental Surgeon. He seldom went into any one else's Wards. Enormous as were the numbers of cases of the same kind treated, *viz.*, of Dysen-

tery, Fever, Scurvy, &c., there was no comparison of different treatments, in order to determine, from experience, the most successful kind of treatment, with a view to its adoption generally.

Medical Officers were frequently changed; but the successor was not enabled to profit by the experience of his predecessor.

Each had to learn his own lesson, if he could; and the results were often curious.

Contrast, in this respect, of the French System.

It is well known that, in the French Military and in our own Naval Hospitals,* the highest Medical ranks are those who actually treat the Patients, as they ought logically to be. In both these Services, they are in charge, themselves, of a certain number of Patients. In the French Service, the "treating" Medical Officer (*médecin-major*) is accompanied by his Assistant Surgeon (*aide-major*) and dictates to him the dietetic and medical treatment, and the observations on each case. These are written down by the Assistant, at the bedside, on the same "cahier," and appear on the same sheet. For alternate days there is a different sheet, so that the Surgeon holds his sheet of the preceding day, with its treatment recorded, in his hand, while dictating to his Assistant the treatment of to-day.

From this sheet are extracted the Diet Roll, the Prescriptions, &c., but not by the treating Surgeon.

* We beg not to be understood to mean that the French Army Medical System is perfect; on the contrary, the collision of interests between the French Intendance and Medical Department is *obviously* and actually hurtful to the Patients. The interest of the first is economy—the interest of the second is efficiency: yet the former are allowed occasionally to recommend the latter for promotion; and a Medical Officer troublesome to the Intendance from his care of his Patients, may thus be punished for his very zeal and humanity. It is reversing the order of things, as a very high Functionary of the French Army said to me, "putting the 'materiel' first; the 'body' over the soul."

In our Regimental Hospitals at home, the Surgeon has to make six different records of the Diet Roll himself.

Multifarious Non-professional Duties of our Surgeons.

To give some idea of the multifarious duties, non-professional, devolving upon the Surgeon, we may state that, in one of the General Hospitals, during the War, the Orderly Medical Officer, told off for duty each twenty-four hours, had to give a written Report to the Principal Medical Officer, that he had inspected the Kitchen, the Meals, the Steward's Store, the Wards, the Water-closets, in short, every conceivable appurtenance of a Hospital, about most of which he could know nothing, if he did inspect them, and complained bitterly that he had to do so.

The natural result of loading a man with a greater variety of duties than he can possibly attend to, or than he can possibly be properly acquainted with, is that none are attended to, and the Report becomes merely nominal.

Illustration of the Neglect of Medical Records.

One more illustration. We are now on the point of sending out an Expedition to China. The sufferings and great mortality of the troops, in the Expedition of 1840, from Dysentery and from salt meat, especially of the 26th Regiment (the mortality of which was upwards of 40 per cent.) are fresh in the English memory. Valuable medical records are said to exist of this, in the Archives of the Army Medical Board; yet they were not publicly communicated to all the Medical Officers accompanying this Expedition, nor could they be to those who were ordered to China, from a station distant from England.

Why are not abstracts of or selections from our Medical Records published half-yearly and a copy sent to every Medical Officer in the Service?

To sum up.

Three things which it is here endeavoured to establish are: —

1. The want of definition of the functions of the different ranks.

2. The too great care of the individual liberty of Medical Officers.

3. The disregard of the interests of science.

We cannot, at the same time, repeat too often how ably some of the Medical Officers organized their General Hospitals. But these General Hospitals have been discontinued, some of these officers are on half-pay, some absorbed in the Regimental and Depôt Service, and few, if any, will ever have an opportunity of again acting out or handing down their experience.

Recurrence since the War to the Regimental Hospital System.

It appears that the Army Medical Department, with very few exceptions, has now slipped back to the same state, in which it was before the War; and it may, therefore, be concluded that, the system being the same, it will work again in the same manner in any future War, if the personal experience of a few individuals, which acted so leading a part in the last, is no longer at our command.

We find now the Regimental System kept up as exclusively as before the War—Regiments and Detachments establishing Hospitals wherever they go, independent of each other, according to the system detailed in the Hospital Regulations.

which in the War was found entirely inadequate.

It is, however, an acknowledged fact that the Regimental organization of the British Army—the necessary consequence of the nature of our Service, as it was formerly, proved insufficient for the purposes of a large Force

in the Field—hence the demand for Staff education; hence the brigading together of Troops at home, &c. But, although in the Military *Medical* Service, the evils of an exclusively Regimental organization are, if possible, more evident than in any other branch of the Military Service, in this alone nothing has yet been done to change the System.

Without actual experience, indeed, which the late War so abundantly and sadly furnishes, it is logically evident that to divide a small number of sick into half-a-dozen Hospitals, which have all to be kept up as complete and separate establishments, instead of uniting them into one, necessarily involves considerable waste of labour and expense.

But this is not the greatest disadvantage of the System.

As long as the System of Regimental and Detachment Hospitals is exclusively kept up, no great improvement is possible, in any of the following particulars:—

Nine Particulars in which Small Military Hospitals must continue to be deficient.

1. The management and internal economy of Hospitals, cooking, washing, supply and issue of extras, &c.

2. The financial part of the Service.

3. The professional and economical Superintendence.

4. The organization of the Attendance Department and its Superintendence.

5. The Dispensing and supply of Medicines and other Appliances.

6. The introduction of proper baths, lavatories, &c. See p. 187.

7. The classification and treatment of particular Diseases.

8. The imperatively needed organization of Hospitals for the Soldiers' Wives and Children, when sick, the want of which is most demoralizing.

9. The arrangements for the treatment of sick Prisoners and others, not belonging to Regiments on the Station.

In large permanent Establishments only, could these things be properly regulated.

In Malta, Corfu, Gibraltar, London, Portsmouth, Aldershott, &c., there is a sufficient body of Troops for such Establishments to be made.

Regiments even now leave their sick behind them—one consequence of which is, that no system of Sick Transport is devised.

But the greatest Disadvantage is the want of Professional Training to be obtained in them.

But, above all and before all this, under the present exclusively Regimental System, no great improvement can be made in a professional point of view, *i. e.*, in raising the standard of professional qualification among Army Medical Officers which is so much needed.

However justly they now claim improvement in their status and position (which can hardly, we trust, fail to be granted them), how much more justly would they claim this, which alone will not bring about the necessary improvement in scientific matters, if a change in the System had raised their professional claims?

The desiderata are:—

1. Sufficient professional occupation for Medical Officers to keep up their knowledge, and sufficient material to augment it by experience.

2. Opportunity for improving and furthering the practice of Surgery and Medicine, by command over large numbers of cases of the same affections.

3. Opportunity for comparing results of different modes of treatment.

These things cannot, ordinarily, be found in a Regimental or Detachment Hospital.

No great improvement can be made, because—

1. No practice can ever be established as the best in the Army for the treatment of certain diseases, if the sick are treated in so many hundred Hospitals by as many hundred

Surgeons, scarcely one of whom ever becomes acquainted with the result of the practice of all the rest.

2. No system of mutual information and clinical instruction can ever be established under a System where individual experience remains individual property, or is buried in Official Reports.

3. No professional specialities, and this is a most important point, will ever be educated in the Army, as long as no one can have an opportunity for collecting the necessary material for study, practice, and experiment, in special diseases. Twenty legs may be broken in the same Garrison in one year; but, under the present system, no Surgeon in the Garrison sees more than the one or two under his care, and therefore has very little chance indeed of learning anything by it; whereas a man who treated the whole twenty would be master of the subject, and all the others (for this is the main point) would share the benefit of his experience.

4. The introduction of publicity is one of the most important agents for the improvement of the Department, because it would bring Individuals and Establishments into competition with their rivals in Civil Life and other Armies; but this is almost impossible under the present System.

5. The same thing may be said, both as to the importance and as to the impossibility, (under the present System), of introducing prizes, distinctions, and promotion for scientific and professional labours.

From all these reasons, it would appear that the deduction is as follows:—

Establish Divisional or Brigade Hospitals.

It is desirable to establish on Stations, where larger numbers of Troops than one Regiment are collected, at home and abroad, permanent Divisional or Brigade Hospitals; together with a permanent Staff of Medical and

Administrative Officers and subordinates, for the treatment of the sick of the Station, and of Detachments within reasonable distance.

At this moment, the Artillery at Portsmouth alone have six Hospitals, of which four are within five miles distance of each other.

One advantage to be derived from the above arrangement would be the necessity of transporting sick.

This would lead to an organization of such transport, which at present does not exist; and did not exist, even during the War, at home.

Another advantage would be, that the efficient Hospital Staff, trained under such an organization, would supply Regiments going on Colonial Service for the period of such Service, after which it would return to the General Staff.

The technical difficulties of transforming the present Regimental Medical Officers into Staff Officers may appear greater than they really are.

In the British Army, where one Regiment, or half a Regiment, is stationed by itself at a Colonial Post, it is essential to keep up the main features of the Regimental Medical system; but, whereas now there are, besides the Regimental Surgeon, two Assistant Surgeons to each Regiment in time of peace, three in time of war, one Regimental Surgeon and one Assistant Surgeon would be enough to do the duty, if there were Divisional Hospitals where more than one Regiment are stationed together. The Senior Assistant Surgeon, who is expecting his promotion, might be appointed to the Divisional Hospital.

Baths and Lavatories.

It is not necessary to prove the great importance of personal cleanliness, and of opportunity for bathing, in Hospitals.

Neither is it difficult to make the English Soldier keep

himself clean. In the Crimea, nothing depressed him and put him to shame so much as the impossibility he was under of obtaining the means to do so. Nothing pleased the Patient so much as being washed when he came into Hospital.

There are, of course, dirty and brutal characters in our Army; but anybody who has seen the pursuit of cleanliness under difficulties of the British Soldier, heard his entreaties to the Orderly to bring him soap and water in the Hospital, seen him sitting up in bed scrubbing himself, will allow that it is the least difficult task in a British Military Hospital to inculcate cleanliness among the men.

Yet in most, if not all, Regimental and Garrison Hospitals is still to be seen the Lavatory on the ground floor, with sink and stone flooring, of the same construction for the sick as for the well; and in the Wards little or no provision of basins, towels, soap, &c., which the man is still supposed to find for himself from his kit.

The Medical Officer has still the same difficulty in prescribing baths for his Patients. They may be prescribed, but the thing is not done; and, we fear, never will be done, till there are General and Divisional Hospitals, with proper arrangements for bathing and personal washing. In 1848 a circular was issued from the Director-General's Office, stating that baths were not necessary in Military Hospitals.

Cooking.

The cooking is now provided for, by recent order, in Regimental Hospitals, an Orderly being told off, for the purpose, from the ranks; hitherto it has been done, by Regulation, by the Orderly attending upon the sick.

Practicable Improvement in the Regimental System.

The Regimental System, as laid down in the Hospital Regulations, is so defective in its organization that, if preserved, it needs to be improved.

The Medical Officer and the Hospital Serjeant form the whole Staff in charge of a Regimental Hospital, as at present constituted.

According to those Regulations, the entire management of the Hospital rests with the Medical Officer and a Hospital Serjeant under the Military Authorities.

The duties of the Hospital Serjeant, by Regulation, are so multifarious that it may safely be said to amount to a physical impossibility for one man, however active and intelligent, to perform them all. In addition to which, the natural dislike of almost every Surgeon for non-professional and book-keeping duties throws many more than Regulation duties on the Hospital Serjeant.

Summed up, they are as follow:—

1. To superintend the Wards; the attendance on the Patients; the administration of Medicine, &c., &c., &c.

2. To keep up Military discipline.

3. To assist the Surgeon in keeping the Admission books; in making States, Returns, Accounts, and other Documents.

4. To take charge of the Dieting, Issue of Extras, with half-a-dozen Diet Rolls and Provision Returns.

5. To take charge of the Washing, Hospital Stores, Furniture, Medical and Surgical Stores, Surgery, &c.

The Hospital Serjeant, in short, is to act as

Ward-Master,	Serjeant,
Steward,	Clerk,
Dispenser, till very lately,	

and, where there is no Purveyor, as Purveyor's Clerk.

Under the most ordinary circumstances, it is utterly impossible for one man to perform all these duties; but what becomes of them when the number of sick increases under extraordinary circumstances?

It is indeed the chief fault of the Regimental Hospitals, viz., this want of expansibility.

What really happens is the construction of a different system in every Regimental Hospital. In one, the Hospital Serjeant is always in his Wards, where indeed he has need always to be, and leaves all the writing to an Orderly. In another, he has never time to enter his Wards, which are left to the charge of Patients and Orderlies, and devotes himself to the book-keeping.

Proper Staff of Officers required in a Regimental Hospital.

But a Regimental Hospital really requires, to do its business properly:—

1. A Serjeant, to take Military charge of the Hospital and its Inhabitants, to take the general superintendence, and to be the Office Clerk.

2. An Assistant Ward-Master; to be the Head Nurse, superintend the Orderlies, attend on the sick, administer medicines, &c.; for the Orderlies are only the sweeps and ration-carriers under the present system.

3. A Dispenser (Non-Commissioned), to compound, take charge of Medical and Surgical Stores, of Returns and Accounts connected with these.

(The same man may fill Offices 2 and 3; but not Offices 1 and 2, which, to be well done, must essentially be discharged by two different persons. No. 3 must be an educated Dispenser.)

4. An Assistant Steward, as Purveyor's Clerk; to take charge of Purveyor's and Barrack stores, provisions, cooking, washing, diets, and extras; including Returns and Accounts connected with these.

5. Orderlies in the Regulation-proportion to the sick.

(No. 1 should always be a Soldier; No. 2 of the Medical Staff Corps.)

Need of the Immediate Organization of General Hospitals in time of Peace.

How, then, must these General Hospitals be organized? At Fermoy, &c., &c., there are Depôt Battalions. At Aldershot there is a Camp; yet there is but one General Hospital, viz., at Chatham, and Surgeons might be many years there and learn nothing of the organization of a General Hospital.

It is of the first importance to make use of this time when there are congregations of Regiments (as at Aldershot) grouped together, to form a system of Divisional Hospitals, in which alone Army Surgeons can be properly trained.

The Regimental System was proved completely illusory in the Crimea, not affording accommodation for one-tenth of the sick, although the Regimental Surgeons are admirable and the Regimental Hospitals, during the latter part of the time, were in admirable order.

It might never happen again that we should be twenty-one months in the field on the same spot, and on the march the Regiment cannot carry its Hospitals with it; there must be General Hospitals in the rear, as in the beginning of the Crimean War.

Yet our whole system at home, and in time of peace, having been a Regimental one, it naturally happened during the War, that Staff Surgeons, never having seen more than 50—100 sick together before, had no idea of organizing an Hospital where there were to be 1,000—2,500 sick.

Evils of the Regimental System.

The Regimental Hospital System is, at once, the most expensive and the least conducive to Science that could be devised.

It requires a larger body of Medical Officers, a larger body of Attendants and Officers of every description than any other system.

At the same time, it is the least conducive to Science; for how can a man learn much when he has one or two cases, and not more, of each disease to practise upon?

One of the main objects of a Regimental Surgeon is to have no death in his Regiment during the year; and this is often accomplished; because when a Regiment moves, the sick can be transferred to another Regimental Hospital, or a batch of weakly men may be sent to Chatham to die or be invalided. Provided a man dies out of his Regiment, or is invalided, the object is gained.*

Ignorance and Neglect as to the means of Transport.

During the War, 13,000 sick and wounded passed through Portsmouth. Those who were able to move were sent on to Chatham or to Chichester, the rest detained in General Hospital at Portsmouth up to November 24, 1856.

It will scarcely be credited, yet so entirely unaccustomed were the authorities to deal with large numbers, that there were no sick carriages, or other means provided, to convey the wounded men to Chatham. A certain number of second-class tickets were bought, equal to the number of invalids, and the men put into the second-class carriages, without even a pillow, when they either went to Chichester or to London Bridge, as the case might be; from which latter Station they were transferred by another train to Chatham.

The confusion and distress when the Wounded first arrived at Portsmouth was almost equal to that suffered at Balaclava, or after Alma at Scutari. There was no preparation, and hundreds of wounded men were laid in their

* This is but another proof of how little our Returns of Mortality really tell. In order to give us any actual insight into the sanitary state of our army, we must know how many days a Regiment spends in Hospital in the year; that is, how many days it is more or less ineffective, and how many men are invalided as unfit for service.

blankets on the floor, as appears by the account of the indignant Surgeons. The worst cases were taken into the Hospital, as fast as there was room for them, under the care of a very able 2nd Class Staff Surgeon, who performed many amputations upon these wounded arrivals, but had not one death among them.

Fallacy of the superior knowledge of their men by Regimental Surgeons.

It is repeatedly said that the Regimental System is perfect, because the Regimental Surgeon knows all his men. The fact of the frequent changes of Regimental Surgeons is not noticed. One Regiment has been known to have no less than six Regimental Surgeons successively during the War: and one Surgeon to have been Regimental Surgeon to seven Regiments successively, in the West Indies.

Fallacy of the Argument* drawn from the preference of the Medical Man for Regimental Service; and of the preference of the Soldier for Regimental Hospitals.

It is true that the Regimental Service is infinitely preferred by Medical Officers to the Staff Service, because the Regimental Surgeon is more independent, and less inspected.

It is also said, not without some truth, that the Soldier likes his Regimental Hospital better than the General Hospital as now conducted.

The good ones do, but why? Because there is, now, much less discipline in a General than a Regimental Hospital; the utmost that a Medical Officer can do with a refractory Patient or Orderly who "commits himself" is, to place him under arrest, and report him to the Commandant, or Commanding Officer, and the utmost punishment which usually follows is to order the man, if an orderly, to rejoin his Regiment. I have more than once seen cases where an orderly, if anxious for some reason to rejoin his Corps, offended on purpose.

Actual Deficiency of the Medical Staff Corps

On this and many other accounts, the Corps called the Medical Staff Corps is an excellent institution, although, at this moment, its Members are generally inferior to the

old Orderlies of the Line, having been selected by merely looking at them; but the impossibility of having permanent good Orderlies is obvious—not in the Regiments where, if the Regimental Surgeon is on good terms with his Commanding Officer, he can obtain whichever one or two men he likes; but in General Hospitals it is impossible to expect the Adjutant (or whoever the Officer may be) to tell off the 100 best men for the Hospital service. He tells off the worst.

which was employed in the General Hospitals.

A permanent Corps of Hospital Attendants, with Superintendents of its own, is therefore an obvious improvement; but it has not been made in the best way. Instead of their having Medical Officers or skilled Nurses appointed expressly to instruct them theoretically and practically in dressing a blister, putting on a water-dressing, and all the minor dressings they will have to perform, they have been left to learn, or not to learn, by their own intuition. A Medical Staff Orderly has been seen endeavouring to make a Patient eat his poultice—in all good faith.

This Corps is also understood to be enlisted to serve "in Hospital;" *i. e.*, not to be employed under fire, or in the field. Yet it would seem as if one of its main duties would have been to carry wounded to the rear: whence it would also have followed that the Medical Staff Orderlies ought to be instructed in such duties as having at hand for the use of the Surgeon what is necessary for an amputation, for putting up a compound fracture, for applying the tourniquet in case of hæmorrhage. A certain amount of Anatomical Instruction from a Medical Officer would appear to be highly necessary, so that they should at least know where the principal arteries are.

I have seen a Medical Officer cooking starch himself in the kitchen in a Hospital, because the Medical Staff

Extra Duties entailed on the Medical

Officers, in consequence of the Ignorance of the Attendants.

Orderlies did not know how to make starch for starched bandages; and it was not the business of any one to shew them.

I have seen a Medical Officer (doing duty as Assistant Surgeon, at Scutari), spreading simple dressing himself on lint, spending a couple of hours in making his own petty arrangements, which were obviously the duty of an Orderly or Nurse, and which, had they been made for him, would have given him time to attend far more closely to far more Patients.

The cause of all this is in the Medical Officer being understood to perform duties which he never does perform, and which he ought not to perform, if he does his duty by his Patients. He is understood to dispense, administer medicine himself, and attend to all those minor Surgical details which, in all Civil Hospitals, are the recognized duty of the Nurse.

It is true, that the Hospital Serjeant does dispense—it is true, that the Orderlies do dress blisters, &c.; but the absurd practice is still followed out, *viz.*, of winking at their doing so, and not recognizing the necessity of its being so; and therefore it is not made a regular part of their education to learn how to do it properly; indeed, they are supposed to require no education at all.

The washing is done as follows:—the "Diets" are counted up, which means the Patients; the Hospital Serjeant probably has a wife, and she receives the dirty linen, washes it, the Purveyor reckons up the pence, and gives her so much per "Diet." This again does very well when there are ten Patients; where there were 10,000, we saw the failure.

But is this a preparation for organizing a General Hospital in time of war? Is it to be wondered at, that Medical Officers brought up in this School to look after a dozen

Patients, should have lost their heads in time of pressure, and been incapable of coping with it?

These minute details are given, in order to shew how necessary it is to have model General Hospitals at home. To any one who has seen a Regimental Hospital at work in time of peace at home, and a General Hospital abroad in time of war, it would seem as if the Surgeons who made the latter march at all, must have been gifted with real intuitive genius, and resource, so wholly unprepared were they with any example, any training, any experience. So far from blaming them for what they did not, we must admire what they did.

Sketch of the Hospital Service of the French and Sardinians.

A sketch may be added of the organic difference between the Hospital Service of the several nations engaged in the War.

The essential characteristic of the French is, the importance given to the Divisional Hospital Service in the field over the Regimental. The Regimental Medical Service treats only those ephemeral cases which are to be exempted from duty for a day or two.

All those whose wound or disease, such as Bronchitis, &c., is supposed likely to last for a term of weeks, are sent to the Divisional Ambulance, established in the field. Those, again, whose disease may possibly last for months,—chronic cases, which yet may rejoin the Army, and do not therefore require to be sent home, are sent to the General Hospital at the base of operations (in the late War, Constantinople).

The Sardinian Medical Service closely resembles the

above in its formation. In the late War, the General Ambulances were in the Crimea, on the heights above our own Castle Hospital, at the mouth of Balaklava Harbour. The General Hospitals were at Jeni Koï, on the Bosphorus.

"There are 1,276 Medical Officers in the French Army. Of this number about 600 are employed in the different Regiments. Each Regiment has a complement of 3 Medical Officers, viz., 1 Médecin Major, 2 Aides.

"The remaining 676 are attached to the ambulances and Hospitals—they can be detached for service in the Regiments, according to the exigencies of the Service, or *vice versâ*.

"Of the 676, about 400 perform the duties of Assistants and Dressers; the remaining 276 only are the actual responsible officers.

"Those Medical Officers who are attached to Regiments cannot treat their sick, but only slight cases of indisposition, such as may be liable to incapacitate the men from the performance of their duties for a few days only: all those who are really sick are sent to the Ambulances," (Divisional or General) "where they are at once removed from all further control or care of the Regimental Medical Officers, who are not permitted even to visit them after their removal.

"The duties of the Regimental Medical Officers are to examine, each morning, all those soldiers who report themselves sick and to send them to the Divisional Ambulance, or exempt them from duty for a day or two, according as the gravity of their case may demand either expedient; to make suggestions to the officer commanding the Regiment, on all matters connected with the Sanitary arrangements of the Camp or Barracks, and also to report on all Medical matters to the Medical Board in Paris.

"This Board is composed of—

"1 Pharmacien Inspecteur-Général,
"6 Inspecteurs-Généraux des Hôpitaux." *

* This extract is translated from a French document.

The French Regimental Medical Officer corresponds exactly to the Sanitary Officer we would wish to see established, as our Regimental Surgeon.

The grand fault of the French Medical System is its dependence upon and subordination to the Intendance, which defect branches out into every ramification. It is impossible to describe the deplorable consequences of this subordination, nor the feeling entertained by the French Medical Service about it, which, for obvious reasons, they are obliged to dissemble.

In our Army, as is well known, the Regiment estab- Of the English.
lishes its Regimental Hospital, wherever it goes.

Theoretically, it is exclusively a Regimental system of Hospitals; but, practically, as has been seen, it entirely breaks down.

When an army is advancing, for instance, as was our case at the Alma, the sick and wounded must obviously be transferred as quickly as possible to the General Hospitals at the base of operations. During the whole winter of '54-55, even when we were stationary, the Regimental Hospitals were found incapable of holding one-tenth of the sick and wounded, and it will be seen by the return p. 17, how large was the proportion sent to the same General Hospitals.

A General Hospital was also established early in the summer of '55, in the front, three others in the rear.

Great as are the theoretical advantages of Regimental Hospitals, practically, in operations of any magnitude, they must always be found inadequate. For what circumstances could have been found so favourable to them as the late War, where we remained on the spot after Balaklava, Inkermann, and all the winter?

How many battles are recorded in history, where the Army remained where the battle was fought, after it was

over, and was able to accommodate its sick and wounded on the spot? This can only be the case in sieges, in a standing camp or winter quarters.

The question will be immediately asked, as to the injury likely to be inflicted on the sick by moving them?

This may very shortly be answered. There cannot be a doubt as to the fatal consequences of transporting Cholera or Choleraic Diarrhœa. It was little less than manslaughter sending these cases down to Scutari. Cholera can best be treated where the man is attacked. Lay the man down, if possible, then and there in blankets, and treat him there. Move him in a horizontal position, when he can be moved, to the nearest Hospital.

As for fever, change of air is the best thing for the case in the incipient stage, or when convalescence has begun. In the collapse stage of Typhoid Fever, it is nearly sure to be fatal.

In wounds, there are always 24 hours' respite, before inflammatory symptoms set in, when it does the wounded no harm to be moved.

It is true, on the other hand, that there is a time when wounded are moved with difficulty, especially compound fractures.

Great must have been the suffering, and fatal the consequences, of the 7 miles' land journey after Inkerman to the wounded.

But, again, after how many battles has it not been compulsory to move the wounded off the ground?

It remains to say, is it safe to depend upon an exclusively Regimental system, when in all emergencies, the General Hospitals must be what we must fall back upon?

Of the Russians.

The Russian system can scarcely bear a comparison with ours; because their Regiments are Divisions. They had a regular system of transporting the sick and wounded

upon the North side of Sevastopol, then upon Mackenzie's Heights, then upon Bakschi-Serai, and lastly upon Simpferopol.

This system seems to have been excellent. And the wonderful effects of change of air upon the sick in inducing recovery, spite of the inconvenience of transport, are well known, and have been seen in the Peninsula, even on a retreat.

VIII.

Notes on the Existing Organization for General Hospitals.

Government of General Hospitals.

The primary necessity of Hospital management is the reduction of Departments to their smallest possible number, and the definition of their functions. Military General Hospitals should be compared with Civil Hospitals, Gaols, Lunatic Asylums, and Workhouses—institutions containing from 1,000 to 1,500 persons.

Hitherto there have been Nine Departments concerned in their Management.

In our present Military General Hospitals there are nine Departments, a system which seems to have been adopted for the sake of checks and counter-checks, the object of which is rather to save money than to save the lives of the sick. It is a system inconsistent with prompt and efficient action.

The nine Departments are as follow :—

1. The Medical Department.

First, the Medical Department, named by the Director-General, and appointed by the Commander of the Forces.

In the case of Scutari, the position was one intermediate between the Home and the Military authority. In other cases, also, General Hospitals at the base of operations must always be at some distance from the army.

The first and second Commandants at Scutari were named by the Commander of the Forces; the third, after having been made Commandant of a Civil Hospital at Smyrna, by the sole authority of the War Department, was appointed Major-General Commanding in the Bosphorus, by the Commander of the Forces.

The Principal Medical Officer was appointed by the

Commander of the Forces, and was inspected and reported upon by the Inspector-General in the Crimea—(*vide* Report of the House of Commons Committee and the General Orders).

The War Department, dissatisfied with this Report, and receiving extraneous information, sent out to Scutari an additional staff, to reinforce the Medical Department, October 1854, unappointed, though possibly confirmed, by the Commander of the Forces.

2. The Commissariat.

Secondly, the COMMISSARIAT, who are the carriers, store-keepers, and bankers of the army.

The Medical Department, therefore, can send its stores through them only, and it was, at Scutari, dependent for the removal of its stores to and from Varna on the Commissariat, using a portion of that Transport which was under the command of the Admiralty. Upon the same principle the transport of even wood, charcoal, and ice, meat, and bread, rested with the Commissariat, as did the conveyance to the Purveyor's Department of whatever was landed from England.

In the Contracting Department of the Commissariat, the Purveyors and Medical Officers received from the Commissariat commodities in the choice of which they had no voice and over the quality of which they had no power, except that of reporting.*

* The questions to be asked, in order to elucidate this all-important question of supply, would seem to be the following:—

1. What are the inconveniences from mixing the duties of the Purveyor with those of the Commissariat? Had the Purveyor, in the late War, any veto on the Commissariat contracts, on the choice of kinds,
qualities,
prices?

2. Did any remarks or remonstrances induce the Commissary ever to change?

3. Was not the Purveyor in the hands of the Commissary, and was there

In the Banking Department of the Commissariat, the officers of all grades in the Hospitals, Medical, Civil, and

any appeal to the Commander-in-Chief, except in extreme cases, and, if used, did it bring on dispute?

4. As to coal, wood, charcoal, did not the Commissary provide these, did not the *supply* run low, and was not the quality bad, on account of them being no store on the Asiatic side and of the difficulty in the passage without any immediate remedy?

5. In these matters would the service have profited, as to supply and rapidity, certainty and quality, had the Purveyor made his own contracts?

6. Does the same apply as to bread?

7. Was not the bread at Kochali better than at Scutari, under similar circumstances?

8. In landing goods, stores, and provisions, was the Purveyor dependent on the means of carriage the Commissary had collected, and could the Commissary know the wants of the Purveyor, while collecting that carriage from day to day?

9. Was mutton always given to the British and beef to the French, with few exceptions?

Could the Purveyor, had the Regulations allowed, have provided beef?

Was he ever told that quantities of cattle existed round Olympus, in sight of Scutari?

Was the question ever debated between the Medical Officers and the Purveyor, and any demand made on the Commissariat, at Head Quarters at Pera?

10. Had the Purveyor supplied his own Hospitals, by Agents and Contractors, would any practical difficulty have arisen, by conflicting with the Commissariat, which mutual understanding and information would not have prevented or removed?

11. In this point of view, were not the Hospitals on the Bosphorus and Dardanelles wholly detached in principle, as well as geographically, from the Army Hospitals at the base and centre of operations in the Crimea?

12. If the Commissariat can alone supply the Army and Army Hospitals does it follow that the Purveyor may not pervey provisions, carriage, &c., as well as other supplies, for Hospitals in England, in the Colonies, and detached from Armies, *i. e.*, drawing their supplies from other districts than those used for the Army's supplies?

13. As the Commissariat had the carriage department, *i. e.*, the bringing goods from the quays to the Hospitals, and as the Quartermaster-General had the care of the quays, was there any good combined action or any mechanical contrivance for diminishing the labour, in bringing the same goods up the steep ascent, from the landing-place to Scutari? In such cases, would advantage be derived from the Commissariat not being allowed to intervene?

Ecclesiastical, were taken from their duties in the Hospitals to be paid at Pera, the Central Counting-house of the Commissariat, on the opposite side of the Bosphorus.

3. The Purveyor's Department.

Third, the Purveyor's Department.—A great part of the food supplied to the Hospital consists of the regulated rations of the soldiers who are inmates. These are contracted for and provided by the Commissariat, and the Purveyor is obliged to receive them, whatever may be his judgment as to the price, or even as to the quality, unless they should be so bad as to be altogether unfit for use. As to the periods of supply (which is of the greatest importance to his office) he is subject to the provisions of the Contract drawn as above.

Food.

As to other commodities, not contracted for by the Commissariat, however great may be the wants of the soldiers, the Purveyor is restricted to the existing Warrants of the War Department (which are wholly inadequate to the requirements of the soldiers in hospital, in time of war). If he exceeds them, he is liable to be mulcted to the pecuniary value of the excess.

But, where the Purveyor has the signature of a Medical Officer for a medical requirement, as wine or spirits, he is wholly reckless of the quantity supplied, not considering himself responsible, and exercises no judgment in the matter.

The first Purveyor-General, *e. g.*, even while holding in

Knives, Forks,

16. Is the Purveyor held bound to see that the kitchens are perfectly adapted to the service?

Are any kitchens so adapted?

17. Are requirements as to food, its preparation, its distribution, serving, &c., under the Purveyor or under the Medical Officer?

What simplification of action could be suggested?

18. Would variety of Diet be more expensive?

17. If potatoes or other food, not to be had on the spot, were ordered, by what Departmental steps were they obtained?

and Spoons, &c.

his hand the Secretary at War's general authorization as to issues, in November 1854, and while admitting that he knew as a fact that a portion of the soldiers then in Hospital had been ordered to abandon their knapsacks, refused to supply knife, fork, spoon, &c. &c., upon the ground that the War Department Warrant required each soldier to bring the knife, fork, and spoon of his kit into Hospital for use.

The refusal, on the same ground of Warrants, applies to utensils, benches and tables, lamps, &c., which ought to be furnished by the Barrack Department, according to War Office Regulation.

The principle of supplying some articles under Warrant and others not under Warrant, although under circumstances of paramount necessity, did affect the Purveyor's mind and would affect any other Purveyor's mind, with the idea that he was showing great liberality, under the first; while exercising great economy, or absolute refusal in regard to the second.

This refusal was, however, foreseen by the War Department, and, consequently, a peculiar and exceptional power was given to the Ambassador at Constantinople, and it was on finding that the Ambassador did not exercise the power nor use the credits thus given to him, that Miss Nightingale issued, for a length of time, a great variety of stores and extra diets (on the requisitions of Medical Officers) as follow:—

Average Daily Issue of Extra Diets supplied from F. Nightingale's Kitchens to the Extra Diet Rolls of the Medical Officers, Barrack Hospital, Scutari, from 10th January, 1855, to 13th February. Vide p. 61 of "Report upon the Scutari and Crimean Hospitals," by the Cumming-Maxwell Commission.

No. supplied.	———	From Public Stores.	From Private Sources.
35 gallons ...	Beef tea ...	40 lbs. beef	...
15 „ ...	Chicken broth	28 chickens	12 chickens
45 „ ...	Arrow-root ...	...	Arrow-root
15 „ ...	Sago ...	...	Sago
240 quarts ...	Barley water ...	Barley	...
10 „ ...	Rice water ...	Rice	—
8 „ ...	Lemonade ...	...	Lemons
20 „ ...	Milk	...	Milk
175 portions ...	Rice puddings	Rice	...
53 bottles ...	Port wine ...	...	Port wine
8 „ ...	Marsala ...	...	Marsala
3 „ ...	Brandy ...	...	Brandy
25 lbs. ...	Jelly	...	Isinglass
4 dozen ...	Eggs	...	Eggs
40	Chickens ...	28 chickens	12 chickens

SCHEDULE A.

List of the Principal Articles of Hospital Furniture, &c., supplied by Miss Nightingale, on the requisitions of the Medical Officers to the Hospitals at Scutari, from November 10, 1854, to July 1, 1856.

ARTICLES.	Deficient Public Stores	Obtained from Private Sources	Total Issued to Nov. 1, 1854, to July 1, 1856	Issued to Nov. 1, 1854, to July 1, 1855	Issued to July 1, 1855, to July 1, 1856	Total Issued to Nov. 1, 1854, to July 1, 1856
Cotton Shirts	400	10,137	10,537	1,436	1,365	13,338
Flannel ditto	400	6,423	6,823	1,013	1,324	9,160
Drawers	...	4,007	4,007	460	165	5,172
Pairs of socks and stockings	50	6,123	6,173	791	865	7,829
Night caps	270	1,238	1,508	1,046	270	2,824
Pairs of slippers ...	200	1,050	1,250	410	443	2,103
Coatees	...	2,674	2,674	594	157	3,425
Pairs of mittens ...	...	427	427	...	15	442
Hospital suits of clothing	150	293	443	29	12	484
Handkerchiefs ...	...	615	615	1,460	1,310	3,385

List of Principal Articles of Hospital Furniture, &c.—continued.

ARTICLES.	Obtained from Public Stores.	Obtained from Private Sources.	Number of Articles in Store, 1st April, 1867.	Number of Articles in Store, 1st April, 1868.	Number of Articles Condemned during the Year.	Number of Articles Purchased during the Year.
Flannel belts	..	301	301	47	116	163
Sheets (pairs)	379	..	379	14	27	413
Towels	150	639	789	239	319	1,377
Hair mattresses ..	20	..	20	4	..	24
Hair pillows	..	247	247	70	2	315
Straw pillows	150	..	150	..	152	302
Knives and forks ..	70	645	715	77	64	856
Spoons	100	1,037	1,137	77	136	1,350
Tin drinking cups..	300	4,026	4,326	44	300	4,670
Earthenware ditto ..	57	500	557	250	..	807
Tin plates	300	1,486	1,786	..	300	2,086
Meat dishes	..	75	75	..	..	75
Basins (zinc)	..	155	155	9	..	164
Basins (earthenware	80	200	280	..	80	360
Basins (wooden) ..	..	100	100	..	..	100
Wooden spoons ..	..	1,300	1,300	..	..	1,300
Buckets	..	28	28	..	..	28
Bed pans, &c.	..	613	613	36	..	649
Tin pails for soap ..	..	192	192	16	..	208
Wooden trays	..	86	86	..	..	86
Hair brooms	30	45	75	20	..	95
Hand scrubbers ..	..	136	136	23	..	159
Long scrubbers ..	..	78	78	..	..	78
Mops	48	..	48	23	..	71
Shoe brushes (sets)	..	93	93	2	..	95
Blacking (dozen) ..	..	22½	22½	16	..	38½
Combs	444	84	528	128	130	786
Lamps and lanterns	..	106	106	1	6	113
Scissors (pairs) ..	..	51	51	24	..	75
Mats (cocoa nut) ..	..	39	39	35	..	74
Saucepans	10	17	27	..	..	27
Boiler	1	..	1	..	..	1
Candlesticks	..	36	36	..	..	36
Sick feeders	..	24	24	..	9	33
Expectorating cups	..	20	20	34	..	54
Tables	..	84	84	2	15	99
Forms	..	144	144	5	22	171
Clocks	..	19	19	2	..	21
Baths	..	16	16	6	2	24
Operating tables ..	..	2	2	..	..	2

A Purveyor, under such circumstances and for such articles as hospital shirts, knives, and forks, would naturally consider no requisition upon him as valid, inasmuch as they are theoretically provided for by the War Department. And the fact of the articles not being otherwise provided would not defend him against pecuniary loss for supplying what was not included in the War Department Regulation, as was stated in words and truly.

Cooking.

The Purveyor's Department, having first issued the provisions, was held to cook them; but it was not responsible for extra-diet kitchens, and none existed previous to Miss Nightingale's. The only approach to extra diets was the cooking of fowls, arrow-root, &c., in one of the common coppers at the same time as the other food, and with the same method.

The Kitchen, as a case in Illustration.

The Kitchen illustrates the conflicting powers of Departments; the Commandant assigns the orderlies to the wards, who fetch the diets, and the cook, who cooks them; the Medical Officer determines the diet; the Engineer maintains the kitchen in a sufficient state of repair; the Purveyor supplies the food, part of which he obtains from the Contractor, as he does the fuel. The Commissariat through the Contractor supplies fuel, bread, and meat; the soldier himself supplies some of the utensils necessary for eating. In the case of Scutari, the Commissariat supplied the carriage of the fuel, through the local subordinate stationed there.

In one case of fuel running short, an extra-diet kitchen was supplied by Miss Nightingale buying four caïque loads of fuel. The Commissariat Officer, not having a supply at Scutari from the Contractor, offered her orderly £1, to buy what he could at the Bazaar.

The local Commissariat Officer thus depended entirely on the Contractor, and, in a gale of wind, which prevented

the commissariat supply coming from Constantinople, he had no mode of reproducing his supply; although to the market of Scutari town, a mile distant, a number of "arabas" brought in fuel daily.

The Purveyor, therefore, bound to supply the dinners, had no means to supply the fuel, but depended on the soundness of the Contract, the fidelity of the Contractor (the servant of the Commissariat), and the state of the weather.

Washing. The washing is also in the Purveyor's Department; but, not being responsible for the care and cleanliness of the patients, he had no sufficient incitement either to provide liberally and punctually for its execution, or to provide the machines, appliances, and labour necessary—considerations which guide the mind of the Steward of a Civil Hospital in England and even of the Committee, in the construction of the building.

A large wash-house, admirably fitted by the Turkish authorities who built the Hospital, was seized by the Commissariat, and used as a depôt for chopped straw. The Purveyor contented himself with contracting for the washing. The contract was very soon broken, in consequence of the evident want of means for fulfilling it.

After November 4, 1854, Miss Nightingale having supplied 2,000 shirts on the refusal of the Purveyor so to do (upon the principle above stated that the soldier was bound to have them in his kit), it was found that the men were not supplied with clean shirts, all efficient means of washing having been neglected. Miss Nightingale formed a washing establishment, by which a portion of washing was effected; another portion was given out to individual soldiers' wives by the Purveyor: the sheeting and bedding continued to be washed by the Contractor.

Even after the order from England was obtained to

clean out the wash-house, the Commissariat having no interest in the matter, allowed two months to elapse before it was effected; the straw being carried away on panniers.

The wash-house, as fitted by the Turks, with additional machines sent out by the Medical Department, on requirement, and a drying closet supplied by private benevolence, did all that was required with peculiar efficiency. It was not, however, opened till May 1, 1855.

The Purveyor has charge of every soldier's kit, arms and accoutrements, money, &c. If the soldier dies, the effects are sold, and the proceeds forwarded through the Paymaster to the War Department to the credit of the relatives. These duties would devolve upon a Governor, should such an officer be appointed, who would, in addition, cause an inventory to be taken of the man's effects, upon his entry into Hospital; this to be read to him, receive his signature, and be forwarded to his relatives in case of death. Kit, &c.

Fourth, the Engineer's Department.—To the Engineer Officer belong the fittings, drainage, and repairs of Hospitals. He can act on requisition only of Commandant, Quarter-Master General, Chief Medical Officer, or Purveyor—the last two indirectly. He is dependent for the supply of money to purchase labour and material on the Commandant. 4. The Engineer's Department.

He is not constituted a judge of sanitary matters; as to ventilation, for instance, he can take no measures without the authority of one of the above Officers, with whom the "requisitions" to promote it must officially originate.

And, as to water-supply, the same principle applies. However much he may be convinced of the necessity of such measures from his professional experience, he has to act under the instructions of those who may have no knowledge of what may be necessary for protecting health

nor official responsibility as to proceedings even obviously necessary.

As to the kitchens, he is bound to see to their efficiency, but only upon requisition of the Chief Medical Officer, or Purveyor, countersigned by the Commandant.

To illustrate this again, it must here be stated that the Engineer Officer at Scutari, although directed by the Commandant to raise buildings for stores, was unable to do so for want of a supply of money; for the same reason the Commandant was unable to effect the repair of a large portion of the Scutari Barracks. These things were afterwards provided for by an order from England, received October 1854, which gave the Ambassador power. This power, however, he did not use, vainly endeavouring to obtain such repairs from the Turks. After the repairs were begun, and some 80 workmen employed, at a moment of great urgency, the money for the payment was advanced to the Engineer Officer from a private source.

The necessary improvements in drainage, and cleansing the Hospital yard and adjacent ground and roads, were not effected till the Sanitary Commission directed these operations under the powers of their Commission. With regard to the water supply, whatever investigations may have been made before the arrival of the Commission, nothing was done, though imminent danger of its diminution or interruption existed. If any representation was made to superior powers, it was to the Ambassador, who may have referred to the Turkish authorities, as in the parallel case of repairs of the Hospital buildings.

About the year 1806, an aqueduct of four miles was constructed by Sultan Selim, for the supply of his newly-built mosque and village of Selimiyeh, to which the Hospital is adjacent. This aqueduct was formed of pipe tiles laid close under the surface of the ground, and was found

to be exceedingly defective, and likely, upon evidence of the Turkish employés, as well as from obvious defects, to lose three-fourths of its supply in the summer.

It was not till April 1855, however, that the Engineer Officer was empowered, by a sufficiently authoritative order, to take the necessary measures. He began the repair of the aqueduct May 1, 1855, and the operations terminated towards the end of July. In the beginning, ten, and afterwards eighty, Turks and Greeks were employed under Sapper and Miner non-commissioned officers.

Happily, the intelligence and experience of the Greek workmen in this peculiar kind of work supplied the want of interpreters in great measure, and the Sappers (of whom three or four only could be spared) were enabled to explain the excellent plan marked out for the work, in some cases varying from the old line of the conduit.

In one spot, where the ground had broken away with the conduit, the chasm was filled up with the body of a dead horse, through which the water ran for several weeks.

From this history it may be inferred that, without these steps, it is very doubtful whether means would have existed to maintain a supply of water to the Hospital and troops, amounting to from 5,000 to 7,000 men.

It was stated to the Sanitary Commission, that the additional water supply was contingent on the Turks giving authority, and that this matter was in course when they arrived.

To the Engineers' Department belonged the duty of maintaining the quays, which, after great delay, was effected under an order from the Quarter-Master General's Office.

The Engineer Officer was not supplied with sufficient

assistance of officers, non-commissioned officers, or interpreters, and effected his objects, only after unnecessary delay in authorization, by the employment of great numbers of the Greek populations.

In regard to the improvements introduced by the Sanitary Commissioners, he was assisted by their inferior officers, by the advice of their Engineer, and by the carpenters sent out from England in the summer of 1855.

It may here be observed, in justice to the Officer, Captain, now Major Gordon, who commanded the Engineers, from September 1854 up to the evacuation of Turkey by the British, that not only had he neither distinct authority to whom to apply, upon points evidently requiring his interference, nor definite power in executing what was to be done; but, while responsible for large sums of money expended in contracts and for labour, skilled and unskilled, (chiefly Greek,) he had often difficulties in getting cash in time and even in trusting his messengers. For his inferior officers, commissioned and non-commissioned, were perpetually sick; no efficient assistance was rendered to him in answer to his constant applications; he was also harassed by contradictory orders, and by the results of attempts to escape responsibility in those above and below him. It is therefore as surprising as it is creditable to him that so much was effected in his Department. But the fortunate efficiency of this Officer in the midst of difficulties by no means excuses the system which leaves the Engineer of a Hospital or Depôt in time of war, to be commanded by several Departments, alike incapable and unwilling to direct him in any special duties.

2. Adjutant-General's Department.

Fifth, the Adjutant-General's Department had charge, besides keeping up the military discipline, of the burials, the cleansing of the barrack-yard, incidentally a

this case the hospital-yard also, and of supplying fatigue parties for landing the sick, and every imaginable purpose; duties executed from the occupation of the Barrack Hospital in October 1854, to its close in August 1856, with great alacrity and unwearied perseverance by Lieutenant, now Captain Finnerty, 47th Regiment.

4. The Quarter-Master General's Department.

Sixth, the QUARTER-MASTER GENERAL'S DEPARTMENT.—Its duties consist of obtaining quarters and distributing them to troops, Officers, Chaplains, Medical Officers, Civilians, women—within and without the Hospital; it has in charge the Quarter-Master's stores, also finding store room, and the transport of the sick, with the Quarter-Master General's duties belonging to the Depôt.

At first, the landing of the sick at Scutari was effected almost by hap-hazard. The larger Hospital was filled till it could hold no more: the excess went on to the other Hospital, either on stretchers or otherwise. Afterwards, a return of vacant beds from each Hospital was made to the Quarter-Master General's Office by the Inspector-General, and the boats containing sick being ordered to the wharf communicating with the Barrack Hospital or with the General and Palace Hospitals, as the case might be, the Deputy Assistant Quarter-Master General stood at the beach directing the course of the sick transport. Occasionally, however, he lost his reckoning, did not remember the number of sick he had sent to occupy the number of vacant beds, and sent another boat-load at random "to astonish—" the Medical Officer in charge.

But what really was "astonishing" was the non-construction of a pier between the Barrack and General Hospitals. The carrying by unwilling Turks, or feeble convalescents, of the "stretcher cases" during the greater part of the winter will long be remembered.

In the case of a remodelled Hospital, with Governor,

Steward, &c., all the Quarter-Master General's duties which apply to the interior of a Hospital would cease.

7. The Contractor.

Seventh, the CONTRACTOR, who enters into contracts with the Commissariat.—Thus the Commissariat make the contracts for bread, meat, fuel, and sometimes wine, for the Purveyors, upon whom, therefore, the Contractors are not immediately dependent, as they ought to be, and as actually is the case with corresponding departments in Naval and Civil Hospitals. Thus the Purveyors have an immediate interest in enforcing the terms of the Contract, but not the power to do so. The Commissariat have the power, but not the interest.

8. The Paymaster.

Eighth, the PAYMASTER, who keeps the accounts of the soldier in Hospital, and receives from the Purveyor his report of their stoppages.—The stoppages are now of thirteen kinds; viz., two on board ship, two in the field, two for sick and wounded in the field, three for sick in Hospital, one for troops at home, three for troops serving abroad,—which is very unsatisfactory to the men. Uniformity of stoppages would reduce a great expense in keeping accounts, now taking many soldiers from their duty—it would be a great satisfaction to the men—and an uniform stoppage might be fixed so as not to cost anything to the country. It is impossible to describe to one who has not seen it the distrust engendered in the men and the expense occasioned to Government by the cumbrous machinery of "stoppages."

The ration stoppage in the Crimea was—

4½*d.* doing duty on shore;
3½*d.* in hospital;
4½*d.* in hospital at Scutari;
5*d.* on board ship;
6*d.* ditto, if receiving spirits.

Crimean Commissioners' Report.

"For each man it is necessary, to the settlement of his account, that the precise amount of stoppage to which he is subject on each day should be ascertained. This, however, in a vast number of cases, is impossible; and therefore the soldier cannot get a settlement of his account; neither can the Regimental Paymaster, nor the Commissariat, nor the Purveyor. At length, after an amount of labour and correspondence which is almost incredible, the inextricable knot has probably to be cut by an arbitrary settlement, as being the only one practicable.

"Even when the whole details of the various stoppages can be traced and established, the amount of labour and the extent of the accounts is enormous."

2. The Commandant.

And ninthly, the COMMANDANT.—His present duties are the military command of Depôt and Hospital, including that of Medical and Civil Officers, and of camp followers and labourers employed. But the duties of a Governor, if a Governor were appointed, would supersede those of the Commandant in the interior discipline of the Hospital, and would include countersigning orders and auditing accounts, to which would be added the carrying out the recommendations of the Sanitary Officer, the collecting, arranging, and forwarding reports of Admissions, Deaths, and Discharges, the disbursement of incidental expenditure, &c.

The duties of the Commandant, by the present system, involve absolute command over two Departments, concerning which his military education and career leave him wholly uninstructed, viz., the Medical and Purveying Departments. He must necessarily, therefore, interfere ignorantly, and occasionally officiously, or he must allow these Departments to be carried on without any of those checks or supervisions apparently intended to exist, except when extraordinary exigencies, as in the late war,

occasion various exceptional orders, he has no means of obtaining money or credit with the Commissariat, beyond his current official expenses.

The 1st and 2nd Commandants, at Scutari, withdrew as much as possible from all interference with the Medical Officers. With regard to the Purveying Officers, these Commandants accepted those officers' own views of their respective duties: a principle of action which, it is evident, would be most readily adopted by military men, who must be averse to involve themselves in the difficulties of directing officers as to duties with which they themselves must be necessarily unacquainted.

In discussing the question of the Government of a General Hospital, hereafter, it will be proposed that a "Governor" shall absorb the duties of Commandant, of Adjutant and Quarter-Master General, that there shall be no depôt at or in any future hospital, or within the sphere of the "Governor's" duties, and that all patients must cease to be soldiers in Hospital, as in the Sardinian army.

It is desirable, wherever it may be found practicable, that the Depôt should be not less than a mile distant from the Hospital. Great practical inconvenience results from its proximity.

In what follows it is assumed—

Summary of Changes which may be assumed as already proved to be necessary.

1st. That there will be two or more General Hospitals in England.

2nd. That there will be a Medical Staff Corps.

3rd. That there will be a Female Nursing Establishment, with restricted and defined powers.

4th. That there will be an Army Works Corps, or a Pioneers' Corps, the practical operations of which would be directed by Engineers.

5th. That a Sanitary element in the army, as stationed at home and abroad, will exist, as has been proved in the late campaign to be necessary.

6th. That Regimental Hospitals will remain as they are; subject to the formation of temporary Central Hospitals in the front, in case of siege or during winter quarters.

7th. That there will be a General Hospital at the base of operations.

8th That there will be a Depôt (near the General Hospital, at the base of operations), with a Quarter-Master General's store, (independent of the divisional stores of regiments,) from which the deficiency of the soldier's kit, arms, and accoutrements can be made up.

9th. That the Depôt will not be under the same command, or in the same building as the Hospital, although it would furnish guards to the Hospital.

IX.

Propositions as to General Hospitals.

Propositions as to General Hospitals.

1. That the Hospital shall not be dependent upon the Commissariat for any supplies, but that the Commissariat shall honour the drafts of the Treasurer, countersigned by the Governor, for the expenses of the Hospital, including the pay of the officers, attendants, and others attached to it, and that the Governor shall be held responsible for the due and proper disbursement and application of the funds.

2. That the duties of the Purveyor shall be equivalent to those of the Steward in a Civil Hospital.

3. That all transport by sea or land required by the Steward for the purposes of the Hospital, be obtained or provided by the Governor, as also the transport required by the Principal Medical Officer for stores strictly medical.

4. No contracts for supplies to the Hospital which the Steward may propose to make, shall be concluded until approved and countersigned by the Governor, unless when made at a distance from the Hospital by written instructions from the Governor, by whom, in that case, they must subsequently be countersigned.

5. All Contracts for supplies shall contain a clause authorizing the Steward to purchase in the market, at the cost of the Contractor, any supplies which the Contractor may fail to deliver in terms of his Contract—if they are immediately required.

6. The government and control of the Hospital shall be vested in the Governor, except so far as relates to the medical and surgical treatment of the patients by the Medical Officers.

7. The Governor of a General Hospital, whether he be a Military or Medical Officer or a Civilian, shall be considered, and shall assume the functions, and be vested with the powers, of a Civil Governor.

8. That there be attached to the Hospital one or more Military Officers of the Adjutant-General's Department, subject to the authority of the Governor, to conduct the discipline of convalescents, when necessary, and to see that they are properly equipped when they proceed to join the Depôt.

9. That all orders or requisitions of the Principal Medical Officer, or of the Steward, for supplies for the Hospital, shall be ineffective unless countersigned by the Governor.

10. That the Governor be selected and named by the Secretary of State for War, by whom the other Officers, Heads of Departments in the Hospital, should also be named. In the event of a vacancy occurring on service, the Commander of the Forces to make a provisional appointment, subject to the approval of the Secretary of State.

11. All Officers of Engineers, Sanitary Officers, or others employed on the application of the Governor to carry on duties connected with the Hospital, to be under the authority of the Governor while so employed.

12. All the labour required to carry out plans approved by the Governor, under the directions of any Department, to be obtained or hired by the Governor or by his written directions, and not otherwise.

Propositions for General Hospitals considered in further detail.

In establishing a General Hospital for an Army in the field, the first principle is to have the heads of Hospital Departments named before leaving home, and to make them conjointly and severally responsible for providing what is really necessary to enable them to do their duty in an efficient manner.

Governor or Commandant.

The Governor of a General Hospital, whether he be Military, Medical or Civil, ought to be selected by the War Department for his fitness alone; *i. e.*, his capacity for administration, and not upon grounds of professional eminence.

He ought to be responsible for the whole management of the Hospital; to have authority in it similar to that of the Governor of a Fortress, and over every one in it, whatever be his professional rank, unless over Special Commissions of Inspection; to correspond directly with the War Department or the Commander of the Force whose representative he is; subject to the orders of no one else; and not subject to the Head of the Medical Department with the Army.

He ought to reside within the Hospital, and visit every part of it at least once a week—to work the Medical, Attendance, Steward's, and Treasurer's Departments under him as wheels of one machine; with power to remove all impediments, and with commensurate responsibility.

Each Department would acquit itself of responsibility only after reporting to him the impediments it found to the performance of its duties, and any neglect of orders—it being his business to find the remedy.

His written order would be sufficient authority, exonerating those subject to him from all responsibility for obeying it.

It would be his duty to require from time to time returns of all stores; of all probable wants; to take our

that stores are provided in time to meet these wants; to have a reserve at command.

All questions as to the limits of the different Departments should be decided by him, without appeal, except to the Commander of the Forces, or the War Department at home.

The Governor should see to the combination of the highest efficiency with the greatest economy in the Hospital, keeping in view that the most economical Hospital is that which, *ceteris paribus*, restores the greatest number of men in the shortest time to the ranks, and not that which is conducted at the smallest monthly expenditure per head.

He must have the fullest discretion, in order to secure the complete efficiency of the Hospital at all times, and under all circumstances.

Principal Medical Officer.

The Principal Medical Officer, *selected* for the charge for his fitness alone, to have, 1, the control of everything and every one properly belonging to the Medical Department, including Apothecary, Dispensers, Dressers, &c.

2. To prepare, in communication with the Apothecary, the lists of Medicines, Medical and Surgical appliances, instruments, &c.,—in communication with the Head of the Attendance Department, the list of Medical Comforts to be provided by the Steward—both lists being submitted to the Governor.

3. To point out, from time to time, all defects in the sanitary arrangements, and to report, when required by the Governor, upon such as are pointed out by the junior Medical Officers or others.

4. To direct and control the treatment of the Patients, not only in regard to medicines and appliances, but also in regard to diet, clothing, bedding, position of bed, and

choice of ward, *i. e.*, everything affecting health or treatment in the hospital.

Every Medical Officer, in charge of Patients, should note at least once a day, in a Book kept for the purpose, to which the Ward Masters and Officers of the Attendance Department have free access, under the name and number of the Patient, not only the prescriptions and distinct directions for administering or applying them, but also the Diet with the hours at which it is to be given, and a note under the head of Attendance, *e. g.*, "very good," "good," "indifferent," "not good," "bad," specifying, in the latter case, the nature of the defect, *e. g.*, "want of punctuality in administering medicine," or "food," or "wine," &c.

The Ward Master should at once communicate these notes to the Head of the Attendance Department: a repetition of the offence to be reported by the Medical Officer immediately to the Governor, who will investigate it in communication with the Head of the Attendance Department.

By this arrangement, Medical Officers would be left at liberty to devote themselves to their proper professional duties. It is absurd to suppose that, if required to manage a large establishment of attendants engaged in multifarious occupations, cooking, &c., Medical Officers can also give to their professional duties the time and thought necessary to ensure fair play, either to their Patients or to themselves. The ablest will often find, in the conscientious performance of these duties, more to do than he can well accomplish.

Steward. The Steward (1) to provide and to issue—the written order of the Governor being sufficient authority—*everything* required for the use of the Hospital; in such manner as he may be directed by the Governor.

2. To report immediately to the Governor any inability to procure the articles so ordered; to propose any temporary substitutes; and to point out the manner in which the articles ordered could most readily be obtained.

3. To make himself acquainted with the prices of commodities, the wages of labour, and the resources of the country where the Hospital is placed, in as far as regards its requirements. Want of information ought never to be a cause of delay in obtaining articles, the order having been given, or the emergency having arisen.

The Steward is not to be, like the Purveyor, a part of or responsible to the Medical Department, but to be responsible to the Governor, whether he be a Civilian, a Military or a Medical Officer.

He is to have no power to determine what is to be provided, and consequently no responsibility for the adequacy of the provision made, either of stores sent from home or ordered on the spot.

His duty is to execute the orders he receives from the Governor, and to store and issue the supplies according to those orders.

The Heads of the Medical and Attendance Department determine beforehand, subject to the Governor's approval, what stores and supplies of every kind are to be provided, either from home or where the Hospital is to be established.

The Steward lays before the Governor monthly, or oftener if required, accurate Returns shewing the quantity of every article in store at the date of the last Return, the quantities since received and issued, and the quantities remaining in store.

It is the duty of the Governor, in communication with the Heads of the Medical and Attendance Departments, to exercise the necessary foresight in securing adequate supplies.

Superintendent of Attendance Department.

There should be, in all Hospitals, a Superintendent of Hospital Attendants, selected according to fitness, Military, Civil, or Medical, with entire control over all attendants,

Male nurses,
Cooks,
Washers,
Linen storekeepers,

in short all not belonging to the Steward's Department or to the Medical Department.

He should have the entire distribution of the duties of the Hospital attendants and be responsible for the way in which those duties are performed, as a Commanding Officer is responsible for the discipline and drill of his Regiment.

The Ward Master of a certain number of wards would be responsible to his Superintendent, for seeing the duties performed by the attendants in his Wards. He would keep the Books and Accounts, see the instructions of the Medical Officers carried out, make up from those instructions the Diet-Roll of the Patients, transmit it to the Cook, and be responsible that the food was properly and punctually served to the Patients, reporting any failure, being held responsible if he does not report it.

Unless the failure to report is practically made an offence, entailing certain punishment, the disinclination to bring an acquaintance into trouble will certainly lead even a good Ward Master to conceal the shortcomings of his friend. A man ought to be relieved from the odium of being a tale-bearer, by making it a breach of duty and an offence against discipline not to report any deviation from instructions. A Hospital attendant is a sentry on duty within sight of the enemy's lines, and no relaxation of discipline can be excused.

All nurses, male and female, should be able to read directions.

The Head of the Attendance Department is to furnish, 1, lists of the various furniture, including utensils of every description, bed and body-clothing, bedding, bedsteads, &c., required for the number of patients to be provided for, as well as, 2, a report of the size and arrangement of the cooking apparatus; 3, of the washing and drying-houses, the laundry, stores, &c.; as, also, 4, the number and classes of attendants; and, in short, everything necessary to the efficiency of the Department.

5. To submit the Lists to the Principal Medical Officer selected for the Hospital, and, finally, to the Governor selected, these officers making any additions they may deem necessary, and ultimately countersigning the Lists and Report.

Subsequent complaints of the insufficiency of that provision would thus be precluded, and the responsibility for defects would be brought home to individuals.

To prevent needless extravagance and capricious demands, a scale, in proportion to the number of patients to be accommodated, should be fixed upon sound data, on which these supplies should be provided; and a strict account of these issued should be exacted.

Every quarter, a Committee of Inspection might "take stock" and give in a written Report, it being for the Head of the Attendance Department to account for any deficiency and to produce for condemnation all worn-out articles, and have them replaced, if not already done.

From Civil and Naval Hospitals valuable information, as to what this scale should be, may be obtained.

But articles procurable in England may be unattainable in the country where the General Hospital is to be. Pro-

vision must be made accordingly. Our late experience in the Crimean War is a valuable guide.

The length of time that each article may be supposed to last must be determined by experience.

But it is quite certain that the worst, the least durable, and, therefore, ultimately the most costly articles of every description will be those procured on contracts conceded to the lowest tender.

Treasury or Commissary officer.

Attached to every General Hospital of an Army in the field, should be an Officer who performs the duties of Treasurer and is the only Public Accountant.

It is his duty—

1. To provide the requisite funds and to make all payments as determined by the Governor, whose written order is his sufficient authority.

2. To keep the accounts of receipt and expenditure of funds.

3. To subject the accounts of the Steward to preliminary audit: to see that they are accompanied by the necessary vouchers for the purchase and payment, and to ask for the explanations likely to be required by the Auditors at home.

The funds being, in all cases, provided by the Treasurer, the payment of the Attendance Department should be in the hands of the Head of that Department and should be conducted as the payment of wages in a commercial establishment, or of a company by the captain.

Men naturally look with more deference to a chief through whose hands they receive their pay; and all means of influence should be concentrated in the head of a Department, in which the mere force of coercive discipline cannot secure the services of most value to the Sick.

Where so much depends upon the tone of feeling, upon

moral influence, and the impulse given by the Head of the Department, it is of great consequence that the persons composing it should not be exposed to any disturbing influences and should not look beyond their own Department for anything.

It might be well to introduce a system of punishment by moderate fines.

Necessity of a Sanitary Officer or Sanitary Board of Inspection.

Looking at our past experience of Scutari Hospitals, as a starting-point, what were the evils?

Not in the climate, not in the situation.

The operative causes of our great mortality were—

See also below, p. 235.

1. Over-crowding of the Patients in the buildings, so that it may safely be said that, treated under a hedge, they would have had more chance of recovery.

2. Extremely defective drainage. The Barrack Hospital contained, in reality, under its foundations a cesspool exposing a large exhaling surface; the wind, whenever it blew up the drains, brought on outbreaks of fever, cholera, &c.; the saturation of the walls, in various parts of both Hospitals, by the bursting of the earthenware pipes of Turkish latrines, occasioned also disease; the walls of Wards and Corridors, from neglect of lime-washing, were impregnated with organic matter.

3. Want of ventilation and means of warming; the Inspector-General of Hospitals frankly saying that he kept in the foul air in order to keep out the cold.

4. Inconvenience and confusion, regarding store-room and distribution of food, fuel, medical stores, clothing, linen, packs, and squallags.

5. Unsuitable and unwholesome accommodation for Officers of all classes, whereby the ratio of mortality among Medical Officers was raised to an extent unparalleled in history, and far higher than what it was in the Crimea, among the hardships of the field.

6. Wholly deficient means for washing and insufficient for cooking.

7. Want of regard to the supply and quality of the water; dirty clothes were once discovered in a tank and a dead horse in the aqueduct.

It has never been denied that the mortality at Scutari necessarily high, from the state of the patients, when admitted, was considerably raised by these causes. The sick could hardly have been placed under worse conditions for recovery.

The remedy is a simple one.

Let some Medical Officer, or (better) some specially qualified Sanitary Officer, medical or otherwise, thoroughly conversant with sanitary details, and with him an Engineer, be employed, to choose the situation of any General Hospital in rear of an army in the field.

Let these report, where full power to act is not given them, upon

I. The character of the situation,

Its defects,

The means of remedy,

The character of the buildings,—above all the maximum of Patients which ought to be contained in them,

The defects of the buildings and the means of remedy.

In these days when, by scientific analysis and by practical statistics, it has been ascertained that the three essentials for health, without which medical treatment can be of no avail, are—1. Light,

2. Air,

3. The congregating a given number of human beings only upon a given space, it is just as criminal to put men to death by the agencies, which are as certain, of bad air and insufficient room, as by highway murder or by putting men to sea in a vessel not seaworthy.

The exact amount of exhaled carbonic acid, in a given space, where a given number of human beings are breathing, has been measured. The injurious effects on the system of an atmosphere, containing a certain percentage of carbonic acid, can be estimated.

Can we say that it is manslaughter to put a man to death by poison or by the knife, and not manslaughter to put him to death by the slower poison of bad ventilation and bad drainage?

II. These officers should report upon,

The drainage:—its condition,

Its defects,

The remedies, including, where practicable, the provision of such an outfall to the sea, river, or some other point, as will ensure no nuisance remaining behind.

III. The ventilation:—its condition,

Its defects,

The remedies, together with the means of warming and cooling the building, or hutting.

IV. The water supply, with its resources, at all seasons:

Its defects,

Their remedies.

V. The condition of the walls and ceilings of Wards, and the means of cleansing and disinfecting them.

VI. The means of storing and distributing

Food,

Fuel,

Medical Stores,

Clothing,

Linen,

Arms of Patients,

Packs and squallages.

VII. The means of cooking and washing: how to provide them.

VIII. The accommodation for attendants of all kinds, and especially for Medical Officers.

The building or hutting should be then at once put into order, upon the report of the Medical Officer and the specification of the Engineer Officer. Reproach to the authorities and destruction to the Patients would thus be avoided.

But at this moment how many Medical Officers are there capable of making such a sanitary report? How many are there to do the work here described efficiently?

Our experience in the Crimea and at Scutari, as well as the Barracks and Hospitals planned since our return home, do not enable us to answer this question satisfactorily.

Hospital Kit. How is the General Hospital to be furnished?

Hitherto it has been furnished by the Patients themselves with what they brought in with them.

And it has not been supposed that a Hospital wanted more or better appliances than a Barrack or tent.

What is, however, the end of all the arrangements made for the army? Its efficiency: and whatever provides best for its efficiency is most economical. If a Hospital establishment restores fewer men more slowly to the ranks, it is more expensive, however cheap, than one which restores more men more quickly. To say nothing of a man's pension, it costs the country from £100 to £120 to replace a made soldier on foreign service. The real value of a soldier to the service is very much more than this. It cannot be stated in money. That Hospital system, therefore, is the cheapest, which restores most men in the shortest time.

Our Military Hospital system almost ignores the curative means used by every medical man of reputation at home, viz., the economy of the patient's vital powers at

to his bed, his covering, his food, his attendance, his mental state. A Military Hospital cannot rival a Civil Hospital in these things, but may command them to a much greater degree than it does, especially with the advantages afforded us by discipline.

We are constantly told, by those whose *idée fixe* is "Malingering," that the Hospital must not be made too comfortable, just as we are told that the workhouse must not be too comfortable. But the comforts of the latter, which generally exceed those of the poor in their own dwellings, are found to be consistent with a stringent test of destitution and with driving paupers from the poor-house, as soon as they can exist beyond its walls. So a similar discipline may drive Malingerers from the Hospital. Frequent in the Peninsular War, they were rare in the Crimean Campaign.

Exceptional cases there will always be. But public opinion among their comrades is now generally sufficient to drive even bad soldiers out of Hospital, as soon as they are fit for duty.

The Hospital, therefore, should furnish everything to the soldier, irrespective of his ordinary military equipment. For the experience of the late War has shown that the accidents of war will deprive the sick or wounded soldier of his kit, and prevent him from bringing into Hospital that which he wants when there, even if he possessed it, which he does not.

It is positively incredible that we should, nominally, have Hospitals, and expect the sick to supply any part of the furniture. A sick soldier is, in fact, treated as a kind of hardy exotic, able to bear what would kill a civilian.

On his arrival in Hospital, the Military Patient ought to be divested, as the Naval Patient is, of his pack, his arms, ammunition, clothing, blanket, &c., which ought to be

washed or baked, in order to kill the vermin, and placed in the pack-store, with name, No., Regiment of their owner. He receives them on going out of Hospital, and thus becomes immediately effective.

The amount of transport necessary for Hospital stores, upon the above system, will be adduced, as an objection; but the base of operations for the British Army has always been and always will be the sea.

So it was in Spain, though the Army traversed the Peninsula, in quasi friendly countries.

So it was with Marlborough; though the Army was on the Danube, the base of operations was in Holland or the Netherlands, in friendly countries.

It is, therefore, safe to calculate, in most instances, upon the General Hospitals of a British Army in the field being either upon the coast or in a country whose resources are at the command of the Army.

One thing should never be forgotten. Our Army are volunteers, not conscripts, and never will be. It is, therefore, worth while to make our service popular, and to attract a better class into it, by improving the pay, occupations, education, and comfort of the soldier.

A General Officer, of acknowledged distinction, has remarked that, after the experience of the Crimean War, it might be hard to recruit such a class for another war.

I speak from experience of two things, viz., that, unmurmuring as the soldier is, a more forlorn being does not exist than he, separated from his comrades, in a General Hospital, nor one who feels more the thought and care of his country, if, in such a situation, he is provided for by her, in Hospital, with the comforts of home. And this will always be the case with the Anglo-Saxon.

Hospital furniture,

Hospital utensils,

Bed and body clothing,
Cooking by trained cooks,
Efficient kitchen battery,
Proper serving of the food,
Washing and drying apparatus,
all these are important parts of the treatment.

And it never can be pretended that what is supplied to every pauper, in every poor-house in the country, is too great a luxury for sick soldiers, to give whom a fair chance of recovery is to give the country a fair chance of success, upon economical terms, in time of war.

Three things the late War has obtained for us, which we should not have had without it. Whether we can name more than three is doubtful. Medical Staff Corps.

1. We have an Ordnance Hall, which was empty.
2. We have a Military Train.
3. We have a Medical Staff Corps. But whether this is a trained body or not is now to be shown.

That a body of trained attendants is necessary to attend upon sick men in Hospital does not appear to require much logic to prove. Yet until the late War it was never thought of.

Men who, at considerable cost, had been taught one trade were told off to practise another, which they had never been taught, and were changed just when they were beginning to learn. Commanding Officers, of course, did not like to part with good soldiers, and told off the least efficient for Hospital Orderlies.

Skilled labour, the result of training and practice, is as valuable to the Medical Officer, in his attendants, as to any other master of a trade. No Medical Officer would take the most kind-hearted soldier as an auxiliary, if he could get a trained nurse; nor would he dream of bring-

ing the former into his own sick room, if he could have the latter.

There must be a certain number of attendants in a Hospital, skilled or unskilled. The question is, which shall they be?

We have decided the question against Orderlies from the ranks, as withdrawing too many men from the disciplined strength of the army.

We have very wisely organised a Corps, on purpose for Hospital Attendants.—

But have we trained them?

A man trained to any kind of work will not only do it better but do more of it, in a given time, than an unskilful workman.

The rate of pay is justly higher than in the Army, because the Medical Staff Orderlies are supposed to give more skilled labour than the Orderlies from the ranks.

But, to have trained attendants, there must be an organised and established system of instruction, in suitable schools and under competent teachers. During peace this can be done. But it has not been done. Every Military Hospital might become a training school. And now, while the memory of the late War is fresh, it must be done or it never will be done. A small trained body now, in time of peace, would serve as a nucleus ready in the event of a war.

The Medical Staff Orderlies ought to be enlisted for different periods, in order to avoid the expiry of the periods of service of too many at once.

PREFACE

TO

SECTION X.

PART I.

Authorities for the Statistics used in the Section, with an Enquiry as to their Sufficiency.

Sources of the Statistics in Section X.

The whole of the figures in the ensuing Section have been taken from official and authentic sources.

Those, from p. 247 to p. 251, have been taken from Sir A. Tulloch's invaluable "Statistical Report on the Sickness, Mortality, and Invaliding among the Troops in the United Kingdom, 1858," p. 3 to p. 75.

The strengths given, at p. 247, are the aggregate strengths for the 10 years, 1837–1846, and the whole of the data refer to the same period, which is the last given in the Report.

The Civil Mortality, p. 247, is taken upon the Deaths in seven years, 1838—44, in twenty-four large towns, Registrar-General's 8th and 9th Reports, quoted by Sir A. Tulloch, in the same Report, p. 31.

It is gratifying to learn that, during the nine years, 1845–53, the troops serving at home have experienced a slight reduction in the excessive mortality from which they suffer. Although so slight an improvement, it shows that the time is at hand when much greater sanitary advance will be made, and corresponding results enjoyed.

The improvement stands thus:—

Comparison of Rates of Mortality in Army serving at home, 1837—46 and 1846—53.

Annual Mortality per 1,000 of Mean Strength.

	Household Cavalry.	Dragoon Guards and Dragoons.	Foot Guards.	Infantry of Line.
1837—46 (ten years)	11·1	13·5	20·4	17·4
1846—53 (nine ")	10·3	12·4	19·2	16·7

The Table of Pensioners, p. 255, was furnished by Dr. Balfour, the able coadjutor of Sir A. Tulloch, and the materials for the Table at p. 259 by the Adjutant-General's Office.

The Statistics of the Metropolitan Police Force (p. 252) have been taken from M'Culloch's Statistics of the British Empire.

Those of the City Police were furnished by Mr. Beeton Childs, Surgeon to that Force.

Those of the Comparison of the Army serving at home with the Civil Population (pp. 253, 254) were afforded by the Registrar-General, as well as the Corrected Rate of Mortality for the Army at home (Note, p. 253).

Corrected Mortality for each Arm of the Service at Home.

A full Table will now be given, also furnished by the General Register Office, correcting the mortality for each arm of the Service at home.

The explanation of the difference which will be seen between this Table and that given in Sir A. Tulloch's Report, above mentioned, p. 31, is as follows:—

In instituting a comparison between the mortality of different arms of the service, at different ages, it is necessary to take into account the *number* of men in each arm at those ages, and for very obvious reasons:

Each period of 5 years (or any other period) in human life has an average mortality belonging to it, and the number of men in the Army at any such period must obviously influence the sum total of life for the period.

The mortality over (say) 5 such periods is made up of the mortality of each period, the whole being added together.

If there be a preponderance in any Arm of numbers at the ages at which the mortality is high, the *whole* mortality will be high.

If there be a preponderance of numbers of low mortality ages, the aggregate mortality will be low.

The problem is, in fact, a fractional one of this kind:—

$\frac{Mortality}{Numbers}$ We must reduce all the fractions of this class to a common denominator, before we can either add, subtract, divide or compare them.

TABLE of the Mortality of the British Army, if the rates had been the same as those in—1. The Household Cavalry; 2. Dragoon Guards and Dragoons; 3. Infantry of the Line; 4. Foot Guards—serving at home.

Ages.	Effectives of the British Army.	Deaths, if the Mortality had been the same as in the				
	Number living at each Age.	Household Cavalry.	Dragoon Guards and Dragoons.	Infantry of the Line.	Foot Guards.	Troops in the West Indies, at the Cape of Good Hope, and in Mauritius.
Under 20	11,011	20	29	157	133	146
20—25	50,387	558	620	896	1,087	631
25—30	38,242	394	547	758	806	703
30—35	22,669	293	320	458	431	409
35—40	10,005	84	153	211	224	214
40 and upwards ..	3,663	49	67	85	95	79
Total	136,277	1,498	1,813	2,565	2,776	2,231
	Rate of Mortality per 1,000.					
Total	11·0	13·3	18·7	20·4	17·1	
Under 20	7·5	8·3	13·1	13·2	12·4	
20—25	11·7	12·4	17·8	21·6	17·4	
25—30	10·3	14·3	19·8	21·1	18·3	
30—35	13·0	14·8	19·8	19·2	18·1	
35—40	8·4	15·2	21·0	22·4	19·1	
40 and upwards	13·4	15·2	23·4	20·2	21·6	

The annual deaths among the 136,277 effectives of the British Army, if the mortality were the same as in the Household Cavalry, would be 1,498; in the Dragoon Guards, 1,818; in the Infantry of the Line, 2,545; in the Foot Guards, 2,776; in the men of all arms in the British Service at home, calculated on the same proportion of ages, it is 2,381.

The annual rate of mortality to 1,000 of the Household Cavalry is 11·0; of the Dragoon Guards, 13·3; of the Infantry of the Line, 18·7; of the Foot Guards, 20·4; and of the men of all arms in the British Service at home, calculated in the same way, it is 17·5.

If the 136,277 soldiers had been subject to the rate of mortality which prevails in the healthiest districts of England, the annual deaths would have been 1,051; in one of the unhealthiest cities (Manchester) 1,088; and in all England, 1,248.

Note.—The numbers of the men living in the British Army, in 1851, are obtained from the Census Report of 1851, Vol. I (Occupations), p. ccclvi.

Table of Mortality of the Army at Home and Abroad, 1839—1853.

A full Table will now be given, showing the mortality of the whole Army, both at home and abroad, during fifteen years, from 1839 to 1853, and calculating the annual mortality upon these data, for both Officers and Men, with the annual mortality in healthy districts in England, annexed for the sake of comparison.

It will be seen that the soldier suffers a mortality of 33 per 1,000; the Englishman in healthy districts of 7·7 per 1,000; —that is to say, that one Englishman under these circumstances dies where die rather more than four soldiers.

It thus appears that, during a period of 15 years, terminating before the Crimean Expedition, 58,000 of Her Majesty's troops have perished. Comparing these Deaths with those occurring among the healthy part of Her civil subjects, we see that more than three-fourths, or 44,550, would have been saved, had they remained among that civil population, from which most, if not all, of them have come. It may be truly said that by far the larger portion of these 44,550 have been lost from ignorance and want of sanitary foresight. But fatalism is not confined to the Mahometan races—it may still be found, and very largely, among the Christians.

Table showing the Average Strength, Deaths, and rate of Mortality in each year from 1839 to 1853, of the Officers, Non-Commissioned Officers and Men serving in the Army, exclusive of Artillery, Royal Engineers, West India and Colonial Corps.

Years.	Average Effective Strength.			Deaths.			Annual Mortality to 1,000 living.			Annual Mortality to 1,000 living of Men of the soldiers' Ages in Healthy Districts, taken on an average of 7 years.
	Officers, Non-Commissioned Officers and Men.	Officers.	Non-Commissioned Officers and Men.	Officers, Non-Commissioned Officers and Men.	Officers.	Non-Commissioned Officers and Men.	Officers, Non-Commissioned Officers and Men.	Officers.	Non-Commissioned Officers and Men.	
1839	104,278	5,365	98,913	3,017	103	2,914	28·9	19·2	29·5	17
1840	112,922	5,353	107,569	3,383	85	3,300	30·0	15·8	30·7	17
1841	116,423	5,289	111,134	4,278	111	4,167	36·7	20·6	37·5	17
1842	120,370	5,299	115,186	5,190	138	5,052	43·0	25·6	43·9	17
1843	124,023	5,439	118,583	5,371	101	5,270	42·3	18·4	44·5	17
1844	124,836	5,402	119,434	3,944	77	3,867	31·6	14·9	32·4	17
1845	123,550	5,479	118,071	4,691	104	4,587	38·0	19·0	38·8	17
1846	120,392	5,588	120,644	5,243	118	5,125	41·5	21·1	42·5	17
1847	132,811	5,566	127,245	4,317	85	4,232	32·5	15·3	33·3	17
1848	133,433	5,512	127,921	3,308	95	3,213	24·8	17·2	25·1	17
1849	129,226	5,553	123,673	4,146	94	4,052	32·1	16·9	32·8	17
1850	124,657	5,546	119,111	3,189	70	3,119	25·4	12·6	26·2	17
1851	122,989	5,452	116,536	2,785	56	2,729	22·8	10·3	23·4	17
1852	124,093	5,469	118,623	3,134	74	3,060	25·7	13·6	26·3	17
1853	124,711	5,440	119,271	3,434	62	3,372	27·7	11·4	28·4	17
Total and Average 1839-53.	1,844,330	82,093	1,762,037	59,513	1,373	58,139	32·3	16·7	33·0	17

The Army for these Years was from taking Study in Stations furnished by the Adjutant-General, July 6, 1855.

38,000 then have perished in 15 years.

These are figures on the page—but, to us, these figures are men.

The following Table, a deduction from the last, will make the excess of Mortality existing in the Army over that in Civil Life still more evident.

Number of Deaths of Non-Commissioned Officers and Men, showing also the Number of Deaths that would have occurred if the Mortality were 7·7 per 1,000, such as it was among Englishmen of the Soldier's Age in Healthy Districts, in the years 1840–53, which fairly represent the average mortality.

Excess of Deaths in the Army over those in Civil Life in Healthy Districts.

Years	*Deaths* that *would have* occurred in Healthy Districts among Males of the Soldier's Ages.*	Actual Deaths of Non-commissioned Officers and Men.	Excess of Deaths among Non-commissioned Officers and Men.
1839	761	2,914	2,153
1840	829	3,303	2,474
1841	857	4,167	3,310
1842	888	5,052	4,164
1843	914	5,270	4,356
1844	920	3,867	2,947
1845	933	4,587	3,654
1846	930	5,125	4,195
1847	971	4,222	3,251
1848	987	3,213	2,226
1849	954	4,052	3,098
1850	919	3,119	2,200
1851	901	2,729	1,828
1852	915	3,120	2,205
1853	920	3,352	2,432
Total ..	13,539	58,139	44,550

The Table may be read thus: in the year 1839 the number of Deaths among non-commissioned officers and men was 2,914 out of the strength (98,912, see preceding Table)—whereas the deaths among the same number of men of the same ages in the healthy districts of England would have been only 761;

* The exact mortality in the healthy districts is 0077122, the logarithm of which (3·8871801) has been used in making this calculation.

consequently the excess of deaths in the army amounted to 2,151.

After so frightful a table it is necessary to remind ourselves that matters have been much worse, viz., in the Army abroad.

Comparison of Rates of Mortality of the Army, at the various stations abroad, prior and subsequent to 1837.

If we compare the rates of Mortality of the Army at the various stations abroad, prior and subsequent to 1837, as Sir A. Tulloch gives us the means of doing, the proof of how much has been done, and how much still remains to be done, will be even more convincing.

		Rate of Deaths* per 1,000 of Mean Strength.	Aggregate Strength.
Gibraltar	1818—1836	21·4	60,289
	1837—1856	11·7	68,412
Malta	1817—1836	16·3	40,836
	1837—1856	16·5†	47,961
Ionian Islands	1817—1836	25·2	70,252
	1837—1856	16·4	56,752
Bermudas	1817—1836	28·8	11,731
	1837—1856	32·3‡	22,389
Canada	1817—1836	16·1	64,289
	1837—1856	14·1	123,385
Nova Scotia	1817—1836	14·7	46,442
	1837—1856	11·9	46,006
Newfoundland	1823—1836	37·7	3,931
	1837—1856	9·3	6,966
Bengal Presidency	1817—1836	75·3	145,139
	1836—1856	69·5	227,266
Madras Presidency	1817—1836	76	142,059
	1836—1856	38·3	160,545
Bombay Presidency	1817—1836	62·7	66,260
	1836—1856	58·7	98,516

* These Deaths do not include those occurring out of Hospital, either suddenly from disease, or from accident. Nor are the killed in action included.

† The Deaths from Cholera were, prior to 1837, ·8 per 1,000.
after " 4·2 "

‡ This was the consequence of Fevers, the Mortality from which was
11 per 1,000 of Mean Strength, before 1837.
20·7 " after 1837.

			Ratio of Deaths per 1,000 of Mean Strength.	Aggregate Strength.
Van Diemen's Land		1838—1856	7·8	17,000
New Zealand		1844—1856	9·1	15,128
West Indies	White	1817—1836	79·5	66,093
		1837—1853	60	51,115
	Black	1817—1836	40	40,534
		1837—1853	28·4	19,987
Jamaica	White	1817—1836	121·3	51,567
		1837—1853	56·6	22,109
	Black	1817—1836	30	5,729
		1836—1855	253*	13,645
Ceylon	White	1817—1836	69·8	42,978
		1837—1856	36·8	23,069
	Black	1837—1856	21·1	33,303
Cape of Good Hope	White	1819—1836	13·7	22,714
		1836—1854	12	73,598
	Black		10·9	4,136
		1836—1854	13·9†	10,066
Mauritius		1818—1836	27·4	30,515
		1836—1855	22·4	29,178
St. Helena		1818, 19, 20, 21, 36, 37	25·4	5,068
		1837—1856	10·6	8,258

It will be seen from these statements that our home troops have actually suffered more in their own country than the troops do now, who are serving at some of our foreign and Colonial Stations, such as Cape of Good Hope, St. Helena, New Zealand, Van Diemen's Land, Newfoundland, Nova Scotia, Canada, and Gibraltar. Why should this be?

It will also be seen how frightful is the mortality, even now, of the troops in some of Her Majesty's possessions, as the West and East Indies, &c.

Only one-third of the Statistical case has, however, here been given. The other two-thirds, viz., the Recruiting and the Invaliding, remain still to be considered.

Statistics of Recruiting and of Invaliding necessary to make the case complete.

* The Deaths from Cholera were, *after* 1837, 11·7 per 1,000 of Mean Strength: prior to 1837, none.

† The Deaths from Diseases of the Lungs increased from 3·9 per 1,000, before 1837, to 6·7 per 1,000, after 1837.

Difficulty of ascertaining the relative Mortality of the Army and of Civil Life with any precision.

The exact relative mortality of the Army to the mortality among the same ages in civil life is far more difficult to ascertain than would at first sight appear. Among the Civil population the elements of the problem are sufficiently constant, but it is not so in the Army. The first difference between the Civil population and the Army comes into play at the period of recruiting.

There is a process of selection out of the Civil population, whereby about a third of all men of the army ages who present themselves is rejected, as unfit for military service, very often from diseases which will eventually shorten life; but the precise number rejected cannot be ascertained exactly.

There is besides a previous process of selection, so to speak, from the circumstance that a certain proportion of the Civil population is unable from sickness to present itself for recruitment, and this part remains to furnish deaths which raise the mortality of the Civil population.

Next, the Army is subject to reduction, and there is every probability that the strongest and most healthy men are retained at such times, and the weakest sent back into the civil population.

Additions to the Army also infuse into it younger and better lives than those already there, a circumstance which likewise interferes with the accuracy of the comparison.

Another disturbing element is invaliding, by which men in bad health are discharged altogether from the Army, and a large number invalided die within the first year, while many others die shortly afterwards from diseases contracted in the service. The ratio of mortality among men serving cannot, therefore, be taken as a ground of comparison with the mortality of the same classes in Civil life. If we had the means, which is certainly not the case at present, of calculating the value of all the elements affecting the life of the soldier, we should find the absolute mortality in the Army greatly higher than the statistics represent, and the comparison with the mortality in Civil life much more unfavourable to the Army.

It would be most desirable in the constitution of the statistical department, which is now contemplated, to provide the means of accurate comparison between the Army and Civil life, which do not now exist.

It is extremely important to make the statistical case as complete as possible. We have the Army Mortality among men serving complete as the middle part of our problem, but it is absolutely deficient, 1st, in the recruiting, *i. e.*, the inlet to the Army, and, 2nd, the invaliding, *i. e.*, the outlet from the Army. These two extremes ought to be furnished, in order to complete the case, and to obtain for us (as they would do) the most perfect body of Army statistics in existence, although not the most perfect possible.

Statistics of Recruiting.

1. With regard to Recruiting, the extremely imperfect manner, in which our recruiting statistics are kept, prevents us from arriving at any general or accurate conclusion.

There are three methods of examining recruits; and of the results of two of these no record whatever is kept.

The methods are as follow:

1. When a man enlists for the regiment in which he wishes to serve, he is examined by the Regimental Medical Officer, and by him rejected or approved. Of the numbers thus examined no return is made.

2. When a man enlists at the Head Quarters of a Recruiting District, he is examined by the Staff Surgeon, and by him rejected or approved. Inspections by this process are called "Primary" ones, and of these returns are made.

3. When a man enlists at any of the out-stations of these Recruiting Districts, he is first examined by the nearest Army Medical Officer, or by a Civil Medical man. If approved, he is then examined a second time, at Head Quarters, by the Staff Surgeon. Of the first examinations no return is made. The last examinations are called "Secondary" ones, and are returned, but mixed up with the Primary examinations, made at Head Quarters as described in process No. 2.

The only returns made, therefore, are those of the Primary and Secondary Inspections, at Head Quarters, made by the Staff Surgeons. In three districts only, viz., those of London, Edinburgh and Dublin, and for five years only, are the Primary distinguished from the Secondary Inspections.

Therefore, as we have no means of ascertaining what rejections have taken place to sift the number which actually arrives at Head Quarters for "Secondary" examination, no comparison of the difference as to numbers of the "Secondary" rejections,

which take place at the different Head Quarters of Recruiting Districts, can give any accurate result at all, as to the absolute ratio of rejections.

Yet when we consider the incalculable importance of the contribution to our knowledge as to the health of our Civil population, which would be afforded by accurate recruiting statistics, did we possess them, we must the more regret the exceedingly imperfect nature and limited extent of the information which they actually contain.

Such as they are, the only fact to be derived from them of any conclusive nature is the following:

From 1832—1842, at Head Quarters of the 10 Recruiting Districts of England, Scotland, and Ireland, nearly 30 per cent. of all the recruits examined were rejected, and, from 1842—1852, 33½ per cent., or one-third of the whole. Of these rejections one-fourth, at least, may be safely said to have been for causes which would shorten life.

In 1834, the "*Primary* rejections" at Dublin were nearly 72 per cent! What important consequences might be drawn from the comparison of facts like these as to the health of a district, if only the statistics were kept as they might be.

When we see the amount of care thus given in sifting the good lives from the bad for military service, well may we say that the Army are *picked* lives.

The inferior lives are thrown back into the mass of the population. The Civil population has had all the loss—the Army has had all the gain. Yet, with all this, the Army, from which the injured lives are subtracted, dies at twice the rate of mortality of the general population, to which the injured lives are added.

It is useless to go into the recruiting statistics at greater length. Because, owing to the entire absence of Returns in Recruiting Processes (1) and (3), owing to the mixing up of "Primary" and "Secondary" rejections in the Returns which do exist, and which are thereby rendered almost valueless, it is impossible to say *how much* below the truth this "one-third" and "one-fourth" are. They are to be depended on as being correct as far as they go. But the real truth would give us a far higher ratio. They are then *much* below the truth. But *how much* there are no means of knowing.

Three very interesting tables, therefore, are all that will now be given.

Table I, shewing the causes of rejection, and ratio of rejections at these Head Quarters of Recruiting Districts.

And upon this it must be remarked, of what great importance it would be to have and to use the same nomenclature and the same classification throughout the three subjects for statistics in our Army, viz.—for the Statistics of Recruiting, for those of Death and Disease during Service, and for those of Invaliding, as also to let this Nomenclature and this Classification be the same as that used by the Civil Registrar-General of England.

Our system of Registration of Deaths in the civil population is now complete. Our knowledge of what it suffers from disease is extremely incomplete. Were the recruiting statistics kept upon the same system of nomenclature as that used by the Registrar-General, they would form a most important addition to his means of information.

Tables II and III, shewing the native countries and the occupations of the recruits examined, are given only for their general interest, and do not affect, strictly speaking, our subject.

These tables are taken from the Appendix to the Report of the Commission of Enquiry into the Regulations affecting the Sanitary Condition of the Army, &c., No. LXVI.

Table I.

Table showing the Causes of Rejection of the Recruits found Unfit for Service, at the Head Quarters of each of the Recruiting Districts, in the Ten Years 1842–1851.

Causes of Rejection.	Ratio rejected per 1,000 examined.				Proportion by each class of cases in every 1,000 rejected in			
	England and Wales.	Scotland.	Ireland.	Total.	England and Wales.	Scotland.	Ireland.	Total.
Weak intellect	·7	·9	1·8	1·	·2·	·2·2	·6·7	·3·1
Unsound health, marks of treatment	25·2	49·5	22·0	27·1	73·3	109·8	82·4	89·7
Muscular tonality, want of physical power	26·2	31·8	23·4	29·1	75·9	70·3	122·	86·8
Affections of the eyes	23·0	17·7	12·6	18·9	64·2	44·3	45·9	56·2
Loss or decay of teeth	13·	8·7	6·7	13·4	52·1	21·7	24·5	40·
Deformity of spine	16·3	14·6	9·3	14·1	47·1	36·3	33·9	42·1
Want of due capacity or malformation of chest	26·9	20·5	14·	24·	77·9	76·1	51·2	71·6
Defective condition of the superior extremities	15·1	16·8	11·6	14·4	43·8	41·8	42·3	43·
Hernia	14·2	10·2	6·5	11·4	41·1	25·5	23·8	34·2
Tendency to rupture from laxity of the groins	17·7	20·2	14·	17·1	51·3	50·2	51·3	51·1
Varicose state of the veins of the spermatic chord	29·4	22·8	10·4	23·2	85·1	56·7	38·1	69·1
Disease or injury of the testicles	5·3	10·4	4·3	5·9	15·3	25·9	15·6	17·5
Varicose state of the veins of the lower extremities	33·9	61·3	38·	39·	98·5	152·7	138·8	116·3
Defective condition of the inferior extremities	37·9	47·8	32·	37·9	109·8	119·	116·9	113·2
Cicatrices, ulcers, wounds, and chronic diseases of the skin	17·9	35·5	26·4	23·2	51·9	88·6	96·2	68·9
Tendency to consumption	4·5	4·7	1·9	3·8	13·	11·6	7·	11·4
Diseases of the heart	4·6	4·7	6·5	5·3	13·3	16·7	23·6	16·3
Impaired hearing or deafness	2·4	1·5	·7	2·3	9·5	3·4	2·6	6·9
Impediment of speech	1·9	1·5	1·4	1·7	5·6	3·9	5·2	5·2
Syphilis	7·1	10·7	4·9	7·1	20·5	26·7	18·1	21·2
Marks of corporal punishment	2·8	1·	·9	2·	8·1	2·4	3·3	5·9
Marked with the letter D	1·9	1·2	·9	1·5	5·5	3·1	3·3	4·5
All other causes	13·	4·5	12·	11·6	37·9	11·3	47·4	34·6
Total	345·8	401·8	272·6	334·	1000·	1000·	1000·	1000·

Table II.

TABLE II.

TABLE showing the NATIVE COUNTRIES of the RECRUITS examined at the HEAD QUARTERS of RECRUITING DISTRICTS in the TEN YEARS 1842-1851.

NATIVES OF	1842-3.	1843-4.	1844-5.	1845-6.	1846-7.	1847-8.	1848-9.	1849-50.	1850-1.	1851-2.	Total.	Ratio per 1000.
England	14,879	16,339	7,141	8,350	21,346	8,277	5,974	6,991	6,791	6,959	79,976	669·9
Wales	218	167	141	91	273	113	135	106	140	116	1,087	9·1
Scotland	3,956	5,213	2,991	3,110	5,674	3,005	2,411	1,914	2,011	2,749	27,377	154·7
Ireland	5,301	4,830	4,009	4,942	12,969	10,799	7,825	3,921	3,853	3,791	62,249	369·4
Foreign Countries ...	13	17	14	37	44	34	37	41	41	28	265	1·8
Not stated	304	363	...	...	...	...	...	...	...	...	415	2·1
TOTAL	31,479	37,349	13,379	16,588	37,309	19,243	16,381	13,967	13,791	14,647	171,373	1,000

TABLE III.

REFER showing the OCCUPATIONS of the RECRUITS examined at the HEAD QUARTERS of the RECRUITING DISTRICTS in the TEN YEARS 1842-51.

	1842-3.	1843-4.	1844-5.	1845-6.	1846-7.	1847-8.	1848-9.	1849-50.	1850-1	1851-2.	Total.	Ratio per 1,000.
Husbandmen, labourers, and servants ...	19,609	13,316	8,327	10,089	17,096	13,291	11,024	8,817	8,139	10,681	130,999	662·9
Mechanical Trades ...	9,019	6,268	4,063	5,145	8,268	5,252	4,162	3,569	3,932	3,715	53,429	194·7
Shopmen and clerks ...	890	1,554	382	739	1,021	1,345	715	913	655	739	8,940	32·9
Professional occupations	16	63	29	51	74	91	33	66	45	47	547	2·3
Boys	3	...	...	...	54	39	37	42	44	54	187	2·3
Not stated	944	...	...	...	...	...	...	...	...	...	944	3·4
TOTAL	31,479	37,349	13,379	16,588	37,309	19,243	16,381	13,967	13,791	14,647	171,373	1,000

Statistics of Invaliding.

Apparent Reduction effected in Mortality of Foot Guards, by Invaliding.

II. We now come to the invaliding and the *apparent* reduction which is thereby effected in the real mortality of the Army.

For instance, the aggregate strength, 44,343, of the Foot Guards, from 1845 to 1853, yields its own proper mortality of 851. But, besides the mortality on effectives, there is a mortality taking place on non-effectives invalided, who partly become pensioners, partly are invalided without pensions. These invalids are discharged at any time after the Army strength is made up for the year. They are included in the strength up to the day the annual return is made, but they begin to disappear and their mortality together with them, as soon as the day of making up the strength has passed. Thereafter they form a distinct class, with a special mortality. Of those who receive no pension, no further trace can be obtained: of the pensioners alone any distinctive statistical results can be established.

It is considered that one year's mortality among these invalids of both classes might be fairly added to the mortality of the effectives, because the diseases of which they die within the year may be fairly attributed to causes connected with their service. But it can be ascertained only for the pensioners.

We therefore add together the effective strength and mortality for 1845—53, to the invalid (pensioners') mortality and strength, 1845—53. (The *invalid* strength must be added, because it does not exist in the *effective* strength.) Thus:—

1845—53.		Deaths.	
Aggregate Strength ..	44,343	851	
Invalided with pension	1,565	210	
	45,908	1,061 =	23·1 per 1,000 per annum.

being an increase of 3·9 upon the Mortality of the Effective, which was, during that period, 19·2 per 1,000 per annum.

By the kindness of Dr. Balfour, so often mentioned, a Table will now be supplied, showing how far the Mortality of the Troops serving at home is increased, by adding the Mortality of the Pensioners, during the first year of Pension—or, rather, how far below the *real* rate of Mortality of the troops that represented as their Mortality actually is, because men likely

to die are invalided to die out of the Army. And, again, it must be observed that many are invalided without pension, and thus cease to be under observation. The table includes the Household Brigade, the Regiments of the Line, Cavalry and Infantry, serving at home, and the Horse Artillery at home. The Foot Artillery and the Sappers and Miners are not included, because it was found impossible to distinguish between the Pensioners from home service and those from foreign service:—

Table showing the *apparent* Reduction of Rate of Mortality of Troops serving at home, by Invaliding.

TABLE No. I.*

Troops serving at Home, 1865–69. Five Years.	Aggregate Annual Strength.	Total Deaths.	Ratio of Deaths per 1,000.	Total number of Pensioners.	Died within Twelve Months.	Aggregate Years of Service of Pensioners.	Average Years of Service.	Ratio of Deaths per 1,000.	Ratio of Deaths per 1,000.
Household Cavalry	10,819	114	10·5	360	43	12,379	133	14·2	3·7
Cavalry (Line) ..	53,094	724	13·2	1,757	140	56,701	864	15·2	2·0
Foot Guards	44,343	851	19·2	1,565	210	45,908	1,061	23·1	2·9
Infantry (Line) ..	204,650	3,425	16·7	6,767	536	211,417	3,961	18·7	2·0
R. Horse Artillery	6,031	79	13·1	273	12	6,304	82	13·0	1·4

A similar Table is now added, derived from the same source, showing the *apparent* reduction of Mortality in the whole Army, at home and abroad, effected by the invaliding.

* In this and the following Table the numbers pensioned and the deaths among them are obtained from Sir Alexander Tulloch's Department—the strength from the Returns made annually by each Regiment to the War Office.

The same for the whole Army at home and abroad.

TABLE No. II.

Army and Ordnance Corps. Nine Years, 1845—53.	Aggregate Strength.	Total Deaths	Ratio of Deaths per 1,000 of Strength	Total No. placed on Pension List.	Died within Twelve Months	Total Strength of Men serving and Pensioned	Total Deaths among these	Ratio of Deaths per 1,000
Cavalry, Guards, and Infantry, exclusive of West India and Colonial Corps.....	1,091,289	33,569	30·7	29,057	2,255	1,120,446	35,824	32·1
Royal Artillery	86,600	1,520	17·5	2,214	123	88,814	1,643	18·5
Royal Engineers....	16,469	275	16·7	402	25	16,871	300	17·8

A third Table is now annexed, of which the materials are also derived from Dr. Balfour, showing the Aggregate Strength of each Arm of the Service at home, at periods of service of seven years, and the ratio of Invaliding at each such period of service :—

TABLE No. III.*

Table showing the rate of Invalided to Strength on Home-Service.

1839—53. Fifteen Years.	1. Under 7 Years' Service.	2 7—14 Years' Service.	3. 14—21 Infantry. 14—24 Cavalry.	4. Total under 21 or 24.	5 Above 21 or 24.
HOUSEHOLD CAVALRY.					
Strength	3,332	4,388	4,188	17,508	606
Invalided	52	68	147	267	125
Ratio Invalided per 1,000 serving	6·2	12·6	33·1	15·2	221·9
CAVALRY (LINE.)					
Strength	48,541	21,721	15,453	85,715	1,414
Invalided	713	519	565	1,797	1,043
Ratio Invalided per 1,000 serving	14·7	23·5	36·7	20·9	737
FOOT GUARDS.					
Strength	36,761	20,731	12,707	70,199	3,321
Invalided	528	335	254	1,115	1,167
Ratio Invalided per 1,000 serving	14·3	16·1	20·	15·9	351·4
INFANTRY (LINE.)					
Strength	195,628	76,549	39,097	310,274	3,135
Invalided	3,103	1,485	2,174	6,765	3,094
Ratio Invalided per 1,000 serving	15·9	21·1	55·6	20·8	987

* These data are obtained from the Returns made annually by each Regiment to the War Department.

Defect in preceding Table.

It would, however, be unsafe to reason upon the fourth column. The three first and the fifth are the important ones. The comparison ought to be drawn, year by year, if possible, or at least period by period, as is there done, and not in the Total. This would lead to inaccurate inference, as to the actual loss of officiency from invaliding: the shorter the period taken, the more it diminishes the error. But it would be still better to take 1,000 men and follow them up to the end of their service, till they are all dead or invalided, than to take even a year, or, as has here been done, an aggregate of years; because fresh lives, of course, continually supplement the column "under seven years' service." And the elements of the calculation are thus perpetually changing. The man may actually appear on the Strength twenty-four times—on the "Invalided" he will appear only once.

It would also be very desirable, if possible, to give in a separate column, after each period of invaliding, the per-centage of men invalided, who died within the year, in order that we might see where the highest mortality lay. For the ratio of invaliding of men under seven years' service, which varies from 0·2 per 1,000 in the Household Cavalry to 15·9 per 1,000 in the Infantry of the Line, bears no proportion to the Mortality among the Invalids, which raises the Mortality among the Household Cavalry by 3·7, among the Infantry of the Line by only 2·0 per 1,000.

The following Table is from the Appendix to the Evidence taken before the Commission appointed to inquire into the Regulations affecting the Sanitary condition of the Army, &c. No. LVI, and shews in one summing-up the Strength, Deaths and Invaliding of the whole Army, taken (1) generally, (2) abroad, and (3) at home.

Strength, Deaths, and Invaliding in the Army at Home and Abroad.

TABLE No. IV.

1879—1883.	Officers		Non-Com. Officers & Privates		
	Strength	Deaths	Strength.	Deaths	Invaliding
Cavalry, Guards, and Infantry.					
Aggregate of 15 years...	62,085	1,373	1,702,037	48,330	
Annual Average	4,473	91.5	113,469	3,222	
Ratio per 1,000 mean strength	—	20.22	—	27.49	
Royal Artillery.					
Aggregate of 15 years...	7,349	175	184,096	3,402	436
Annual Average	490	11.7	8,273	226.8	29.1
Ratio per 1,000 mean strength	—	23.80	—	27.49	3.53
Royal Sappers and Miners.					
Aggregate of 15 years...	—	—	22,173	411	76
Annual Average	—	—	1,505	27.4	5.1
Ratio per 1,000 mean strength	—	—	—	18.47	3.43
Royal Marines.					
Aggregate of 15 years...	—	—	118,579	2,770	1,166
Annual Average	—	—	10,465	184.7	77.7
Ratio per 1,000 mean strength	—	—	—	17.70	7.42
AMONG THE TROOPS SERVING ABROAD.					
Royal Artillery (Foot).					
Aggregate of 15 years...	2,473	46	67,000	1,224	*
Annual Average	240	3.1	6,150	81.5	
Ratio per 1,000 mean strength	—	18.14	—	20.17	
Royal Sappers and Miners.					*
Aggregate of 15 years...	—	—	11,158	221	
Annual Average	—	—	744	19.5	
Ratio per 1,000 mean strength	—	—	—	20.58	
Royal Marines, Afloat.					*
Aggregate of 15 years...	—	—	91,214	1,807	
Annual Average	—	—	6,079	114.5	
Ratio per 1,000 mean strength	—	—	—	20.48	
TROOPS SERVING AT HOME.					
Household Cavalry.					
Aggregate of 15 years...	—	—	16,114	104	28
Annual Average	—	—	1,209	31	8.5
Ratio per 1,000 mean strength	—	—	—	10.7	2.3
Cavalry. (Line).					
Aggregate of 15 years...	—	—	87,129	1,241	240
Annual Average	—	—	5,809	77.5	16.5
Ratio per 1,000 mean strength	—	—	—	12.5	2.7
Royal Horse Artillery.					
Aggregate of 15 years...	646	—	9,417	138	19
Annual Average	47	—	630	9	3.5
Ratio per 1,000 mean strength	—	—	—	13.7	4.6
Royal Artillery (Foot).					*
Aggregate of 15 years...	4,403	31	77,763	1,139	
Annual Average	293	3.5	5,184	75.9	
Ratio per 1,000 mean strength	—	—	—	14.6	
Royal Sappers and Miners.					*
Aggregate of 15 years...	—	—	13,021	141	
Annual Average	—	—	868	9.5	
Ratio per 1,000 mean strength	—	—	—	11.0	
Foot Guards.					*
Aggregate of 15 years...	—	—	47,301	1,106	
Annual Average	—	—	4,474	67.5	
Ratio per 1,000 mean strength	—	—	—	15.5	
Infantry (Line).					
Aggregate of 15 years...	—	—	338,479	5,197	1,250
Annual Average	—	—	22,565	346.5	83.3
Ratio per 1,000 mean strength	—	—	—	15.3	3.7
Royal Marines, Ashore.					*
Aggregate of 15 years...	—	—	65,745	903	
Annual Average	—	—	4,383	60.2	
Ratio per 1,000 mean strength	—	—	—	13.7	

* The Invalids from the Troops serving abroad and at home cannot be separated.

The preceding tables, however, do not give the absolute value of the loss to the service from invaliding, nor the mortality among men invalided. They present the same defect which runs through all systems of averages, where absolute results are expected from them. For instance, the men who escape invaliding during the first period of seven years, are passed on to the next septennial period, and are again counted against the number invalided, and, although the same men, they are made to represent, so to speak, a different force. Were the tables given year by year, the error would be diminished, but still the total loss in effective service from invaliding hardly admits of being expressed in figures, for figures represent all classes of soldiers, good and bad, healthy and unhealthy. The same remarks apply to the statistics of mortality generally.

Defect of the System of Averages as applied to such Problems.

The defect of the system of averages applied to such problems is that it fails to give the absolute facts of the case. We wish to know how much the mortality of the Army during any year or series of years is increased by the mortality among invalids. This can only be done by adding the whole mortality, year by year, to that of the Army. But, when we say that, during a term of years, such a per centage of men was invalided, we count over and over again the men who escaped invaliding, while we also take advantage of the additions of new lives, made year by year, and take the per centage of loss, not on the damaged constitutions alone, but on a body of men made up of those who have been exposed to the causes which influence the amount of invaliding, and of those who have not been exposed to these causes.

Problems to which the System of Averages in Vital Statistics is or is not applicable.

The problems, to which the system of averages in vital statistics is applicable, or non-applicable, may be described as follows:—

1. If we want to compare, *irrespective of all conditions*, the deaths among corresponding populations, we may use the system of averages, but it only tells us the fact that the mortality is similar, or different, *but absolutely nothing more*.

2. If we are desirous of knowing the mortality at different periods of time among the very same individuals, we may use the same system, but it tells us nothing more than the rates at different periods.

The figures given at pp. 254, 314, illustrate this and all that it is worth.

3. As soon as we introduce *conditions* into vital statistics, and require to know something about the circumstances or reasons of the mortality, the system of averages fails.

Illustrations of what the System of Averages in Vital Statistics *does not show.*

This may be illustrated as follows:—

Lord Raglan lost 90 men from Scorbutic Dysentery (say) out of a regiment 1,000 strong, in the month of January alone, and ten men by other diseases out of the same Regiment, in the 12 months.

The way of stating this by averages would be to say that the Regiment had lost in 12 months 100 men, or at the rate of 10 per cent. per annum. Not a very heavy death rate, it would appear, under the circumstances.

Out of the 100 deaths 90 occurred in a month, 10 in 11 months. The ordinary mortality would be—say 10+1=11 per 1,000 per annum. But, during the Scorbutic Dysentery month, it was $90 \times 12 = 1080$ per 1,000 per annum. Again, 90 out of the 100 deaths occurred (say) in a fortnight.

The practical conclusion of the first method is that the year was rather an unhealthy one; the practical conclusion of the second, that measures for saving life ought instantly to have been carried out.

Again.—Take the case of the forces in India during an epidemic of Cholera.

100 Regiments, 1,000 strong, yield (say) usually 40 deaths per 1,000 per annum, and the rate next year is suddenly raised to 200 per 1,000 per annum.

The fact, as stated by averages, proves that, some how or other, the mortality had risen over India by 160 per 1,000 above the usual average.

The conclusion is, that the special year is unfortunately an unhealthy one, nothing more.

The fact being examined in detail, it is, however, found, that some regiments have lost 20 per 1,000, and some 40, while the half of other regiments has entirely disappeared at certain stations.

The real conclusion is, that Sanitary improvement, or even removal of troops, is necessary at certain stations, and not at others.

The system of averages, applied to questions which it cannot solve, becomes thus practically injurious.

The Public Health Act can only be applied, by Government, in towns with a mortality not less than 23 per 1,000; but the average thus taken conceals the most important fact; viz., that in a fourth part of the town the mortality may be as high as 30 per 1,000.

The practical result is, that the minority may be suffering above five times the mortality suffered by the majority. The intention of the Act, as regards the only real sufferers in the case, may thus be nullified.

Again, when an average mortality is struck over the entire life of a population, at (say) 22 per 1,000 per annum, the important fact does not appear at all, that half of all the children born may die under five years of age.

Hence, the causes of this great infantine mortality may be overlooked and never touched, although thousands of pounds may be spent in works for reducing the average mortality below 23 per 1,000. For the question, at what age was this excess of mortality?—is practically very important. On the answer to the question, whether the mortality occurs among adults or among children, depends very much the nature of the causes of mortality to be removed.

The same remarks apply to averages for septennial and all other periods of life. We cannot average a calamity. If I lose £20,000 to day, it is no practical benefit to me to learn from a calculation that my average loss during 20 years is £1,000 a year.

The system of counting the same men over and over again in averaging mortality, in a stream of life passing through years, is just as absurd. Every year, nay, every month in vital statistics has its own problem, in itself complete, and the ground of an eternal fact, incapable of being averaged with any other fact—true in itself and by itself; but ceasing to be true as soon as it is mixed up with another similar fact—admitting of comparison, but not of combination.

Mortality of the Army in the East in Hospital, at the Average Rate.

The fact, that the mortality of our Army in the East in Hospital was, during 2½ years, at the average rate of 22·8 per cent, is not a very suggestive one. But the fact that, during eight months of that time, it was losing men from disease alone, at

the rate of 60 per cent., per annum—during other five months, at the rate of 1·2 per cent., per annum, *is* a very suggestive one—as also that, during one month, its rate of mortality in Hospital was 117 per cent. per annum, during another month under one per cent., per annum. None of the numbers here given include the killed in action.

Mortality in the Army of the East, in Hospital, during 2¼ Years, from April 1, 1854, to June 30, 1856.

Period.	Years of Life or Aggregate Strength	Average Strength of the Army.	Deaths.	Annual Mortality per Cent.
April 1, 1854, to June 30, 1856 (2¼ years)	79,273	34,520	18,658	22·78

Note.—The years of life and the average strength of the Army have been derived from the weekly return of the strength, from April 1855 to May 1856 (inclusive) and for the previous period, April 1854 to March 1855 inclusive, from the return of the Deaths during each month, and from a return of the rate of Mortality during the same periods.

The following Table gives the Classes of Disease from which this mortality arose.

Class of Diseases.	Number of Deaths from specified causes.	Of the Total Deaths the Proportion per cent. from each class.	Of the Total Deaths (exclusive of Violent Deaths) the Proportion per cent. from each class.	Deaths Annually to 100 living.
1. Zymotic	14,567	81·9	94 3	13 7
2. Constitutional	204	1·1	1·3	3
3. Local	608	3 3	4·3	9
4. Developmental	79	·4	·4	..
5. Violent.....	2,314	13·1	..	3·0

System of Averages destroys the value of absolute facts in certain cases.

An engineer, for a river of unequal velocity, takes the sections at different points; but he does not strike the average of those sections; for there is no fact obtained in taking the *average* velocity of a river, of which he can make use in constructing engineering works, requiring the absolute velocity at a given point to be taken into account.

In constructing a Table of Mortality we take 100 men, eight die the first year, there are left 92—two die the second year, there are left 90. The usual method of stating this mortality would be to *take the hundred over again* and strike the difference, thus—

$$100+100=200 \quad 8+2=10$$

$$2)10(5$$

Therefore, it is a mortality of 5 per cent., per annum. Now, this is manifestly wrong, and gives the Secretary of State no idea of his *accumulated* loss.

What we want to know is, where the conditions vary, what the result is of each successive condition, *not* what is the average of the whole.

The only arithmetical problems where averages can be justly used are those where they *diminish* the error, as they would, *e.g.*, in a series of chemical experiments or astronomical observations. In vital statistics, they only increase the error.

Dr. Farr has constructed a "*Stream*," in accordance with the idea above expressed, viz., that it would be better to follow up a given number of men, through a certain number of years' service, showing the number annually lost to the service by invaliding and by death out of the same body, not supplemented by fresh lives. The result is—

Table I.

Numbers remaining of 10,000 Recruits at each successive year, serving at Home.

Table showing, of 10,000 Recruits, at the Age 20, the numbers remaining at each successive year of Age, up to 40, and also the Numbers annually eliminated by Invaliding or by Death.—It has been constructed from the facts supplied, by the Army Reports and by the Tables of Dr. Balfour on Invaliding. The principle of construction is the same as that employed at the General Register Office, in constructing Life Tables. It is assumed that the soldiers enter the Service at the age of twenty years.

Age.	English Soldiers.				Completed Years of Service.
	Living.	Dying and Invalided.	Dying.	Invalided.	
20	10,000	330	169	161	0
21	9,650	325	168	157	1
22	9,325	305	166	139	2
23	9,020	280	164	125	3
24	8,731	276	162	114	4
25	8,453	270	160	110	5
26	8,183	265	159	106	6
27	7,918	264	158	106	7
28	7,654	263	157	106	8
29	7,391	260	155	111	9
30	7,125	271	153	118	10
31	6,854	275	150	125	11
32	6,579	282	147	135	12
33	6,297	288	145	143	13
34	6,009	296	144	152	14
35	5,713	302	144	158	15
36	5,411	307	143	164	16
37	5,104	313	141	172	17
38	4,791	315	138	177	18
39	4,476	318	135	183	19
40	4,158				20

Table II.

Summary of Table No. III, P. xviii.

Strength and Invalliding in the Army serving at Home during the Years 1859-1863. (See Dr. Balfour's Table No. III, p. xviii.)

Years' Service.	Strength.				
	Household Cavalry.	Cavalry, Line.	Foot Guards.	Infantry, Line.	All Arms.
All periods of service ..	18,114	87,129	78,729	303,409	487,372
Years.					
0— 7..	8,352	43,541	36,761	195,628	283,282
7—14..	4,988	23,721	20,731	79,549	117,989
14—21 Infantry	..	..	12,707	39,097	51,804
14—24 Cavalry	4,188	15,453	..	..	19,641
21 and upwards Infantry..	..	..	8,523	8,385	6,656
24 and upwards Cavalry..	606	1,414	..	..	2,020

	Invalided.				
All periods of service ..	569	2,856	2,282	9,859	15,566
Years.					
0— 7..	32	718	526	3,105	4,396
7—14..	68	510	335	1,486	2,399
14—22 Infantry	..	..	254	2,174	2,428
14—24 Cavalry	147	568	..	..	715
21 and upwards Infantry..	..	..	1,167	3,094	4,261
24 and upwards Cavalry..	322	1,045	..	..	1,367

Proportion of Troops Invalided to 1,000 serving at each period of Service, at Home.

All periods of service ..	31·93
0— 7	15·19
7—14	20·34
14—21 } 24 }	43·98
21 and upwards } 24 " }	648·46

Accumulated Loss by Death and Invaliding.

TABLE III.

PROPORTION OF TROOPS, serving at Home, who Died or were Invalided, out of 1,000 serving in the Household Cavalry, Cavalry, and Infantry in three septennial periods of Service.

Ages.	Years of Service.	Deaths at Home	Invalided at Home	Invalided and Deaths
		to 1,000 Serving.		
20—27	0— 7	17·41	15·19	32·60
27—34	7—14	18·21	20·24	38·45
34—41	14—21 or 24	19·15	43·98	63·13

The Table may be read thus:—To 1,000 Troops who have served under 7 Years, of the Ages 20 and under 27, 17·41 DIE, 15·19 are INVALIDED, and 32·60 DIE OR ARE INVALIDED Annually.

NOTE.—Table I was constructed from the facts in Tables II and III.

Comparison of the Loss of Veterans to the Army as it is now and as it might be.

TABLE IV.

TABLE showing the Number of Effectives (distinguishing Young Soldiers from Veterans) remaining (1) in the Army as it is: (2) in the Army in an Improved State—if the number of Annual Recruits were 10,000, and the Army served only at Home in a time of Peace.

	Years of Service.	Ages.	To 10,000 Annual Recruits		Excess of Strength in the Army in an Improved State.
			Army in its present Sanitary State.	Army in an Improved State.	
			Upon the above hypothesis.		
Effectives	0—20	20—40	141,764	166,910	25,146
Young Soldiers	0—10	20—30	84,858	92,305	7,447
Veterans	10—20	30—40	56,876	74,605	17,729

Loss of Veterans to the Army in its present State.

The Table is intended to show more particularly the large number of Veterans lost to the Army as it is at present constituted:—Thus in the Army as it is, the number of Young Soldiers at the Ages 20—30 is 84,888, and of Veterans of the Ages 30—40 66,876, while in an improved state the numbers would be respectively 92,305 and 74,605, showing an addition to the strength of the Army of 7,417 Young Soldiers and 17,729 Veterans.

The number of Veterans actually in the Army, owing to Service in unhealthy stations abroad, is much less than in either of the above estimates; in 1851, of 120,733 men, 88,629 were of the Age 20—30, and only 32,104 were 30—40.

Two very interesting Tables are added, furnished by Deputy Inspector-General Taylor to the Commission of Enquiry into the Regulations affecting the Sanitary Condition of the Army, &c.; giving—

TABLE I.

1.—NUMBER of INVALIDS from Home and Foreign Stations discharged the Service at Chatham in each Year from 1st April, 1833, to 1st April, 1837.

—		For the Year ending 31st of March,																		
		1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.	Total.
Cachexy ...	Home	25	29	9	23	29	21	23	28	62	67	14	11	14	28	37	39	32	245	878
	Foreign	43	33	20	19	17	21	24	36	33	28	37	83	25	50	51	45	45	97	696
Bronchy and Visceral Diseases ...	Home	6	8	6	17	8	16	5	3	8	7	2	9	17	7	5	16	5	25	166
	Foreign	25	29	14	21	9	24	24	4	16	25	8	27	10	22	10	8	31	30	308
Dysentery and Hepatic Disease ...	Home	12	5	8	40	27	28	39	30	30	27	8	9	13	19	13	19	16	90	459
	Foreign	37	55	50	44	36	46	78	39	79	63	58	61	40	80	52	19	61	57	904
Eye Diseases ...	Home	19	28	27	39	36	27	43	30	70	29	62	46	14	21	30	22	28	350	1,000
	Foreign	74	69	70	40	39	43	60	66	104	55	66	146	102	73	55	58	179	151	1,391
Wounds and Fractures ...	Home	23	17	12	28	15	39	15	24	28	33	21	8	19	12	20	22	29	161	541
	Foreign	72	98	33	27	32	28	73	229	233	88	85	155	48	32	52	56	1,500	733	3,708
Dislocations ...	Home	10	5	6	—	10	—	4	5	7	6	4	1	1	—	2	1	—	7	89
	Foreign	7	21	9	2	4	3	7	8	5	2	4	—	1	2	1	1	—	2	88
Contractions ...	Home	8	4	5	32	18	30	5	20	9	8	—	9	17	7	13	9	4	108	302
	Foreign	7	12	12	28	22	40	14	21	23	3	10	28	21	20	11	12	108	51	455
Hernia ...	Home	29	39	22	33	24	27	30	31	45	45	34	13	36	29	21	11	12	251	718
	Foreign	53	70	43	7	4	10	20	18	14	22	19	33	19	27	27	6	27	34	438
Mental Diseases ...	Home	9	13	8	9	13	7	7	14	30	23	8	19	30	29	28	27	45	101	599
	Foreign	25	24	18	30	9	22	19	32	32	21	32	63	45	49	40	46	64	69	629
Paralysis ...	Home	10	12	6	12	11	8	8	8	9	21	9	17	12	11	21	19	30	20	341
	Foreign	21	29	26	25	16	26	15	22	21	33	19	33	23	39	16	30	48	20	437
Epilepsy ...	Home	20	18	18	12	22	17	17	15	17	13	19	17	17	13	16	14	40	110	408
	Foreign	33	34	36	9	13	9	15	10	15	11	19	36	18	12	18	9	46	55	534

(—continued.

		1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.	Total.
Deafness and Impediment of Speech	Home	8	21	4	19	18	21	9	8	13	13	15	6	10	10	4	1	3	68	224
	Foreign	10	12	13	10	9	7	9	15	11	10	10	14	5	14	13	1	28	18	200
Pulmonic Diseases	Home	338	320	316	316	307	310	299	301	347	261	246	228	302	246	324	384	376	646	5,099
	Foreign	455	332	321	159	143	131	164	194	255	171	140	198	194	216	246	113	459	243	4,049
Rheumatism and Chronic pains	Home	97	210	208	182	190	110	174	197	268	255	97	28	216	241	226	116	159	285	3,416
	Foreign	113	191	142	119	190	111	121	103	190	243	59	43	69	219	154	64	269	111	1,922
Ulcers and Varix	Home	89	60	55	76	66	78	55	54	69	63	70	46	45	60	58	17	41	102	1,014
	Foreign	103	97	73	50	77	57	69	82	63	43	51	40	33	49	30	19	40	87	1,009
Retention and Incontinence of Urine	Home	1	19	10	8	6	3	4	11	8	3	4	3	10	7	13	3	6	62	302
	Foreign	5	21	20	5	7	4	14	6	6	3	3	7	6	8	13	—	23	34	174
Venereal Diseases	Home	1	5	4	4	—	3	4	3	33	9	10	29	20	10	6	6	6	78	276
	Foreign	1	4	9	8	6	8	33	4	11	13	10	30	16	30	14	8	14	59	338
Infirmities of Age and worn out	Home	194	324	321	196	227	197	161	295	327	246	271	303	216	205	113	111	29	301	5,249
	Foreign	422	264	316	124	122	117	219	426	345	324	329	350	310	96	146	108	61	85	5,616
Weakly Constitution and upon reduction	Home	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1	215	232
	Foreign	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	24	34
Total	Home	852	1,247	719	906	941	898	735	911	1,140	1,173	913	704	723	1,103	1,039	827	688	1,153	19,304
	Foreign	1,494	1,356	1,020	713	774	739	1,031	1,347	1,309	1,161	804	1,467	745	1,761	813	678	2,103	1,564	17,358
Grand Total		2,337	2,603	1,739	1,619	1,715	1,637	1,611	2,258	2,449	2,334	1,716	2,167	1,468	2,864	1,852	1,505	2,791	2,717	36,662

TABLE II.

2.—By Classes of Causes of Disability, Proportion per Cent. of the Invalids arrived, discharged the Service during the Sixteen Years ending 31st March, 1855, and during the Two Years ending 31st March, 1857, inclusive of 2,695 discharged in the latter Period on Reduction for partial Disability.

Per Cent. discharged the Service.	Of Invalids arrived.	
	Sixteen Years to 1st April, 1853.	Two Years to 1st April, 1857.
By Cachexy and Scrofula	2·44	2·91
„ Thoracic Diseases	16·89	12·21
„ Dysentery, Hepatic Diseases, and Dropsies ..	3·67	1·97
„ Diseases of the Eye	4·17	4·41
„ Wounds and Injuries	3·99	17·22
„ Subluxations and Dislocations	·24	·06
„ Contractions	1·13	1·71
„ Ruptures	1·89	2·21
„ Mental Diseases	1·73	1·91
„ Paralysis	1·29	·61
„ Epilepsy	1·19	1·41
„ Deafness and Impediment of Speech	·76	·91
„ Rheumatic Ailments	12·10	4·21
„ Ulcers and Varix	4·23	2·21
„ Strictures and Urinary Diseases	·63	·71
„ Venereal Diseases	·73	·77
„ "Worn out," or general infirmity by age and length of service	14·82	2·17
„ Rejection of the Army, not desirable to retain on account of weakly constitution	..	1·91
Total	71·82	62·51

The want is here evident, which has been already mentioned, viz., of having one nomenclature and one classification, the same for recruiting rejections, for the service and for invaliding—and this to be the one used by the Registrar-General of England, for the civil population.

I have thus tried to give, by way of Preface, a general view of—

1. The Mortality of the Army at home, before and after

1845, together with a corrected Table of the Mortality of each Arm of the Service at home, during the ten years ending 1846.

2. The Mortality of the whole Army at home and abroad, for fifteen years, 1839—1853, and the excess of Deaths in the Army over those in Civil Life in Healthy Districts.

3. The Mortality of the Army serving at the various stations abroad, before and after 1837.

4. The Statistics of Recruiting and of the Ratio and Causes of Rejections in Recruiting, as far as our very imperfect means of information will allow.

5. The Mortality of Pensioners during the first year of Pension, for nine years, 1845—1853, when discharged (1) from home-service, (2) from service at home and abroad, showing how an *apparent* reduction is hereby effected in the Army.

6. The Ratio of Invaliding to Strength, in the Army on home service, exhibited in septennial periods of service, for fifteen years, 1839—1853, and the Strength, Deaths, and Invaliding in the whole Army, at home and abroad, for the same period.

7. The Average Mortality of the Army of the East in Hospital, and from what Classes of Disease.

8. The Numbers remaining out of 10,000 Recruits, serving at home, at each successive year of Age, up to 40, and the Numbers annually lost to the Service by Invaliding and by Death; together with the comparative Loss of Veterans to the Army as it is now, and as it ought to be.

9. The Classes of Disease, for which men are invalided, and the Numbers from each class, on home, and on foreign service.

In the Statistical Section, XI, p. 324, will be found some more minute questions, asked upon these data, which a Statistical Department, if formed at the War Office, ought to be able to answer.

PART II.

Abstract of Sanitary Recommendations contained in Appendix LXXIX to the Report of the Royal Commission, on the Sanitary State of the Army.

Sanitary knowledge comprehends—

1. Drainage, ventilation, cleansing, &c., of buildings, such as the General Hospitals.

2. The sanitary state of occupied towns, such as Balaclava.

3. The sanitary state of camps, such as that before Sebastopol.

4. The question of water-supply.

The abstracts of the sanitary recommendations which will be found elsewhere, will give a fair idea of the amount of practical information at the command of the Army on such subjects, and the whole result may be summed up shortly as follows:

February 21, 1854. Director-General.

On February 21st, 1854, the Director-General proposed to the Horse Guards to send out three senior medical officers to the prospective seat of war, to make topographical enquiries. He was authorized to do so the same day.

February 27.

On the 27th he sent his instructions to Drs. Linton, Dumbreck, and Mitchell, the officers selected for the purpose.

This was a very proper and a very prudent step, but the instructions were meagre and not concise enough. He trusted evidently to the men themselves.

There are no reports among the papers from Drs. Linton and Mitchell. There are reports from Dr. Dumbreck, containing

suggestions for improvements in the clothing of troops and certain sanitary suggestions for occupied towns.

The suggestions about clothing were urged by Dr. Smith on the Horse Guards, but declined, and Dr. Smith issues no instructions on the sanitary part, so that the Commission was a dead failure and led to no result.

The troops went to the East without any sanitary instructions from the Army Medical Department.

There is no paper to show that the Camp at Devna was taken up, after asking the opinion of the Principal Medical Officer, or that any advice was tendered by him about the site. There are representations of Dr. Hall's, but *après coup*, about moving camps affected with Cholera, made very properly and with success.

Dr. Smith sends one solitary sanitary recommendation about the Army, and that is to filter the water for the Hospitals.

On the subject of Hospitals at Varna there is a report, with recommendations from Dr. Dumbreck to General Tylden, for improving the Hospital at Varna. They are good, so far as they go. He used every effort, apparently, to get them carried out; but, even at this early part of the War, he could get no effectual aid and the improvements were not carried out. This case affords a striking instance of the utter want of any sanitary organization at the very opening of the campaign.

So far as the campaign in Bulgaria is concerned sanitary measures, in their preventive aspect, appear never to have been entertained, except by Dr. Linton, of the 1st Division, who, on the 7th July, appointed Mr. Cooper, Surgeon, to the Sanitary charge of the 1st Division Camp. Mr. Cooper is an able, energetic man, and proceeded vigorously with his work, reporting and representing personally nuisances, &c.; but it is easy to see, from his letters, that he made little or no progress in his work.

There is no record of any inspector having been appointed for any other division.

Scutari.

The sanitary procedure, with regard to Scutari, may be summed up as follows:—

There was no intelligent sanitary inspection of the buildings before occupation.

What was done afterwards was good but never touched the

causes of the mortality. The best sanitary measures were recommended apparently by Lord Raglan. Any way the mortality among the sick must have been excessive, from the total neglect of really efficient improvements.

Crimea.

Let us now proceed to the Crimea.

The British Army took ground before Sebastopol at the end of September 1854. There is no record of any preliminary sanitary proceeding having taken place on the occasion. No survey, no topographical report, no sanitary report, no caution to military authorities, no sanitary memoranda to medical officers of divisions. In short, so far as the papers are concerned, the sanitary question appears never to have been considered in its preventive aspect, for there is no record of any preliminary measures having been recommended, either by the Director General or the Principal Medical Officer. There is, of course, no reference to any opinion having been asked, on sanitary matters, by the military authorities. This conflicting inaction is rather singular, as even very popular books, some of them very well known, had indicated the ground occupied by the British troops as unhealthy. This same fact had also been adverted to in the public press, before the Army went to the Crimea.

No sanitary measures were organized for securing the health of Balaclava, the very basis of the operations.

January 12, 1855. Director-General.

The Director-General makes no sign on the subject till January 12th, 1855, when he writes a general instruction to Dr. Hall, to represent defects of every kind, without specification of any sanitary defects, to Lord Raglan in writing.

October 12, 1854. Dr. Linton.

Dr. Linton, Inspector-General 1st Division, on the 12th October, 1854, appointed Surgeon F. Smith to superintend the sanitary state of the 1st Division Camp and to report, in writing, to the Principal Medical Officer.

This is the only instance of sanitary prescience recorded in the correspondence. The example does not appear to have been followed.

December 7, 1854. Dr. Anderson.

The earliest indication of a recorded sanitary opinion is in a letter from 1st Class Staff-Surgeon Anderson to Major Wood, 3rd Division, on the 7th December, 1854, in which sickness in the 9th Regiment is attributed entirely to exposure and not

December 28. Dr. Hall.

The next reference to sanitary matters is on the 28th

December. By that time the water-supply, from neglect, had become impure, and Mr. Aspinall, a civilian who was there, recommended alum to purify the water. The matter was referred to Dr. Hall, who says, in reply, "the experiment can do no harm and, as it may do good, I will call the attention of medical officers to it."

[Note.—Dr. Alexander had already represented want of huts as a cause of disease, and this letter was sent to the Quartermaster-General by Dr. Hall on 26th November.]

November 26. Mr. Alexander.

These entries indicate the whole sanitary procedure in the Camp before Sebastopol, so far as can be learned from the correspondence, during the period of greatest suffering and loss in the British Army.

There is no further notice of any kind on the subject till the 24th January, 1855, when Staff-Surgeon Hume, 3rd Division, complains to Dr. Hall of nuisance from drink sold and ponies kept near the Hospital. This Dr. Hall represents to the Adjutant-General, on the 24th January, and goes on to say, as it were incidentally, "When on the subject of camp nuisances I may mention," &c., and he proceeds to recommend the following sanitary precautions:—Latrines to be dug for all the camps and the soil covered over with earth daily. Dead animals to be buried, "instead of being allowed to decay and taint the air above ground." [This appears to have been the first notice of the abomination.] "It would also be *highly desirable*"—mark the expression!—to direct pioneers to clear round the hospital marquees and tents daily, to collect all offal, dirty and condemned clothes, "which are now merely thrown outside the tents and there allowed to rot." Trenches round the hospitals should be deepened. Says that medical officers, when spoken to about it, state they cannot get labour. Warns the Adjutant-General that if these measures are not taken graver diseases will appear and carry off thousands. [This is all very proper, but why was it not done and the service organized, before this date?]

Camp. January 24. 1855. Dr. Hume. January 24. 1855. Dr. Hall.

This was also complained of by Dr. Linton, on the 27th and 1st February.

Dr. Hall, in reply to a query about using quick-lime, to consume dead animals, very properly expresses his opinion, on the 28th January, that the carcases ought to be buried. He reiterates the sanitary advice given in his former letter, and

January 28. Dr. Hall.

objects to the site for certain barrack-huts, at the head of Balaclava harbour.

The site was selected without any consultation with the medical authorities. The huts were erected. They still were occupied, notwithstanding Dr. Hall's protest, and were only vacated after fever had ravaged the Guards who were in them.

February 5, 1855. Dr. Roberts. February 17. On the 5th February, 1855, Surgeon Roberts recommends the formation of a camp police, for cleansing the 4th Division, to the Assistant Adjutant-General, and, on the 17th, he advises graves to be better covered.

February 24. Dr. Hume. A daily sanitary police for the Camp Hospitals was suggested, by Dr. Hume, on the 24th February, to Lieutenant-Colonel Colborne, for the hospitals of the 3rd Division, to collect and burn or bury filth and rags.

Feburary 25. Mr. Mount. On the 25th February Surgeon Mount, 6th Inniskilln Dragoons, calls the attention of his Brigade Major to carelessly-buried dead horses, within the Cavalry Camp, and predicts fever, &c., if not attended to. The complaint led to inspection. Four camps were cleaned and the dead horse properly buried. This is a very proper letter, under the circumstances, but the necessity for it proves the want of sanitary system.

March 8. Board of Health. The next indication of vitality is on the 8th March, 1855, two days after Sir John Mc Neill's Commission and the Sanitary Commission arrived at Constantinople, and the day the mail would arrive in the Crimea. On the date given Dr. Hall recommended Lord Raglan to appoint a Board of Health, "to take into consideration the sanitary condition of the Army," as to

Diet and water,
Accommodation for sick and well.
Clothing,
Duty, and
Locality,

"the Board to report on the best means of remedying, removing or abating whatever may appear to be prejudicial to health." The Board to consist of Drs. Hall, Linton, Alexander, Macdonell, Hume, Wood, Mount, Anderson.

Were it not for the astounding fact that such a Board was not called together at the beginning of the campaign, it would be positively ludicrous to think of its being summoned after the Army was lost.

It is called together after it could render no effective service and after the Home Government had taken the matter into its hands, apparently simply to save the Department.

What other good it could do is invisible.

On the same day, March 8th, Dr. Linton issued a memorandum to the medical officers of 1st Division, calling attention to camp nuisances. March 8. Dr. Linton.

On the 14th Dr. Hall recommends boring holes in the boards, to ventilate the hospitals. And, on the same date, advises the site of a Land Transport Corps Camp to be moved further from the Hospitals of the 4th Division. March 14. Dr. Hall.

On the 19th March Dr. Hall reports, apparently for the first time, on his weekly state, that the men of the 79th and 93rd Highlanders were affected by the locality of their camps, "but that strategic reasons prevented their removal." [By this time the whole strength of the 79th had passed through hospital, from fevers and other zymotic diseases, but this is not stated by Dr. Hall.] [Neither is any remedy even then suggested.] March 19. Dr. Hall.

On the 24th March Dr. Hall recurs, in his weekly state, to the Camp of the 79th and 93rd, pointing out "that it was owing to the localities of their camps, which it would be desirable to change." March 24.

On the 27th Dr. Hall calls attention of General Airey to a letter of Staff-Surgeon Roberts, Principal Medical Officer 4th Division, advising ventilation of tents and diminution of overcrowding, which Dr. Hall backs. March 27.

On the 25th the Board of Health Report was transmitted, by Dr. Hall, to Lord Raglan. The following are its recommendations, of a sanitary kind, regarding the Camp. Water runs to waste, for want of tanks or means of collecting. Water to be husbanded and wells dug. Tanks to be cleansed; a watering trough constructed. Huts to be ventilated, by three square turrets (Dr. Alexander) through the roof, and holes in the doors. Inmates of huts to be limited. Site of many camps objectionable, from vicinity of ravines with animal March 25. Board of Health.

remains. Such remains to be covered with additional earth and lime, and recurrence of nuisances to be prevented. Utmost cleanliness should be observed in camps and their vicinity. Great attention to latrines, to be dug sufficiently deep, four feet at least; to be covered daily with earth and refuse charcoal. Tents to be boarded and not overcrowded. Outer walls to be raised daily, as also in marquees: tents to be struck once a week. Duties considered a principal cause of disease. (Cavalry, who performed no such duties, suffered most from zymotics at this date.) Graves should be four feet deep and lime used. Camp of Coldstream Guards unhealthy. Spotted Typhus has appeared. "Huts should not be occupied by troops." Suggests a deep trench from Kadikoi to the harbour, about a mile, to drain the ground, to secure the health of the 71st (who did not suffer from this ground) and a few Royal Artillery, who might have been removed. [The work was a good one, but good for other sanitary purposes than those indicated, and it was done towards the end of the year by the Army Works Corps for the road.] Recommends the removal of filth from the General Hospital, and burial of dead animals.

The most obvious matters omitted in this report are—

1st. The Camp of the 79th.

2nd. Drainage of huts

3rd. Removing earth from huts.

From these causes a very large part of the zymotic disease then in camp took its origin.

Unremoved damp was the main local cause and it is not at all recognized by the Board.

Their recommendations otherwise are good.

April 5. Dr. Macdonell. On the 5th April Dr. Hall transmits letter of Dr. Macdonell, to the Quartermaster-General, about a nuisance from bat animals, in the Cavalry Camp.

April 16. Drs. Linton and Scott. On the 16th April Dr. Hall transmits to Quartermaster-General letters of Dr. Linton and Dr. Scott, about removal of 79th Regiment, and objects to their being placed on the site of the Zouave Camp.

April 30. Dr. Hall. On the 30th April Dr. Hall represents nuisances in the trenches and advises latrines properly managed.

May 1. Dr. Anderson. 1st May encloses to Quartermaster-General Dr. Anderson's

recommendations about cleansing in the vicinity of Crost Hospital.

There are sanitary suggestions made subsequently by various persons and of the following nature:—

May 2nd—Dr. Hall, about removal of filth of Balaclava Hospital. — May 2. Dr. Hall.

May 12—Dr. Hall, about covering dead animals. — May 12.

May 15—Dr. Taylor, about camp being too close during Cholera. — May 15. Dr. Taylor.

Dr. Hall, May 12th—Removal of certain camps during Cholera. — May 12. Dr. Hall.

May 27—Not in favour of white-washing roofs. — May 27.

June 2nd—Nuisance and Cholera in trenches. — June 2.

June 4—Charcoal powder for latrines in trenches. — June 4.

July 2nd and 6th—Recommends removal of affected camps. — July 2 and 6.

11th—Removal of dead animals from vicinity of hospitals. — July 11.

18th July—Dr. Hall, for improving drainage in hospital huts of 3rd Division. — July 18.

3rd August—Dr. Hall, suggests means of remedying defects in hospital huts, for winter. — August 3.

May 20, 1855—Dr. Alexander recommends French latrine. — May 20, 1855.

28th February, 1856. Dr. Alexander—Unburied horses near his Division. Latrines should be covered and Camp kept clean. — February 28, 1856. Mr. Alexander.

Dr. Alexander, in his March monthly report, states the Camp of his Division to have been in good order.

With a few exceptions the sanitary recommendations made by the very few medical officers who made such were good in principle.

Dr. Linton's proceeding of appointing a sanitary inspector for the 1st Division, who only did his work for a very short time, for he died of Fever apparently in consequence, was by far the best and most judicious sanitary proceeding adopted during the whole siege, by the Army Medical Department. He did the same at Varna. It indicates what the Principal Medical Officer of the Army ought to have done.

With this single exception the whole sanitary procedure, as regards the Camp, was most defective at first, and there can be no doubt caused much sickness. There was an entire want of estimating the importance of sanitary precautions, and no sanitary organization was ever advised or attempted.

The statement of Staff-Surgeon Roberts, 4th Division, that "there was no sanitary discipline observed in our Army in the Crimea" has been already given. And there could be none, under the system or, rather, no-system which prevailed.

While making these remarks on the absence of sanitary system in the Army, it is necessary to repeat that they refer exclusively to the defects usually classed under that designation (sanitary defects) in Civil life; those defects which are local and not personal.

Balaclava. The town of Balaclava was selected as the base of operations during the Siege of Sebastopol. Any one at all conversant with sanitary work would have detected, at a glance, the sanitary peculiarities and possibilities of the place. A small narrow plot of ground, not more than sufficient for its 500 inhabitants, had to receive 20,000 or 25,000 men per diem, with numerous horses, in addition to the whole population required for conducting the business at the basis: Guards, ships, and a constant harbour population of above 2,000 men. A place altogether very likely to become most unhealthy. Difficult of access for sanitary purposes and requiring more than ordinary care. Crowds of Turkish soldiers were also in the town and vicinity shortly after it was occupied.

Here was a case then of all others requiring a vigilant sanitary police.

There is no document to show that Balaclava was ever inspected: any one recommendation made when it was occupied or any one step taken to preserve it in a sanitary condition, fit for being a basis for such an Army.

Of course the place got unhealthy, and when matters began to look serious, representations were made by any body to any body, without order or system, in the vain hope of remedying the evil.

Dr. Anderson. December 29, 1854. The first of these recommendations was made by Dr. Anderson, on the 29th December, 1854, nearly two months after the occupation. The Commandant having intended to bring the Land Transport Camp and Bazaar too close to the General Hospital, Dr. Anderson very properly protests and the evil is prevented.

December 30. Next day, the 30th December, 1854, Dr. Anderson calls the attention of the Commandant to the mortality among the

Turkish troops, probably from Typhus, which will degenerate into Plague. The filthy state of that part of the town occupied by the Turkish troops; also the fœtid mud, at the place where the sick were embarked, in front of the Hospital. "This emits a malaria highly prejudicial to the health of the town, extremely deleterious to the sick who may have to wait there for embarkation."

On the 15th January Dr. Anderson again calls attention to the subject of his last letter. Asks for enquiry as to the deaths among the Turks, also that the Turkish Burial-ground be brought under observation, and repeats his warning. January 15, 1855.

On the 24th January Dr. Anderson requests a sentry, to prevent Turks and others committing nuisances near the Hospital. January 24.

On the 16th February he calls the attention of the Commandant to twenty dead bullocks floating in the harbour, and also to carrion lying along the beach nearer the entrance to the harbour. He suggests that the dead animals be towed out to sea. February 16.

The hospital latrines having become offensive, he suggests the formation of others, on the 19th February. On the 10th March Dr. Anderson suggests whiting the roofs of huts, to keep them cool. (Dr. Hall, at a subsequent period, apparently from want of knowledge, denies the efficacy of this precaution.) March 10.

On the 13th March Dr. Anderson calls the attention of the Commandant "to the filthy state of the encampment behind and beside the Cattle Wharf," "in my opinion one of the few remaining abominations of Balaclava." March 13.

The Board of Health, already mentioned, which was called on Dr. Hall's recommendation, on March 8th, 1855, met at Balaclava, in the very heart of the evil. The report was sent to Lord Raglan, on the 28th March. Let us see what it says about Balaclava. March 28.

Not one word! It accepts the present state, with all its abominations, while Cholera was imminent, recommends nothing, and sends this report to Head Quarters, after Dr. Gavin and the Engineer and Inspectors of the Sanitary Commission had arrived in the Crimea, and saw with their eyes the abominations reported in the Sanitary Commission Report,

The Commission found that it would have then taken 300 men for many weeks to remove sanitary evils which a Sanitary Board, convened in the heart of these evils, overlooked the very existence of.

The proceedings of the Medical Board, at Balaclava, clearly show that the Principal Medical Officer had formed no estimate as to the bad sanitary state of the town and its probable effect on health, for he did not include the subject in the instructions issued to the Board, and the subject was consequently not mentioned at all in its Report.

After the arrival of the Sanitary Commission recommendations on sanitary subjects appear to have been more frequently made, all good in themselves, but the general result which strikes one, after reading all the documents, is that the amount of sanitary knowledge shown is very different in different officers. With one exception there is no exhibition of sanitary prescience. Some knew more, some less, but the Army has no sanitary method and very little sanitary intelligence, for its protection. The Balaclava Board of Health, comprising the sanitary knowledge of the Army in the East, entirely overlooked the most important local causes of disease then prevailing and took no cognizance of them whatever.

Even where representations were made there appears to have been no necessary connexion between such representation and the execution of improvements.

In the case of the Hospital at Varna, already adverted to, even after Lord Raglan had directed the works to be carried out, nothing effectual was done. In short the British Army was without any sanitary system whatever, and the Army Medical Department has shown no symptom, in these papers, of having kept pace with sanitary improvement in Civil life.

X.

Notes on the Necessity of special Sanitary Functionaries in connection with Military Hospitals, and with the Army in general, both Abroad and at Home.

Is the *sanitary* or the *sanatory* element of most importance to the health of an Army? Let recent experience shew:—We have seen in the Crimean Army 12,025 men in Hospital, while 11,367 only were effective for duty. If men are not kept in health, an Army may be rendered ineffective by disease, though every sick man may be cured.

Sanitary measures include:—

1. The choice of localities, or (in those which for military reasons must be occupied), the removal of the causes of disease. To this branch belongs especially the selection and construction, the repair and adaptation of buildings, and the sanitary charge and management of towns.

2. The choice of Diet, with regard to climate,
fatigue,
exposure,
and the counteracting of the influence of Diets, unavoidably defective.

3. The choice of clothing with regard to climate, &c.

Various Acts of Parliament having lately passed in England, and Sanitary Commissions having been appointed, as well as sanitary powers given to Boards of Guardians and local Boards of Health, now governing the whole area of England, it cannot but be admitted that

Necessity of Sanitary Supervision.

Sanitary Science is accepted by the country and by the Government, as necessary to the well-being of the inhabitants—and practical action derived from it is established in law and in fact.

There should be a Sanitary Officer in every General Hospital.

Therefore to establish a community of 500 to 1,000 Englishmen, densely congregated together, without a sanitary element of government, would not only be wrong in itself, but contrary to the principle distinctly established in this country. It is therefore proposed that a sanitary Officer be added to the Officers of every General Hospital.

Powers and Responsibility of this Officer.

He should have distinct powers to demand, in carrying out his objects, the assistance of the Engineer Officer, the Medical Officer, and the Steward. In case of conflicting opinions, the Governor should decide upon each case of sanitary requirement, after hearing the full explanation of these Officers.

In cases of importance, the opinions of each Officer would be recorded. Under this plan, immediate action is obtained, an amount of independence as great as possible secured to the Sanitary Officer, and the honour and character of each Departmental Officer secured by record where desirable.

Improvements effected at Scutari, by the Sanitary Commission.

It is notorious that neither the knowledge nor the means necessary to effect sanitary improvements, at Scutari, existed before the arrival of the Sanitary Commission. The non-cleansing of the Hospital and its appurtenances, the neglect of the ill-constructed and non-acting drains of the place, and the accumulating an indefinite number of sick, as well as of Medical Officers, Orderlies, and Nurses, and soldiers in depôt, within a narrow area, in the interior of the Hospital, placed its inhabitants in circumstances far more adverse to cure and to health than are afforded by even the most crowded and unwholesome alleys of the worst towns. No appliances for

ventilation were resorted to, and, had they been so, they would have brought in a foetid (although cold) atmosphere, from the state of the yards and external drains.

It may safely be affirmed that even a magnificent stone Hospital, under the above-mentioned circumstances, leaves the soldier in a sanitary condition far inferior to that of the commonest hut. The French Surgeons, long accustomed to Hut Hospitals, in Algeria, distinctly affirmed that they preferred the separate huts in the Seraglio Gardens, at Constantinople, to the splendid Hospital on the heights of the "Campo di Pera;" and they were right. In this building, as at Scutari, the corridors, however wide and commodious, with their staircases and the wards opening into the corridors, acted as a series of tunnels towards the establishment of an uniform Hospital atmosphere, less salubrious than the external air.

Diet of the Measures carried out by the Sanitary Commissioners at Scutari.

The evils of Scutari have been fully described. The measures taken by the Sanitary Commission were as follow:

1. As to over-crowding.

They removed one row of beds from the Corridors of the Barrack Hospital; they fixed the distance of the beds at not less than six feet from head to head; they allowed not less than 1,000 cubic feet of space for each bed.

2. As to ventilation.

They introduced everywhere in the Hospitals plates of perforated zinc or wire gauze; and ventilating shafts for the escape of foul air in the ceiling of each ward.

3. As to drainage.

They drained the site of Barrack Hospital, called the Palace Hospital; they closed fifty open privies under the wards at Kululi, removed 200 cavalry horses in one of the basements there, and closed the wards and quarters over them.

They closed the Stable Hospital at Scutari, and the two Convalescent Ships in the Golden Horn at Constantinople.

They constructed a large flushing tank at the head of every drain, which was flushed several times a day in order to sweep out the contents of the sewers into the sea.

The latrines, sewers, and drains, were cleansed and deodorized with peat charcoal. The sewers were trapped and ventilated, so as to prevent the wind blowing up through them into the Hospitals.

The outskirts of the Hospitals were daily cleansed.

4. As to cleanliness.

They ordered constant lime-washing for the walls and ceilings of all the Wards and Corridors, in order to cleanse and disinfect their saturated surfaces.

All this ought to have been done and finished before the Hospitals were occupied. It matters not whether or not these evils had been reported on. It is evident that the present system does not ensure the putting such buildings as those of the Scutari Hospitals into fit order for the admission of sick, before such sick are admitted. This is what is necessary, if the many lives are to be spared, which were sacrificed here. All these sanitary measures ought to have been taken from the first. The disgrace to our service is, not so much that they were not more speedily executed, as that they should ever have been required.

But then, as now, no adequate estimate of their importance had ever been formed, nor does it now exist. Much is thought of the importance of keeping a position against the enemy—little of that of keeping it against disease. Even now, sanitary measures are still called "humbug," although we have lost half an army by disease.

The Sanitary Officer in a General Hospital should not be an Army Medical Officer.

It is quite evident that, at the present time, considering the great advance during the last ten years of Sanitary Science and practical sanitary improvements in England (enforced by law, under appeals to the tribunals), no Army Medical Officer, having been on service during that period, can have acquired a competent knowledge of the subject. His sphere of observation, confined to a single regiment, or even to a detachment, is far too limited to give him a practical command of the subject.

It is therefore evident that, for the immediate purpose, no Medical Officer should be allowed to undertake the charge of a Sanitary Department in a Hospital, unless he has gone through the practical study of the science in civil life in England.

Necessity of having a Sanitary Officer attached to the army.

In order, then, to prove that the sanitary element is necessary to an army on active service, we have, first, the circumstances which led to the appointment of the Sanitary Commission of the Army in the East; secondly, a large portion of the details which form its evidence. And in general, antecedent to the events of the War, we have at home a mass of facts such as those at the Serpent's Nest, at York, at Newcastle and Gateshead, and in Soho, London, which justify the proceedings of Sanitary Commissions and Boards, and of Cholera Investigations, &c., during the last ten years, in Great Britain. The military mode, probably, of representing this sanitary element would be a sanitary Officer, of superior attainments, placed not merely in every General Hospital, but in every Quarter-Master General's office, at Head Quarters.

He should have the power of reporting home and be independent and responsible for the execution.

This Sanitary Officer ought not only to have power to record his observations and make his reports to the Commander of the Forces, like any other Officer, as well as to Generals of Brigades and Divisions, Commandants, or Town Majors, Naval Officers commanding ports used for

of all necessary operations.

military purposes, but the independent power of reporting home. In the meantime he would also have the power of demanding the means for enforcing such executive operations as would not interfere with the military tactics or the military safety of the troops.

(Dr. Jackson's Statement, in 1799.)

That the above is neither drawn from partial observation nor from hasty conclusion will at once appear by the following quotation. Dr. Robert Jackson, in 1799, after recording the "state of things" which he considers "injurious to the character of the officer and the welfare of the soldier," prophesies (in the following words) that it "will continue until physicians have the place in Councils of Military Commanders that is due to science. The bold history of the late wars in Europe is demonstrative proof of the important fact that military life has been sacrificed in an enormous proportion to ignorance, *i. e.*, to the unwillingness of Commanders to be advised on subjects which they could not themselves be supposed to know."

After half a century of progress in the division of labour, and what may be called the recognition of Sanitary Science in the last ten years, and after its progressive development up to this hour, the "Physician" of Dr. Jackson must be taken in the double sense of Sanitary philosopher and Medical Officer, a position occupied, indeed, by himself alone.

This Officer also should not be an Army Medical Officer.

Enough has been said, it is hoped, to show that this Officer also should not be an Army Medical Officer: the office of the Sanitary Officer and of the Medical Officer cannot be filled by the same person, however much it may be necessary for the latter to have Sanitary acquirements.

We are speaking of the Superior Sanitary Officer attached to the Quarter-Master General's Department: the Medical Officer or Assistant would be the local adviser and enforcer of Sanitary measures, under the Sanitary

officer: for the representatives of the Sanitary Officer, in different stations, would probably be, most conveniently, Medical Officers, specially instructed.

Instances showing the necessity of such a functionary. Balaclava.

The want of sanitary care in the harbour of Balaclava, generally, is well known, and how late it was before any attempt was made for the formation of quays, or for raking the surface of the water, as it may be called, and towing the results to sea. Even after much had been done in the way of improvement, some of the dead carcasses were, nevertheless, allowed to collect, when driven by the eddy, immediately under the Castle Hospital heights. Dead horses were buried in the Sick Wharf at Balaclava, and the salt water filtering through, this nuisance became intolerable every evening after sunset in May, 1855, and most conducive to bowel complaints.

Its condition in the Spring of 1855.

In short, the following may be taken as a fair account of the condition of Balaclava, a town of from 500 to 600 inhabitants, in the spring of 1855, six months after we had occupied it, and at the time of the arrival of the Sanitary Commission.

The east side of the harbour was, from end to end, a mass of putrefying animal and vegetable matter; dead animals were floating in the harbour; the village was filthy—there were no slaughter-houses and few latrines. The whole town was smelling of sulphuretted hydrogen. The horrible condition of the graveyard at the head of the harbour will be elsewhere spoken of.

The question is not, here, had recommendations been made to remove these evils?

This was the state the town was in—of this there is no question. The Commandant and Admiral were, it is true, using their best exertions, but the case appeared almost hopeless. It is far easier to prevent than to remedy such a state of things. The necessity of an

Officer of Health, or his equivalent, was made apparent. Sanitary measures ought to have been taken immediately on the occupation of the town, and a sanitary police at once organized. From May till September, 1855, there were outbreaks of cholera and fever both in the shipping and the town. Admiral Boxer himself died of cholera early in June.

Improvements effected after the arrival of the Sanitary Commission.

A few words will here be said on the course taken by the Sanitary Commission, in order to illustrate the steps necessary in such a case.

The graveyard, and all filth that could not be burnt, were covered over with lime, charcoal, and earth. Latrines were erected; a cleansing staff was organized; a Russian barge, which had been blown out of the harbour of Sevastopol, was employed at Balaclava in carrying such refuse out to sea as could not be burnt on shore; a slaughtering place was provided; houses were lime-washed inside and out; the shoal water at the head of the harbour filled up; the decaying matter along the east side of the harbour deodorized, and covered in with temporary quays. Drains were made; one of the sources of water supply was covered over. Three Naval Surgeons daily made an inspection of the ships; cleansed, lime-washed, fumigated, ventilated, or removed the ships out of harbour. Dead animals were towed to sea. The worst houses were pulled down. The works advanced slowly, from the deficiency of labour, but, by the end of July, they were so far advanced that the Commandant could carry them on alone—and Balaclava became, what it might have been from the beginning, as healthy a little seaport as can be seen.

The Camp.

A very few words will suffice, in like manner, to describe the sanitary condition of the Camp.

Instances of the

Comparatively little had here to be done by the Sanitary Commission, and that chiefly in the construc-

of huts. Many were unventilated, many were partially buried, or had earth heaped up against them. There was fever in consequence. Ridge ventilation was introduced, the earth cut away, the sites drained, the huts lime-washed outside.

Advantageous operation of Sanitary functionaries.

The camps of the Guards before Sevastopol, and of the Highland Brigade beyond Kamara, became sanitary models. Little fault can be found with the arrangements of the second winter. The large drains along the roads had a most beneficial effect.

Case of the 79th Regiment in Huts North-east of Balaclava.

The following is an instance which shows the usefulness of a Sanitary Commission, when its powers can obtain any promptness of remedial action. About April, 1855, a great number of the 79th Regiment, part of Sir Colin Campbell's Brigade, were ill with fever, having been hutted on the heights to the north-east of Balaclava. The Sanitary Commissioners, having inspected the ground in consequence of Sir C. Campbell's representation, called his attention to the topographical defects of the spot. The huts were indeed placed on the sloping base of a steep acclivity, and stood upon clay and shale, one-fourth of each hut being "inserted" into the cutting of the hill. The result was, that the whole of the rain and moisture from the heights (the case being similar to that of Gateshead) was deposited beneath the huts, and even what would have in time oozed through towards the lower ground, was attracted by the heat of the men's bodies lying in the huts, the floors of which were not more than two inches above the surface. Sir C. Campbell was told that the cause must be local, and that the fever was generated by warm damp, in proof of which, when he ordered a board to be taken up, the General's cane pierced through the oozy ground beneath, and was drawn up in a stinking state. In consequence of this, the sick were

taken out and placed under canvas on the hill-side higher up, and recovered. The men were also removed higher up, and the fever immediately abated.

Mortality of the 31st and of four Companies of the Artillery in these huts.

The 79th embarked for Kertch, but on May 25, 1855, the 31st arrived from Corfu and were quartered in the empty huts. They were almost immediately attacked with Cholera, of which thirty-four died. The 31st were marched to the front, but they carried the Cholera with them, and seventeen more deaths occurred. The huts remained empty from June till November, when four companies of the Royal Artillery were landed and marched to these heights. Three were quartered in these huts and one in the immediate vicinity. Seven men died of Cholera in the huts, none in the company not in the huts. Upon all being moved out, and the same huts removed and re-erected for their reception on higher ground immediately above, only one more case of Cholera died.

The Supply of Water.

One of the first charges naturally given to a Sanitary Officer, would be that of the water supply, as to its quantity and quality. In all times, camps have been chosen with great regard to the supply of water, and always must be so; and the selection of the best springs and economy in the use of them, will obviously conduce to the maintaining a position. During the occupation of the Crimea, no wells were at first sunk, except by the Naval Brigade. A great want of economy was observed in the use of water, by the horses being allowed to drink in the pools which had been formed, instead of the water being baled or raised with hand-pumps into casks. One portion of the British Cavalry was, however, supplied by a stream conducted into wooden troughs, viz., the Light Cavalry Brigade. The water down several ravines of limestone was allowed to trickle away and form marshy swamps when it might have been arrested by short and low dams

and a little side walling, as used universally all over the East. The Sanitary Commission, it is known, reported upon this subject; and also, as required, gave in some opinions on the spot.

The fears which the progress of the hot weather, towards the middle of May, 1855, naturally created, were, however, cut short by the advance of the Allied Force, on the arrival of the Sardinians, which gave us possession of a considerable part of the Tchernaya. The fears at home on the same subject, arising out of the obvious reduction of water in a limestone country in the summer, may be judged of by the fact that not only a distilling vessel was sent out, but an expedition was talked of, with the object of pumping water out of the Tchernaya to the plateau, where the chief part of the army was encamped. This, however, was not carried out; the water-supply being, in fact, sufficient for an Army of ten times the strength; but large portions of the cavalry and other horses were habitually watered at the river during the rest of the year.

Medical men have not in general given any special study to Sanitary Science.

It may appear as if the question of the Medical Officers having an amount of sanitary knowledge, ready for immediate application, had been passed over. But when it is considered what is the multitude of sanitary facts brought to light in every town in England, and what the expensive action resulting from them, and also that every little town in England has several medical men, and yet no discovery or abatement of nuisances took place before the inquiries referred to; it is no discredit to the Army Medical Officers to suppose them not to be informed of the malign influences of causes, more or less difficult to detect, in a country which they have never seen before, and in a place where they are almost momentary sojourners.

Further than this, Medical education, as well Civil as

Military, which includes the study of the organs of the human body in their normal state, that of their attributes or powers, that of these organs in their abnormal or diseased state, that of the art of healing, does not include the preservation of the human body from noxious influences, any more than it does from mechanical violence; in other words, the removing the human body from the causes of disease, or *vice versâ* removing the causes. In general terms, these causes are removed by draining and ventilation, and the supply of wholesome aliment. The latter, which is called Sanitary Science, forms no part of the education of the medical man, nor is his observation exercised thereon in after life. The individual or the nation has been willing to pay for a restorative process, feeling the inconvenience of want of health, announced by pain or local inability. But the individual or nation has not hitherto been willing to pay for "preventive" action, securing the person from evils which, though he does not feel, the forewarnings of Science can indicate with certainty. From this false security the nation has been already awakened. It is only reasonable to require that the Army should be so also.

These are the arguments which, maturely considered, should lead, it is presumed, to the establishment of a Sanitary element, in addition to the Curative element long attached to the British Forces.

Whether the preceding conclusions should be limited to Armies in the field, and Hospitals at the base of operations; whether or not there is any similar want of sanitary improvement and sanitary supervision, in our military arrangements at home and in time of peace, may appear from considering the simple question:—

Excessive Mortality among

Is there excess in the mortality of Military over Civil Life?

To estimate this we must compare similar ages.

Soldiers, as compared with Civilians in large towns.

Annual Ratio of Deaths per 1,000 living.

Ages.	Civil.	Guards.	Line.
20—25	9·6	21·6	17·8
25—30	10·4	21·1	19·8
30—35	11·4	19·5	19·8
35—40	16·1	22·4	21
40—45	16·7	26·2	23·4
45—50	24·5	26·2	23·4

The above Table refers to Troops serving in the United Kingdom.

It appears, therefore, that, in the Army, from the age of 20 to 35, the Mortality is nearly double that which it is in Civil Life.

The Civil Mortality takes the population of 24 large towns.*

The respective Strengths of the Guards and Infantry of the Line, taken according to the age of the men, are:

	Guards.	Line.
Under 20.....	4,215	33,463
20—25	13,396	57,291
25—30.....	9,250	27,861
30—35.....	6,106	22,323
35—40	4,518	14,401
Above 40.....	2,635	2,861
	40,120	158,200

* The annual rate of mortality, among men living in the healthy districts of England, from 20—40, is 8 per 1,000; in London rather more than 11 per 1,000. Any rate above this is excessive, unnatural, preventible. The annual rate of mortality in the metropolitan police (1839—43) was 8 in 1,000; in English gaols the mortality of the prisoners was at the rate of 16 in 1,000, double the rate in the police force, but considerably less than the rate which has prevailed in the Guards and the Line at home. Such is the result of the want of Sanitary arrangement in our Army.—See M'Culloch's Stat. of the British Empire, Vol. II, p. 565 and p. 581.

Under 20, the respective Mortalities of the Guards and Line are 11·1 and 13·1. One-fifth of this age are Drummer Boys, between 14 and 18; the rest Recruits, between 18 and 20.*

Above 40, the reduction of the mortality in Military Life to a rate more nearly approaching that of Civil Life must be imputed to the discharge of sickly men.

Excessive Amount of Sickness in the Guards.

The average period of sickness to each man in the Guards serving in the United Kingdom is, annually, 15½ days; the ratio per 1,000 constantly sick 42·9.

In Civil Life the average periods of sickness to each member of Friendly Societies is 8¼ days annually, or little more than half of what occurs among Soldiers. This refers to cities; but, in smaller towns, it is only 6¼ days annually in Civil Life.

It is said, that no comparison can be made between Military and Civil Life, because a soldier goes into Hospital for any cause which makes him ineffective, but which would not, in Civil Life, have incapacitated the person for daily labour, or found any record in Statistics; but, on the other hand, this instant recourse to medical treatment and means of cure ought to make the duration of disease less in the Soldier than it is in Civil Life. But this is not the result.

* The average annual ratio of Deaths per 1,000 of mean strength including all ages, is,

Guards.	Line.
20·4	17·8

The Guards are considered the finest obtainable troops in Her Majesty's Service, and yet the mortality among them, on home stations, when compared with that of country populations at home, and with the mortality of the Army in the Crimea, before the evacuation, shows an excess of 12·6 per 1,000 per annum. If the whole Army of, say, 100,000 men consisted of Guards, the loss of life from preventible disease would be equal to 1,260 men, or an entire Battalion per annum, or twice our whole loss in action at Inkermann.

Taking 43 per 1,000 to be the average daily sick in the Guards, the number of days' sickness among 1,000 soldiers in each year would be 15,695, which, divided by the admissions into Hospital, being 862, give 18 days' duration of each attack. In the Line the average ratio of admissions into Hospital is 1,044 per 1,000 of mean strength; the proportion constantly sick in the Line serving in the United Kingdom is 18 per 1,000; the average duration of each attack of sickness 17 days.*

Subject to so high a rate of inefficiency as this, the Army, it would seem, and not the worst part of our worst towns, must be now our illustration of the destruction caused by bad sanitary conditions. Instead of talking about the "healthy state," it must be called the *unhealthy* state of Her Majesty's troops; and, if it be remembered that the mortality during the last 22 weeks of our service in the Crimea was as low among the men as 12½ per 1,000, *i.e.*, nearly as low as it is in Civil Life in London, the above numbers may indeed make us ashamed.

We hear with horror of the loss of 400 men on board the "Birkenhead," by carelessness at sea; but what should we feel, if we were told that 1,100 men are annually doomed to death in our Army at home by causes which might be prevented?—as a much larger number have been doomed by causes which are now prevented. See our experience in the West Indies, where men fed for seven days in the week on salt meat, at one shilling per pound, in barracks on the low ground, died; where now men fed for two days in the week on salt meat, and for five days on fresh, at five pence per pound, live; having been moved to the high ground.

* May not this (hitherto) unaccountable excess of sickness have been the origin of the word "malingering"—the Medical Officer not having been able to account otherwise for the sickness?

The men in the "Birkenhead" went down with a cheer. So will our men fight for us to the last with a cheer.—The more reason why all the means of health which Sanitary Science has put at our command, all the means of morality which Educational Science has given us, should be given them.

Statistics of Invaliding.

The Statistics of Invaliding show some improvement in the last twenty years, but are still excessively high.

The invaliding in the Guards which was, from 1830 to 1836, 36·4 per 1,000, fell from 1837 to 1846, to 27·8 per 1,000: the chief reduction being in the invaliding of those under 14 years' service speaks much for the improvement of health. In 1846, this was still however 12·7 per 1,000; a very high rate, as disabilities at that period are likely to be real, while after 21 years' service they are only nominal. Because, by the Regulations of the Army, a discharge could not be obtained, even after the completion of 21 years' service, without pleading some disability.

In 1846, the ratio of invaliding per 1,000 of strength above 21 years' service was 10·6; but a high ratio at this period indicates only how large a number have lived to see so many years' service.

Rate of Mortality in the Line and the Guards, in the ten years 1837—46.

The Mortality in the Line from 1837 to 1846 was in the ratio of 17·8 per 1,000; being 4·3 higher than in the Cavalry.

This includes all the Line serving in the United Kingdom, except those Regiments recently arrived from foreign service, which would have raised the mortality higher by ·6 per 1,000.

Considering that Soldiers are all "picked lives"—considering that so little of this mortality has "arisen from service out of the United Kingdom, it is indeed remarkable to find the loss greater than in Civil Life, in the proportion of 17·9 to 11·9, being exactly one-half more."

The Mortality per 1,000 is therefore

Civil Life in Towns.*	Line.	Guards.
11·9	17·8	20·4

	By Fevers.	Consumptions.
Civil in Towns	1·2	6·3 per 1,000
Guards	2·4	13·8 ,,
Line	2·5	10·2 ,,

Why is there a greater amount of Mortality from Lung Disease alone in the Guards than from all Diseases put together in Civil Life?

The cause is made sufficiently plain by looking at their Barrack accommodation and their mode of life.

When the Line is put under the same conditions, the Line loses in the same or a still greater proportion; whereas, when the Guards, whose loss in England is 20·4 per 1,000, are sent to Canada, their loss is only 14·5 per 1,000, being less than that of the Line, which is there 16·5 per 1,000.

In the Tower, the Annual Deaths from Fever, of the Guards, for the period under review, was

4·1 per 1,000,

in St. George's Barracks

1·2 per 1,000 only.

This does not include those deaths which took place from the after consequences of fever, which are often disease of the lungs.

The proportion of deaths to cases of typhus is

* This is in unhealthy towns. It should be 8½ only per 1,000.

Guards 1 to 3½,
Line 1 to 4,

which is fully as high as in West Indian Fevers.

Well may we say what was said of another Service: "The records show that the mortality may be raised to any extent; and that the Heads of the Department have the men's lives so absolutely in their hands that a given number may be put to death at will, without employing any other agency than bad food and bad air. To establish this fact, we shall state two or three experiments upon a large scale," (of which the Crimean expedition may be called the most remarkable,) "with others to show that the mortality may be brought down to an inconsiderable fraction."

Comparison with the rate of Mortality and Sickness in the Metropolitan Police.

We will take the Statistics of the Metropolitan Police Force, which is somewhat similar in the nature of its duty to the Guards.

Annual Mortality per 1,000.

1831—38	9·4
1839—45	7·7

Days of Sickness to each Man.

1831—38	10
1839—45	7·7

The average age at which the men enter is 28½.

The average duration of service 3 years.

The average number constantly sick 28 per 1,000, or nearly three years' sickness to each death.

They are "select" lives. Each man has to walk about 25 miles per day. During two months out of three, each Police Constable is on night duty, for nine hours each night.

In the City Police of 1856.

The following table presents a comparison, in various

more minute points, between the Guards and the City Police of 1856.

	Guards.	City Police.
Average days of sickness to each man	15½	13 per 1,000
Average duration of attack of sickness	18	9 „
Admissions to hospital	862	1123 „
Constantly sick	43	36½ „
Mortality	20·4	7 „

Summary.

The whole case of the Mortality of the Army at home, as compared with that of the General Population, may be summed up in a very few words, with the aid of the following tables:—

Comparison of Mortality in Army with that of Civil Population.

No. 1.—Rate of Mortality per 1,000 per Annum (taking, among the Civil Population, the same ages as those of the Men of the Army).

Effective men of the Army at home.	Total	17·5
	Guards	20·4
	Line	18·7*
Population of England and Wales	Country	7·7
	General	9·2

Two of the unhealthiest Cities in England—

Manchester and Liverpool 12·4

Considerations essential in estimating relative Healthiness of one Arm to another.

* The apparent discrepancy between the Mortality of the Line, as stated here, and as given at pp. 247, 248, 253, will be explained by the following consideration:—

We cannot, on such a Table as that given at p. 247, judge of the relative healthiness of one Arm to another, unless the proportion of Ages to Total Strength be identical.

If the proportion of Ages is not exactly the same in each Arm of the Service, then, although the mortality at each age may be safely compared, the Mortality for all Ages may be fallacious, if compared.

The rate of Mortality per 1,000, after correction, is—

Household Cavalry.	Dragoon Guards and Dragoons.	Line.	Foot Guards.	Total of the British Army Serving at Home.
11·0	13·3	18·7	20·4	17·5

Relative Mortality of Army and Civil Population, at corresponding Ages.

No. 2.—Relative Mortality of the Army at home and of the English Male Population, at corresponding ages.

Ages.	Deaths Annually to 1,000 Living.	
20—25..	Englishmen ..	8·4
	English soldiers	17·0
25—30..	Englishmen	9·2
	English soldiers	18·3
30—35..	Englishmen	10·2
	English soldiers	18·4
35—40..	Englishmen	11·6
	English soldiers	19·3

Mortality of Army ought to be less than that of Civil Life: and is double.

That is to say, if the Army were as healthy as the population from which they are drawn, they would die at one-half the rate they die at now.

The Army are picked lives, and the inferior lives so thus thrown back among the mass of the population.

The health of the Army is continually kept up by a influx of fresh lives, while those which have been used in the service are also thrown back into the general popula tion, and give, as will presently be shown, a very high mortality.

The general population includes, besides those the rejected by the Army itself (whether in recruiting or invaliding), vagrants, paupers, intemperate persons, the dregs of the race, over whose habits we have little or control. The food, clothing, lodging, employment, and all that concerns the sanitary state of the soldier, are abs lutely under our control, and may be regulated to the smallest particular.

Yet, with all this, the mortality of the Army, fro which the injured lives are *subtracted*, is double that of the whole population, to which the injured lives are added.

As allusion has been made to the very high rate of

Mortality among the Invalided, which would considerably raise that among the Effectives, if taken into account, we add—

Mortality among Pensioners.

No. 3.—A Table showing the Number of Men placed on the Pension List, in the five years 1849–53, and the Number of these who have Died, within Twelve Months after being Pensioned.*

Placed upon Pension List in 5 Years 1849—53.		Died within 12 Months after being Pensioned.	Annual Ratio of Deaths per 1,000.
Household Cavalry ..	194	29	149·48
Cavalry of the Line ..	1,547	85	54·95
Foot Guards	934	115	123·13
Infantry of the Line..	13,582	1,056	77·75
Colonial Corps	501	15	29·94
Horse Artillery	154	7	43·41
Foot Artillery	1,069	74	69·22
Sappers and Miners ..	197	16	81·22
	18,178	1,397	76·85

Conclusions from Tables of Mortality of Pensioners.

* The conclusions upon this table are as follow :—

1. That the Army Statistics give no real idea of the Mortality.

There is this essential difference between the Registrar-General's and the Army Medical Returns,—

The first give the precise per-centage of Deaths to Population, within Army Ages; the second give no precise per-centage of Deaths to Army Population.

Soldiers die to the Army in two ways, viz., by death and by invaliding. The State loses them equally whether they die, or are invalided before their time of service is completed.

By the above table it appears that more than eighteen thirty-eighths were lost to the Service in five years.

2. That the Army Mortality, as hitherto stated, cannot be accurately compared with that of Civil Life, at the same ages. To say that the Mortality in the Guards is double that of Civil Life is to make an under statement of the truth. It is more nearly treble. For the Army Mortality

In order to estimate the difference which this would make, in calculating the rate of mortality among the

merely shows the Deaths among those staying in the Service long enough to die in it. It does not show the Deaths among those discharged to die elsewhere.

A low rate of mortality, therefore, may imply not a high state of health, but a high rate of invaliding.

And Statistics thus arranged may give all the results which Sanitary measures would give.

For, if every man likely to die were invalided, the Army would appear immortal; for not a man in it would ever die.

The above table shows that, in five years, nearly 1½ Regiments were swept away, within twelve months, after invaliding.

And most of these men who died were between 30—35 years of age, had had an average of ten years' service; for those invalided after completing their term are not those who show this high rate of mortality, as their disabilities are likely to be only nominal.

The difference between the different Arms shows the method by which the apparent Mortality in some is reduced, *e.g.*, that the Life Guards is stated at 11 per 1,000 (*v.* p. 258. Note), while their Invalids actually rush an Annual Mortality of nearly 150 per 1,000—that of the Invalids of the Horse Artillery being as low as 434 per 1,000.

3. The result of these considerations is that, as we do not possess reliable Statistics of the Army Mortality, we cannot accurately compare with those which we have the rate of Mortality in our Army with that of any other Armies.

Nor can we compare it with Civil Life.

Nor can we even compare Regiment with Regiment.

In order to enable us to do this, the Statistics of the Army must include,—

(1.) Accurate tables of invaliding, stating the diseases and deaths for twelve months, or such other period, if practicable, as would include the termination of the cases up to what would have been the termination of the man's service. Deaths from other diseases, not contracted in service, should not be included.

(2.) Accurate tables of the annual deaths of healthy lives, as known sent into the Army.

(3.) The adoption of an accurate nomenclature and classification of diseases and mortality.

4. The true Army Mortality would then be calculated as follows:—

Mortality in Army Hospitals, *plus* that from all diseases or injuries for which men are invalided, *minus* that from diseases or injuries taking place after what would have been the expiration of the term of service—the percentage being taken on the active Force, *plus* the Invalids.

effectives, we require to know what is the mean *strength* of the several Arms, from which the Pensioners come, during the five years.

Assume that the aggregate strength of the Foot Guards was as in 1842—6, viz., 22,948.

We must add for the strength of the Pensioners—

$$\frac{934 + (934 - 115)}{2} = 934 - 58 = 876$$

E.g., take a case :—

Strength.	Deaths.	Invalided.	Deaths or Invalided *
10,000	100	1,000	100

This Mortality would, according to present Statistics, be represented at 10 per 1,000 upon 10,000, but, in reality, it would be 15·2 per 1,000 upon 11,000.

If it is impracticable to trace each case to the end of the man's term of service, take a year or some other convenient period, as the term for calculation.

5. Preventible invaliding is of just as much importance as preventible sickness or death.

Invaliding is, in fact, only another term for the man becoming dead to the Service.

By the above Table it appears that, estimating a soldier of ten years' service at only £100, the annual *premature* invaliding of 4,000 men is equal to imposing on the country a tax of £400,000 per annum.

No Army Statistics give real information to the country which do not give—

(*a*) Strength of its Army.

(*b*) Annual drafts from its population required to keep up the Army.

(*c*) Amount of sickness,
mortality,
invaliding.

(*d*) How much of this sickness
mortality,
invaliding,

is preventible.

---

* Within term of service.

Thus making the aggregate strength for a year 23,824, out of which—

454 Effectives
115 Pensioners

569 died in the year.

Thus the mortality was at the rate of 24 in 1,000 annually, among the Effectives and Pensioners, whereas the mortality among the Effectives alone was—

$$\frac{454}{22{,}948} = 20 \text{ in } 1{,}000$$

But, to make the comparison at all fair, between the mortality of the Foot Guards and that of the General Population, some allowance must be made for the selection at entry, which excludes the sick.

This may be put down as nearly equivalent to half the Deaths among the Pensioners. Thus the true Strength and Deaths will be about—

	Strength.	Deaths
Effectives	22,948	454
Pensioners	876	115
Excluded Sick of Dangerous Diseases	438	58
	24,262	627

The real annual Mortality per cent. of the Foot Guards after correction, is 26 annual deaths to 1,000 living, whereas the mortality of the male population, at the same ages, is about 9 annual deaths to 1,000 living, or as where there would be three in the Guards.

No. 4.—Average Strength and Deaths in each year, from 1849—53, of the Non-commissioned Officers and Men serving in the Army.

CAVALRY, GUARDS, AND INFANTRY
(*exclusive* of West India and Colonial Corps, Artillery, and Royal Engineers).
Non-Commissioned Officers and Men.

YEARS.	EFFECTIVES. AVERAGE STRENGTH.	TOTAL DEATHS.	RATE OF MORTALITY PER 1,000.
1849	123,673	4,052	
1850	119,111	3,119	
1851	116,830	2,729	
1852	118,623	3,120	
1853	119,271	3,392	
	597,508	16,412	27·4

Now the number of men placed on the Pension List, in the five years 1849—53, and the number of these who died within twelve months after being pensioned, were, as has been seen,—

PLACED UPON PENSION LIST IN 5 YEARS 1849—53.		DIED WITHIN 12 MONTHS AFTER BEING PENSIONED.	ANNUAL RATIO OF DEATHS PER 1,000.
Household Cavalry ..	194	29	149·48
Cavalry of the Line ..	1,547	85	54·95
Foot Guards	934	115	123·13
Infantry of the Line..	13,582	1,056	77·75
	16,257	1,285	82·2*

$$* \frac{16{,}257 + (16{,}257 - 1{,}285)}{2} = 15{,}614$$

Then $\frac{1{,}285 \times 1{,}000}{15{,}614} =$ a mortality of 82·2 per 1,000 per annum.

× 2

To find the Mortality of the Army, with the addition of the Pensioners, we must take—

	Strength.	Deaths.
Army.....	597,508	16,112
Pensioners....	15,614	1,285
	613,122	17,397

$$\text{Then } \frac{17{,}397 \times 1{,}000}{613{,}122} \text{ Mortality} = 28{\cdot}8 \text{ per } 1{,}000 \text{ per annum.}$$

The Pensioners, therefore, raise the Mortality of the Army from 27·4 to 28·8, or 1·4 per 1,000.

It is important to remember the difference between this calculation and that referring to the Foot Guards.

The effective strength, in Table No. 4, refers to the *whole* Army, in all climates, and the Deaths also include those abroad.

The Pensioners, also, are those of the whole Army, in all climates.

The Mortality among the Pensioners is therefore added to the Mortality of the *whole* Army at home *and abroad*, in order to ascertain the total Mortality of the Army. This must not, therefore, be compared with the Deaths in our Civil Population, as may fairly be done with reference to that among the Household Troops.

In the calculation referring to the Foot Guards the average strength has been obtained, by adding that of Pensioners, and also the Mortality in the same way.

The total Mortality thus obtained may be fairly compared with the Mortality in Civil Life at home.

This ought to be done, also, with the other Household Troops.

But, to make it more fair, the number of men purchasing their discharges should be taken into account.

To sum up, we have, then, the Statistics of Mortality in the Army, but they are incomplete for the comparison with Civil Life, which may be made as far as the Household Troops are concerned.

We want, for complete Statistics,—

1. The number of men who have purchased their discharge for the same years for which the Returns are given.

2. For the same years the number of men invalided, and the Deaths among them during the first year of their discharge or pension.

3. The number of men who die of diseases for which they have been invalided, up to the completion of their period of service.

Comparison with the rates of Mortality and Sickness in the Duke of Wellington's Army, 1811—1814.

In 1854, a few months only before the great disaster of the Crimea, these remarkable words were published:

"During the 3 years and 5 months ending May 25, 1814, the English Army had 22½ per cent. constantly sick, and the sickness from wounds did not amount to more than 1½ per cent. It is probable that if some of the subjects discussed in this paper, if the causes of disease and the means of their removal had been as well understood as the use of the amputating knife and the Materia Medica, the Duke of Wellington would have had 8,000 more men at his command, and the country would have had to pay and support less than 5,815 inefficient men constantly sick in Hospitals. In that case 20,000 years of sickness might have been saved."

The writer of these lines would apparently have found it difficult to believe that an Army was then leaving the shores of England which, even before that year was out,

would be losing men at the rate of 60 per cent. per annum, would lose, in the short space of seven months, 39 per cent. of its whole number from disease alone, and that "the country would have to pay and support" more than half the Force as "inefficient men sick in Hospital." Apparently he found it impossible to believe that, with our present advance in sanitary knowledge, which he here complacently records, we should keep an Army in the field under the sanitary conditions of 500 years ago, that we should see again the same state of the Soldiery repeated which Shakespeare and Froissart describe as existing in the British Army before the battle of Agincourt, and before those of Cressy and Poitiers—see, too, the same courage and unflinching endurance, but the same sufferings, the same famine, greater mortality, and far greater disease. Apparently he would not have credited his senses, had he heard the Principal Medical Officer of such an Army doubting whether the ration of raw salt beef was not enough to preserve in health men undergoing the severest duty, day and night, in the trenches.* Requiescat in Pace. But let not the British Army "rest in peace" at home in the sanitary state of fifty years ago, when all around is making progress—let it not be a monument to the disgrace of our Regimental System, in which money is held to be worth more than men.

---

* It could have been "foretold, as a certain consequence, sooner or later of their dietary, that the British troops would fall into the calamitous state of health which befell them last winter, in the Crimea."—Dr. Carstens

State of Barracks and Hospitals at Home.

If we were to look into the construction of Military Hospitals and Barracks, this, if fully appreciated, would be almost sufficient, of itself, to account for the ill-health of our Army.

We have not one Barrack which can be compared, in point of construction, to the Caserne Napoléon, at Paris, or to the Petit Château, at Brussels.

Over-crowding is the fault in both of these. Yet they both give 800 cubic feet of space per man.

Barracks.

Our Regulations allow only 450—500 cubic feet per man; but a Return will show that 300 feet even of cubic space is more than is actually given in some Barracks in England, at this moment.

The cubic space allowed per man at this very day, is as low as—

	Cubic Feet.
At Chatham — Infantry	350—219
„ St. Mary's Casemates	375—243
Hull Citadel	315—273
Brompton	450—243
Gravesend	294
Portsmouth	550—219
Dover Castle	412—147
London — Wellington and St. George's	390
„ Tower	397
„ Portman Street	331
„ St. John's Wood	370
Woolwich—Artillery	583—369
„ Engineers	576—433
Windsor — Cavalry	475
„ Infantry	332
Parkhurst	520—333
Winchester	467—344

In eight instances only in England and Wales does the maximum of cubic space allowed in barracks reach 600 feet per man.

The Barrack rooms are still the day and sleeping rooms of our soldiers, and are still without partitions, which is equally destructive to health, morality, and discipline. A partition might be given to each man to sleep in, constructed, with little additional expense, of corrugated iron, about 5 feet 9 inches high, and 6 inches from the floor, the space thus divided off being 5 feet wide and 7 feet long, with curtain at the end, something after the fashion of Colonel Jebb's Asylum for Female Convicts, at Fulham, where two tiers of cells are thus seen, with a hanging balcony for communication for the upper tier, in one large well-ventilated dormitory.

Till we do this, we shall never see our soldiers respect themselves; and till we see them with good, airy, well lighted and well warmed day-rooms, we shall never see them temperate, healthy, or long-lived.

Hospitals. With regard to our Hospitals, it would be difficult to institute a comparison between those of Portsmouth, Chatham, and Brompton, and the Military French Hospitals of Val de Grâce and that (not yet occupied) at Vincennes; they bear about the same relation to each other that the Gaols of the last century did to those of our day.

In the Hospital at Portsmouth, which is simply and expressly a building containing four Regimental Hospitals, the cubic space is about half what it should be, the means of ventilation are wholly inadequate, the length of wards is placed in the width instead of in the length of the building, so that they have only windows at each end; the staircases, which are of wood, are dirty; the wards are dirty

the lavatory, which is on the ground-floor, is ill-lighted; there are no conveniences for baths, the Hospital is ill-placed.

Yet the Director-General says, in his evidence before a House of Commons' Committee, that "it is a new and splendid Hospital."

"8702. With regard to the men coming to this country, had provision been made here for the reception of them?—Full provision.

"8735. Have you heard any complaints of the state of the Hospital at Portsmouth?—None.

"8704. How were the men transported from the ship to the Hospital?—Those that were seriously ill were supported in cradles fitted up specially for the purpose, to be carried by four men; those who were not so ill were transported in omnibuses or spring waggons, and those who required neither conveyance, I presume marched to the barracks.

"8733. You have seen, have you not, various statements in the papers as to the bad treatment of those persons who arrived, and as to the neglect existing; have you made any inquiries upon that subject?—Yes.

"8796. Were they founded or unfounded?—They were denied by the medical officers.

"8797. Have you heard no complaint whatever as to the Hospital at Southsea?—None whatever. I do not think it is hardly possible to make a complaint against it; it is a new and splendid Hospital."

Our Regulations give from 700—800 cubic feet of space to each Patient, about half of what is given in Civil Hospitals, less than half what is given in the Military Hospitals of France.

Yet even this meagre space is reduced at Chatham; and I have seen there patients with only 350 cubic feet of space. Casemates are altogether inadmissible as wards for a Hospital; yet they are thus used at Chatham. In the

Garrison Hospital, at Brompton, the wards, long and narrow, with ten beds in each, with only one window at one end and a door opposite at the other end, with one window over it, are so ill-contrived that, if the roof were taken off, proper ventilation would not be secured. The cubic space for each Patient is under 500 feet. The wards are intolerably close at night, both here and at Fort Pitt. In the wards of Fort Pitt, the Patients have 713—337 cubic feet each. But the minimum in the five casemate wards, is only 236 feet. In the Fever Female Ward each Patient has only 735 cubic feet.

Now the minimum granted by all Civil Medical authorities is from 1,200—2,000 cubic feet.

Our Regulations give 2 feet from bed to bed. In Fort Pitt it is only 1½ foot, in the Casemates less. Civil Medical authorities give 4—6 feet as the minimum distance between the beds.

The cubic space allowed per Patient in this year (1867) is—

	Cubic Feet.
Tower of London	575
Croydon	337
Woolwich	883—248
Plymouth	575—524
Portsmouth	513—213
Windsor	748—599
Winchester	591—526

In nine instances only, in England and Wales, does the maximum of cubic space allowed in Hospitals reach 1000 feet per Patient.

There are probably no Barracks either by original construction, well-selected locality, or improvements, in a good sanitary state in these islands; probably even no Do-

nitory, in which the most simple processes of ventilation have been adopted and preserved. We have heard of troops in the West Indies moved to positions, deemed to be safe, in Yellow Fever. We have even seen a portion of a town population moved under tents in England on an attack of Cholera. Some improvements have taken place in Hospital Architecture in England—greater still in France and Belgium. Improved normal rules have been laid down and acted upon for the vast number of Lunatic Asylums and Prisons which have been erected during the last ten years. Yet nevertheless the plan of the building of the new Royal Victoria Hospital, near Netley, the foundation-stone of which was laid by the Queen herself in May, 1856, contains within itself most of the Sanitary defects which accurate observation and judicious criticism have condemned in existing structures of this kind.

Surely no trouble can be thought too great in collecting the reasonings of eminent men, and in examining the examples of buildings on sound principles, when we consider that this noble Building, which will contain 1,000 patients, is intended to become a monument of the War, and a testimony of the beneficence of the Queen and nation towards the British Army. But, if still further stimulus were wanting, it would be found in the awful exaggeration of the bad principles of this kind of building (admitting of so easy a misuse) which was seen at Scutari.*

Arguments against the Construction of Scutari Hospitals.

* If it be objected against condemning the plan of Scutari buildings, as a bad system of Hospital construction, that the Sanitary arrangements adopted there brought the mortality, in the Hospitals, down to 22 per cent. (which was actually the case in *June*, 1855, instead of being 42·7 per cent., as it was in Feb., 1855) it may be answered, or rather asked, upon what condition? Upon that *of not allowing* above 600—1,000 Patients in

Propositions for carrying out immediate Sanitary Improvements in the Army.

First. Reconstitution of the Army Medical Board.

I. Re-constitution of the Army Medical Board, with three elements, Medical, Statistical, and Sanitary.

The Sanitary element, though to be acknowledged in the re-constitution, must not be introduced until opportunity has been afforded of finding the best man for the purpose at present in the Army Medical Department.

This is all-important, for upon the success of the appointment will depend the whole future progress of the Sanitary cause in the Army.

For this purpose the records of the Medical Department on sanitary matters, must be carefully examined, and suitable enquiries made into the capacity of the men.

Second. Immediate Improvements in Barracks, Hospitals and Garrisons practicable and necessary.

II. The sanitary improvements in Barracks, Hospitals and Garrisons need not be delayed, but might be at once proceeded with, and special provision should be made to

a building such as the Barrack Hospital, upwards of 700 feet square and three flats in height. Had this building been differently distributed in construction, it might easily have accommodated 3,000 Patients, with good recovering conditions. It is ruinous to build after this fashion. The question, both sanitary and economical, is to find that construction which will accommodate the greatest number of Patients upon a given area, with the greatest facilities for recovery.

However good the construction and ventilation of any Corridors, if they are filled up with Patients, it is tantamount to having two Hospitals "back to back," it is tantamount to building up a street. In all our experience, whether of healthy or of sick men, such a construction generates disease.

If it be objected that the condition of the men (sent down from the Crimea during the first winter) was such that they could not, by possibility, have lived, under any circumstances, I answer, as I have said before, that the Land Transport Corps sent us down men in exactly the same condition the second winter, and that, under different circumstances, they did recover—witness our low rate of mortality.

But, as has been said, it was at the expense of limiting a building of wards of 700 feet square to an extravagantly small number of Patients.

And, again, had there been an Epidemic, no Sanitary precautions could have prevented it from spreading, in a building so constructed.

this work. So far as is known, certain improvements could be carried out, with little difficulty and small cost, but others would require the execution of more permanent works. Every Barrack, Hospital and Garrison should be examined, with reference to its sanitary condition; and all experience has shown that it is essentially necessary that the examinations should be made, the nature of the sanitary works and their extent determined, and the works themselves executed, under the direction of persons competent to deal with special sanitary defects; otherwise the recommendations and suggestions made will be so unwise, and the cost so extravagant, that the whole thing will be brought into discredit.

The War Department should issue a Sanitary Commission for this special purpose, as it did for the East, consisting of a Sanitary authority and an Engineer Officer, to which might be added such consultative Military men, say the Barrack Master and Regimental Surgeon at each Barrack, as might be deemed advisable. Thus the sanitary education of the Army Medical Men might be going on; but the Civil Sanitary authority should be held responsible for the specialities.

III. School of Military Hygiene, with models.

Three Sanitary School.

IV. The complete revision of all Regulations, referring to sanitary matters, whether contained in the Queen's, Quarter-Master General's, Hospital, Barrack, or Purveyor's Regulations, and the re-casting such portion as may require alteration.

Fourth Revision of Sanitary Regulations.

Propositions for carrying out immediate Sanitary Improvements in the Army considered in further detail.

First. Reconstitution of the Army Medical Board.

I. Supposing the Army Medical Board to be re-constituted as proposed, with three Departments, Medical, Sanitary, and Statistical:

The Medical Department would attend to providing Medical attendance, Medicines, Instruments, &c.

The Sanitary Department would attend to questions of Clothing, Diet, Drink, Sanitary state of Quarters, Camps, Transports, Garrisons, &c.

The Statistical Department would attend to every thing relating to Medical Reports, so far as figures are concerned.

The question will be presently considered whether it will not be necessary to separate, in the Sanitary Department, the duties relating to Personal and Camp Hygiene from those which relate to the Hygiene of Towns and Buildings.

Five plans of introducing the Sanitary Department.

We subjoin five plans for introducing the Sanitary Department.

1.

Let the Army Medical Department remain as at present constituted. Let a Sanitary Officer be attached to the Department, subordinate to the Director-General, who would be the executive head.

For obvious reasons, this arrangement would altogether negative itself in the present state of things.

2.

Let the governing authority of the Army Medical Department be re-constituted as a deliberative Board with executive power. Let one member be a Sanitary Officer.

This arrangement is obviously inadmissible, because

virtually constitutes the majority of the Board the Sanitary Administrators of the Army.

3.

Let the Army Medical Department be re-constituted. Let the Board be a Consultative Board, communicating with all the Departments of the Army which have any connection with matters relating to Army Hygiene.

Let all questions coming from any Department on such subjects to the Board be referred to the Sanitary Officer, whose opinion should be forwarded to the executive head of the Department from which the question emanated: all information and advice on sanitary subjects, which the Sanitary Officer feels it his duty to volunteer to any Executive Department, to be sent through the Board to the head of that Department in like manner.

The Sanitary Officer to be held solely responsible for his advice.

4.

Let the Army Medical Department be re-constituted, with a General Officer, Medical Officer, or Civilian selected for his fitness as its executive head. Let him have under him consultative officers, heads of the various sub-departments. Let one be the Sanitary Head; to him let all questions be referred, from him all information and recommendations be received,—the Director-General, or whatever he be called, being solely responsible for the execution.

5.

Proposition 4 being carried into effect, let also a Sanitary Officer be attached (not to the Army Medical Department, but) to the War Department or Horse Guards, as a distinct and independent officer.

Advantage,—that he would thus ensure the previous adoption of the best arrangements and best original construction for sanitary purposes, instead of, as in the previous propositions, being only able at the best to remedy evils which had occurred.

Most of the sanitary evils affecting Camps, Hospitals and Barracks, proceed from defective original construction or arrangements as to sanitary points.

According to this last proposition, the Sanitary Office would be general sanitary adviser to the Quarter-Master General's and Engineer's Department.

Transition Period to be provided for.

It is very easy to plan a Sanitary Department for the future, but it will be very difficult to put one in action during the transition time which must elapse before our Army Medical Officers are sufficiently educated in sanitary matters.

Provisional arrangements for Sanitary action.

If the Sanitary Officer had to carry his measures through the Director-General's Office, as at present constituted, they would be, as has been said, simply negatived.

Now the Quarter-Master General's Department is the executive in any case under our present army organization. It therefore appears the most practical, if not the best conceivable plan, to attach a Sanitary Officer to the War Department or Horse Guards at home, with Sanitary Officers under him and corresponding with him at each station, whose executive will be, as above stated, the Quarter-Master General's Department at each station.

It will be immediately objected that there will be collision between the Sanitary and Medical Departments. There need not be.

1. To the Regimental and Staff Surgeons would belong all that concerns the personal hygiene of the soldier; Duties of Sanitary Duties.

His Clothing, Bedding,
Diets, Personal cleanliness, &c.
Treatment in Hospital.

2. To the Sanitary Officers would belong all that concerns the hygiene of the building and locality, number of inhabitants to cubic space, ventilation, drainage, cleanliness of site, of building, &c.

Now most of this does belong already to the Quarter-Master General's Department, therefore we are only giving a professional adviser to him who must be the executive.

Sanitary Officers might be attached as follow:—

1	to	Canada.
3	„	India.
1	„	Mediterranean.
1	„	West Indies.
3	„	England.
2	„	Ireland.
1	„	Scotland.

And in the event of war,

1 to General Hospitals at the base of operations, subject to the Governor, as, on stations, to the Quarter-Master General.

1 to the Camp, &c.

The Sanitary Officers would naturally report, not only to their chief at home, but also to the Governor, Commandant, or General Officer on the Station.

As Staff Surgeons become more educated in sanitary matters, they will naturally become the Sanitary Officers.

The general argument used to prove that Army Medical Personal Hygiene must

to be left to Regimental Surgeons.

Officers must look after the hygiene, as well as the cure of their own men, is conclusive. A double set of officers could not act.

The conditions are so various in which armies and detachments are placed, that those only who attend the sick can protect the health of the troops.

A whole regiment might be laid low with fever in a week, if the Regimental Surgeon did not understand those questions called by the name of personal hygiene, which include

Clothing,
Diet,
Cleanliness,
Duties,
Positions, &c.

Such a thing has actually happened.

If a choice were to be made of any one class of officers exclusively, to have sole charge of all that concerns the health of troops, undoubtedly it would be better to educate all Army Medical Officers as officers of health. They would treat disease all the better, and have less of it to treat.

Hygiene of Towns, Barracks, Hospitals, a distinctly different question.

The difficulty is with Barracks, Garrisons, Hospitals, &c. with existing buildings and future ones to be constructed, and with towns and villages to be occupied by troops.

The highest order of intelligence, of education, and of practical experience is required in an officer of health who has to deal with these.

Examples.

Need instances be multiplied?

1. Scutari Hospitals.

1. Scutari Hospitals. The most hideous sanitary evils were festering there, evils which raised the mortality per cent. to 415 annually on the sick population. For six months nothing at all was done to remedy these evils.

Yet these Hospitals were seen by all (and reported on by most) of the Senior Medical Officers out in the East.

These Hospitals had within their walls, at various times, the men best informed on sanitary subjects in the army; and every one of them missed the evils and failed to suggest the remedies.

More than this, these Hospitals were reported on as "satisfactory," as "flourishing," as "convenient for the reception of the sick and wounded;" and this when the mortality at Scutari was rising to 415 per cent. per annum, at Kululi to 608 per cent. per annum.

2. Occupation of Balaclava.

2. Balaclava. No effort was made to establish a sanitary police in this little village, which came into our hands as clean and beautiful as any village in Holland.

What it became after our occupation may be inferred from the following facts:

1. Large numbers of beasts of burthen were daily passing in and out, and no means were taken to remove the manure.

2. Large numbers of cattle were slaughtered when cattle were obtained, and no slaughter-houses were arranged.

3. 20,000 or 30,000 men passed in and out daily, and no arrangements were made for them.

4. A burying-ground existed at the head of the harbour, where our men were buried almost in the water, where decomposition was going on immediately below the surface, and remains and portions of red coats were even occasionally to be seen protruding above the surface.

Yet no representations appear to have been made by the Army Medical Department as to the necessity of a sanitary police. The evil, when done, was, it is said, reported on; but no precautions had been previously suggested in time to avert it.

3. Plan of Netley Hospital.

3. Netley Hospital. The plans of this building had received the fullest consideration from the Army Medical

Department and its officers, and been sanctioned by the best men among them, yet it never can be, what it ought to be, an honourable monument of the War to commemorate which it was planned, of the country whose sick it is to receive, and of the Sovereign whose personal regard for Her troops it so royally represents.

4. Drainage in a Town.

4. Supposing that a street in London were to be drained, and a large sum to be laid out in draining it, should we consult the Physician attending us on the best method of doing so?

Conclusions.

To one who, with some sanitary experience, has seen

Scutari,
Balaclava,
Netley,

the following conclusions appear inevitable.

1. Unavoidable inexperience on these subjects of Army Medical Men.

1. A few of the most competent sanitary officers in the Army may, eventually, be set apart for such duties as are involved by the above considerations. But the occupation of towns and of large buildings presents insurmountable problems to ordinary observers. Such problems are specialities, like those in our Barracks and Military Hospitals throughout Great Britain and her Colonies, at the moment.

2. Necessary Experience exists only among Officers of Health of Towns.

2. Nothing but a very large experience could have prevented the opinions which were given from having been given by the Army Medical Department in any of the above instances. And these men neither had nor could they have had such experience in the Army.

If the question be asked, Do men with the experience necessary to cope with such matters exist in Civil Medical Life? it may be answered, no, not as medical men; but as Civil Officers of Health they do. Such experience may be found in Dr. Duncan, Officer of Health at Liverpool.

in Dr. Thomson, at Marylebone, in Mr. Simon, in London —above all, in Dr. Sutherland, late Sanitary Commissioner in the East. These men have had constantly before their eyes the effects of over-crowding, of bad ventilation, bad drainage, bad water, of organic matter stirating the walls of buildings, of soils and sub-soils, &c., &c.

Any one of these men could have laid his hand at once on the causes of disease and death at Scutari and Balaclava, and, what is more, have shown the practicable remedy (Dr. Sutherland did do this). For the question, when the evil has arisen, is not "What is the best possible remedy for this?" but "What are the means at hand to improve immediately the conditions thus producing disease and death?" Without the practical knowledge necessary to answer this last question, there may be such a delay that there is no one left to kill.

3. There must be special men for special work. No medical man that ever lived makes a good sanitary officer, merely because he is a medical man, for the above purpose—it is a speciality.

3. This work a speciality, not essentially Medical.

As to towns, especially, we find this practically in civil life, viz., that other qualifications than that of medical knowledge, go to make good Officers of Health. These qualifications being present, medical knowledge becomes of use.

4. It would be cheaper, in every respect, to the country, to have competent men to advise the Departments on such subjects as the Hygiene of

4. Distinction drawn between Personal Hygiene and that of Buildings.

Buildings,
Towns, &c.,

leaving that of soldiers and camps to the Army Medical Men under a special Officer of Health of their own.

5. Distinction exists in Civil Life.

5. The distinction is clear, and it is a practical one. In civil life, the Physician is, or ought to be, the family adviser in the Hygiene, which corresponds to that of the soldier on duty. But no one would trust his Physician to do the work of an Officer of Health in executing or advising sanitary repairs or improvements in the house or town he lives in.

6. Neither Army nor Civil Medical Men have the competent knowledge, as Medical Men, for the latter branch of Hygiene.

7. Which branch of Hygiene comes most under the notice of the Civil Profession, which of the Army?

6. This is simply matter of fact and of experience. Neither the Army nor the Civil Medical Profession can furnish competent men for such purposes. We mean that neither Army nor Civil Medical Men in England have special qualifications for such work, unless brought out by education and experience.

7. But Civil practitioners have far more opportunity of acquiring experience in the Hygiene of towns and buildings, than Military men, who are constantly on the move; and Military practitioners have far more opportunity of acquiring experience in the specialities of personal hygiene, *i.e.*, the diet, duties, clothing, camping, &c. of soldiers. For the men they have always with them.

Summary of the Three Branches of Military Hygiene.

To sum up, there are three branches of Military Sanitary Science.

1. The personal Hygiene of the soldier.

2. The topography of camps, positions, &c.

3. The local causes of disease arising in towns, villages, buildings, and districts.

Are there men competent, both by scientific knowledge and practical experience, to undertake the new sanitary administration in all these three branches?

Is there a single individual, either in the Army or in Civil life, competent to do the duty of all three?

To give the Army a sanitary head over all these three branches would be to ensure a failure, a semblance instead of a reality.

Distribution of Duties.

Both theory and experience show that the two first, viz., 1. Personal Hygiene; 2. Camping and positions, are better understood, and will be better administered by Army Medical Men—even with their present imperfect education—than by Civilians.

But to seek in the Army for a knowledge of the third branch is hopeless, including, as it does, an acquaintance with the principles of

Drainage,
Water supply,
Paving, cleansing,
Sanitary police of towns,
Construction and sanitary improvement of

Barracks,
Hospitals, and
Other buildings,

whether in towns or garrisons.

Examples more than sufficient have occurred to prove this assertion.

Some Army Medical Officers may, in time, acquire sufficient scientific and practical knowledge to deal with such matters.

During the transition period, it appears essentially necessary that, while

1. The Army Medical Department shall be allowed to administer that which it is competent to perform, under a sanitary head of its own, there should

1. The two first branches to the Army Surgeons.

2. Be a special arrangement for the sanitary improvement or construction of buildings, for the removal of sanitary defects in garrisons and occupied towns, and for affording sanitary advice to the department specially charged with these things.

2. The last to the Quarter Master General's Department, under Sanitary Advice.

It seems necessary to add three observations:—

Distinction between Army and Navy Hygiene.

1. It has been objected that the great sanitary improvements effected in the Navy during the last few years, prove that the same may be made by the Army for itself. But it is impossible to institute a comparison which shall be just throughout between the two services.

For, whereas the Navy Medical Officer is always in his barrack, with the causes of disease constantly under his very eyes, so that his whole experience and daily observations must accumulate for him lessons in *Naval* Sanitary Science,—with the Army Medical Officer, on the other hand, conditions, new to him, continually arise, as he is moved from place to place, in which he may be wholly inexperienced and uneducated. He may have to prepare a building or town for the occupation of troops, having been all his life entirely out of the way of any knowledge of such matters.

2. Important Practical Lesson to be derived from the experience of Netley.

2. An important practical lesson may be learnt from the experience of Netley.

The Engineer Officer who made the plans, distinctly stated in evidence that he considered himself responsible only for constructing a building which would not fall; that he assumed the existence of a sanitary adviser to the Engineer's Department. Now it is vain to say that such an one already exists. The best opinions and advice, the best information were taken from the Head of the Army Medical Department and his Officers—and we see the result. Nevertheless, the 70,000*l.* already spent at Netley will have been well spent for the country, in saving soldiers' lives, if two principles are thereby established, viz.

(1). That the Quarter-Master General's Department assumes the necessity and existence of a competent Sanitary adviser, just as a town does that of an Officer of Health.

(2). That this Sanitary adviser must have the special qualification united to his office; such qualifications having been sought and not found in the Army Medical Department, supposed to possess them, but whose education does not necessarily afford them.

3. It has been said that the Statistical Officer might also be the Sanitary Officer of the Army; but the distinction between these two Departments is an important and a practical one, as much so as the distinction between a Cookery-book and articles of food.

Distinction between Statistical and Sanitary Work.

Registering is essentially a different work from searching out operative causes and the means of remedy. Nay, more, to be employed in the first is almost a disqualification for the second. Witness the mistakes made by the ablest Actuaries, as to causes of mortality. Witness Sir Alexander Tulloch's invaluable Reports, in which scarcely a word occurs capable of practical application by a Sanitary Officer. The Registrar is not an officer of health. The contemplation of figures tends rather to fatalism; while a practical combativeness against operative causes is what we seek in the officer of health.

And, although the latter must be furnished with Statistics, the former will not necessarily acquire sanitary experience, at least of an applicable nature.

Second. Immediate Sanitary Commission and its Functions.

II. Should the Sanitary Commission proposed for Barracks and Hospitals be issued, the manner of working such a Commission would be as follows:

1. To examine into the prevailing diseases in Barracks and the mortality in Hospitals.

2. To examine into all the conditions affecting the health of the buildings and their vicinity.

3. To draw up a brief statement of the remedies required, with sketch plans, where necessary.

4. The Commission should either have power to direct the works to be proceeded with, as was the case in the East, or if that could not be done, consistently with the present money arrangements, the Reports should be sent to the War Department, and the estimates laid before Parliament in the usual way, but separately for Barracks and Hospitals.

Responsibility of Sanitary Commission.

As the Sanitary part of the Commission must be responsible for the results, all works or portions of works influencing the health of troops must be executed to its satisfaction.

Sanitary Improvements possible without waiting for the Estimates.

During the preliminary inspections, many sanitary suggestions of importance could be made and carried out on the spot without cost, and as it would be advisable to complete a number of enquiries, for the purpose of obtaining comparative sanitary information, before any works of importance were decided on, no time would be lost, although the cost of the improvements might have to go into the usual estimates.

Possible Reduction of Army Mortality.

The Army Mortality can be and ought to be brought down to 8½ per 1,000. Of this there is no doubt; the Model Lodging-houses, where 300—700 persons are congregated in a close space under good sanitary conditions, afford a convincing proof of it, if any such were wanted.*

* The Model Lodging-houses were built for health and show a rate of mortality little more than one-half of that of London. The Common Lodging-houses were built for disease, but, under inspection, showed in 1854, one-sixth of the rate of Cholera Mortality in the whole metropolis. The Barracks are built for disease and show twice the rate of mortality from Consumption, more than twice that from Cholera and Fever, and nearly twice that from all Diseases, which is shown by the Civil Population.

It will be found that the repair of men is more expensive than the repair of buildings; and that these buildings might be put to rights at a cost equal to that of the treatment of the men who come out of them sick.

Theoret. Instruction in Military Hygiene.

III. With regard to a School of Military Hygiene, a short sketch of the subjects which should be taught in it, may here be given; and valuable information may be derived from our sister-country, France, as to the best plan of giving practical instruction in these subjects. The sanitary education of the Army Medical Officer in France, given at the "Val de Grâce," is as complete as ours is defective. Full instruction is given to the Student in the French Service on every question of Military Hygiene, none in the British. Every practical point likely to arise in the course of his service is practically presented to the French Student,—and no one acquainted with our sad Crimean experience will say that any one point could safely be omitted.

Sanitary Education at the Val de Grâce.

Sanitary Subjects with which the Army Medical Officer should be acquainted.

It is essential that the Army Medical Officer should be practically acquainted with the following subjects:

1. All the articles of food, with their relative value, and how to detect deficiencies or adulterations.*

2. The effects of particular articles of diet on healthy men, in different climates and under different conditions as to labour, exposure, and fatigue.

3. The diseased constitutional states, likely to arise from the continued use of the same articles of diet.†

* The Milk supplied to the Hospitals at Scutari was adulterated to an alarming extent. "Milk and the appreciation of its qualities by taste" is made one of the subjects, at the Val de Grâce, of the "course of instruction on Military Hygiene."

† It is only necessary to refer to the repeated destruction of large bodies

4. The changes which are required under these circumstances.

5. The means of testing the purity of water and other drinks, and also the best methods of purifying water for troops.

6. The characters and qualities of drinks which the soldier is likely to meet with in different countries.*

7. The question of clothing and accoutrements, as regards materials, qualities, adaptation to climates.

8. The science of medical topography, of physical geography, the climate, waters,† and local diseases of all countries where the soldier is likely to be stationed.

9. The conditions as to soils, sub-soils, geological structure, natural drainage, marshes, lakes, banks of rivers, and the conditions connected with these, likely to affect the health of troops.

10. The means of detecting, in the sick, indications of the presence of organic matter in the air or water of the district, by its effect in modifying disease.

11. The special effects of particular kinds of shelter in tents, huts, bivouacs, damp soils, as influencing the air in these, and the results to the health of troops.

12. The effects of crowding and defective ventilation, and the best means of remedy.‡

of British troops, chiefly owing to the continued use of salt meat, and to the unaccountable apathy on this subject in the late Expedition to the Crimea.

* The alcoholic drinks sold by the Greeks, at Scutari and in the Crimea, were of the most pernicious quality.

† We will only refer to the fact that the suspected cause of Yellow Fever, on the West Coast of Africa, was discovered not by an Army Medical Officer, but by a London chemist. It was this, viz., that, when the rivers pass through the mangrove swamps, decomposition takes place of the sulphates of the water by the presence of organic matter, and sulphuretted hydrogen gas is produced.

‡ It is only necessary to refer to the disaster at Scutari.

13. The best methods of improving the surface and sub-soil drainage,—the external characters of military positions likely to affect the health of troops, with the means of remedying these, if remediable.

14. The local conditions affecting the health of towns, villages, and buildings to be occupied for military purposes, with a view of pointing out the sanitary defects, and the manner of remedying these.*

15. All the sanitary questions connected with permanent Barracks, Hospitals, Garrisons, &c., including drainage, water supply, cleansing, ventilation, &c., and the best means of rendering all military buildings healthy, as regards these things.†

16. Military gymnastics, exercises, duties, and their effects upon health.

17. The whole subject of camp diseases and epidemics, their nature, origin, causes, management, and preventions.

18. Chemical and microscopic analysis for sanitary purposes.

19. The subject of cooking, especially as regards the preparation of hospital diets and comforts.

20. The effects of different kinds of baths in the Hygienic treatment of disease.

The Army Medical Officer should be so thoroughly and practically conversant with all these subjects, that the Military Officer should be able to apply to him for advice and assistance with perfect confidence. He must, however, be instructed in these various subjects, as the French Medical Officer is already, practically and scientifically.

* Our occupation of Balaclava is a disastrous example of the neglect of these remedies.

† Every Barrack and Military Hospital, in the United Kingdom, will afford examples of the neglect of these sanitary questions. The Buildings and Camps planned quite lately, Aldershot, Netley Hospital, &c., are, perhaps, among the most glaring.

The benefits to be derived by the Service would amply compensate for the cost to the country. And, in a practical race like the Anglo-Saxon, were the Army Medical Officer, once really educated in Sanitary Science, the Military Officer would readily avail himself of it for the good of the Service.

Fourth. Revision of Sanitary Regulations.

IV. It has frequently been stated that ample sanitary instructions are already to be found in the existing "Regulations," and that ample sanitary recommendations were actually made during the war in the East, in respect to all the evils which affected the health of the troops so fatally.

However this may be, it is a fact, beyond dispute, that, with regard to the execution of recommendations, there are no means provided, whereby any recommendation, however good and appropriate, for securing the health of the troops, can be brought into practical operation. There is an abyss between the evil and the remedy, the only bridge across which is the sending a copy of any reports to the Director General.

With regard to the problems at Scutari and Balaclava, there is nothing in the "Regulations" that would have led any ordinary Medical man either to have discovered the evils (at least in the Hospitals and in the occupation of the town), or to have suggested the remedies: and, even if suggested, there are no means provided of removing the defects.

With regard to the "Regulations for Army Hospitals," the sanitary heads in these Regulations are not specific enough nor numerous enough,—and, such as they are, they presuppose a much larger amount of sanitary pre-

ical knowledge than is usually possessed by most Medical men, either in or out of the Army.

The remedies for this are:

1. A better Sanitary education, till every Medical Officer is a Sanitary Officer.

2. A Regulation specially appointing him as such, and requiring that he be consulted on all matters affecting the health of the troops, and that he be also required to report any defects to his Commanding Officer in writing.

3. A Regulation that Commanding Officers should consider such recommendations and give effect to them, so far as the interests of the Service will permit; and that they record their reasons for rejecting them, if rejected.

4. That copies of such recommendations, and replies, and reports of the steps taken, be sent to the Secretary of State for War and Commander in Chief.

5. That, in disputed cases, the Sanitary Head at the War Department be consulted by the Secretary of State for War.

6. That there should be Sanitary inspections by Army Sanitary Inspectors.

7. That, for special service, an Inspector be detached as Sanitary Officer (as, *e.g.*, at Scutari or in the Crimea).

8. That, for present purposes, and until the improvements in education, &c., are introduced into the Army Medical Department, all Barracks must be carefully examined by another machinery, such as has been indicated, Prop. II., and the sanitary defects corrected, which will at once reduce the sickness and mortality in the Army.

XI.

Notes on the Inaccuracy of Hospital Statistics and the Necessity of a Statistical Department.

Want in General Military Hospitals, of a Statistical Department separately engaged in Registration.

The acknowledged importance of Statistical Science in England, proved by the elaborate system of the Registrar-General's Office, founded about twenty years since, seems to show the absolute necessity of a Statistical Department.

In the General Standing Hospitals, it would seem that the Officer charged with this duty should not be one charged with the treatment of the sick. Otherwise he would be reporting to himself, which is contrary to the action of the National Registration under the late statute.

Nomenclature of Disease should, for uniformity's sake, be that used by the Civil Registrar-General.

If the Army Registration is to be analogous to the National Registration, which, in all reason, it would seem should be the case, it appears to follow that the nomenclature of disease should be that used by the Registrar-General; the more so, as the latter is fixed so as to correspond with the technical words in French and in German, determined by the Statistical Congresses at Brussels and at Paris, held in the years 1853 and 1855.

Nomenclature identical with that of the Registrar-General cannot be obtained, unless that used by the Medical Officers in their Reports and Returns, and on the bed-ticket of each patient is made also to correspond.

The present Military Nomenclature of Disease is, moreover, quite inadequate and obsolete.

Another reason for this change will appear from the consideration that the present terms, which are inadequate to their purpose, are no others than those used in Cullen's Nosology of 1785, with a few additions.

General Inaccuracy of

The Army Statistics have never been incorporated with

the Civil Statistics of England, producing a very unjust inconvenience to the relatives of the dead, the more so as our soldiers are volunteers. This, however, would be a minor grievance, if the Army Statistics themselves could be relied upon. Of the soldiers who are no longer paraded with their regiments, one portion is returned killed, one portion missing, and the rest in Hospital or invalided. In the late war, the second class will be found, from special circumstances, unusually small. It is in the last two classes that large discrepancies arose. Those in Hospital must be considered to include those on the passage from the Crimea to the Bosphorus, and from the Bosphorus to England. The discrepancy, between the truth and the returns, was supposed to be greater than in the Peninsula War, and may be accounted for as follows. Great numbers of men were embarked, not only after Alma, but during the succeeding autumn and winter on board transports, and even on board the afterwards-appointed sick ships, without any nominal list. Of these it appears, by comparing the numbers of those who embarked with those who landed, that about 949 died and were thrown overboard on the passage. For the reason above stated, many of these were not reported nominally. As we have no security for the accuracy of the Military or Medical Officers in charge, sometimes invalids themselves, this figure (949) may or may not represent the actual number lost. In one instance, the Captain of a transport has asserted that seventy bodies were thrown overboard from his ship in one voyage, without their names, regiments, or ranks being entered into any report on board the ship.

Army Statistics, even as regards the mere Registration of Deaths.

On entering the gates of the Hospitals on the Bosphorus, many men were unable to give their names to the serjeant stationed to require them, and consequently were

entered by a simple number; in other cases, the name of the regiment was added, which could not be ascertained except when the accoutrements were sufficiently complete. Of these men, unable to account for themselves, a large proportion died. Each was entered simply as "a man" in the death books; but, as the returns show that the excess of burials over deaths numerically reported (in the "Orderly Room") during the six months after the Battle of Alma, amounts, in the Hospitals of the Bosphorus, to 530, it follows that that number, which actually entered the Hospitals, died without the Death being reported, nominally or numerically. In some cases, the card remained after the occupant of the bed which it represented had been removed by death; the first real name thus representing its proper owner and his successor or successors, who followed him rapidly to the graveyard. But, till about February 1855 we had no bed-tickets at all; nor, till about that month, was a Nominal Return of deaths made by Surgeons in charge of the Wards. The name of the man who died was, up to this time, simply scratched off the Diet Roll.

Another source of inaccuracy was that, although all who left the Hospitals of the Bosphorus for home, were recorded with nominal lists on embarkation, yet those who died during the voyage were not reported to their respective regiments. Many cases of this kind have occurred indisputably, as appears from correspondence, ultimately proving that the man never was again present either at his Depôt or with his Regiment on service, and was not discharged from Hospital at home.

This great amount of inaccuracy is the more surprising because, in this War, there were no such causes as have occurred in almost every other, viz., desertion, and accidents occurring to troops dispersed over a populated

country, or falling out during long marches, especially retreats.

Another obvious defect in the Statistics of Disease of our Army (which are not published, even at any subsequent period, when military reasons no longer exist for their concealment) is, that the Returns are only made up on one day of the week, of the men then in Hospital. Consequently a man, entering the Hospital on the following day and dying, or being discharged, previous to the subsequent Report, will not appear in the column of Total Sick, which shows those at the end of the week. In cholera and diseases which run their course in a few hours, the Returns may actually only show one-seventh of the cases. The other six-sevenths will, however, appear in the Death and Admission Returns for the week. But, in the *Registered* Return, a man admitted and discharged to duty during the week would not appear.

Statistical Returns, whether of the Hospital or of the Army, can be, comparatively, of little use, till extended, with a sufficient nomenclature, over periods adequately distinguished, and over portions of the force, under different geographical or sanitary circumstances. For example, the total loss in the last war, over the period of two years, unless classified into monthly Returns, will not indicate the fact that we were losing men at the annual rate of 1,173 per 1,000, in January 1855, and in January 1856 at the rate of 21 per 1,000, which shows that, the weather being similar at both periods, the influences of climate were not to be looked to as the grand causes of disaster.*

Requisites for accurate comparison.

For the purposes of accurate comparison, it is absolutely necessary to reduce all our facts to

* This is very much wanted for comparison. Every man, whatever his experience, wants an *unit* of comparison.

1. Unity of time.

2. Unity of strength, or numbers under observation.

Now the standard of comparison, as to mortality, all over the civilized world is the per-centage of deaths per *annum*; as to sickness, the per-centage of admissions into hospital, *in the same time*, together with the number of days' sickness *in the same time*.

And, without reference to the *same* standard, it is impossible for the most intelligent to judge.

By dividing the *weekly* deaths by the force in the Crimea, as was done in the published Returns, the high mortality of the Crimea *appeared* to be exceedingly low. For people naturally took the mortality per cent. per *week* for the mortality per cent. per *annum*.

False impressions created by Medical Statistical Returns in the Crimea.

From the Extracts given below, which are taken from letters of the Principal Medical Officer to the Commander of the Forces, in the published Dispatches, the meaning of what is here suggested will at once be seen.

"(Enclosure.)

"Dr. HALL to Lord RAGLAN.

"MY LORD, *Before Sebastopol, March* 19. 1855.

"In transmitting the weekly state of sick of the Army to the 17th instant, I have the honour to state, that though the sickness still amounts to 1431 per cent., the mortality does not exceed 0·51 per cent., which is a proof that the diseases are milder in character; and I think I may *safely* say the general health and appearance of the men is greatly improved; and had not the duty, by the unavoidable operations of the siege going on, been increased of late, I think the sick list would have been still more diminished, as the men's condition is in every other way so much improved, both in diet, dress, and accommodation.

"(Inclosure.)

"Dr. Hall to Lord Raglan.

"My Lord, *Before Sebastopol, April* 3, 1855.

"In transmitting the weekly state of sick to the 31st March, I have the honour to state, that I am sure it will be pleasing to your lordship to learn, that the general health of the Army continues steadily to improve; and although fevers and bowel complaints continue to prevail, they are both assuming a milder character, and the latter are of much less frequent occurrence.

"During the present week the admissions to strength have been in the ratio of 3·93 per cent., and the deaths to strength 0·38 per cent.

"Last week, the admissions to strength were 4·35 per cent., and the deaths 0·52 per cent.; which makes a decrease of 139 in the admissions, and 43 in the deaths during the week."

The facts which the Commander of the Forces and the War Department want to know, and ought to know, concerning the health of an Army in the field, are not, as is this shown, supplied them.

What they want to know is—

1. How long the army will last at the then rate of mortality.

2. Whether the diseases are preventible from which the mortality arises.

3. What proportion of the army is inefficient from sickness.

The mere information that "the admissions to strength have been in the ratio of 3·93 per cent." during "the present *week*," and "the deaths to strength 0·38 per cent." is simply misleading to the authorities, unless indeed, which is hardly likely, they are thoroughly *au fait* of statistical inquiries.

0·52, 3·93 per cent. look nothing.

But multiply 3·9 by 52 = 2,028, in order to find the *annual* admissions per 1,000; and it will be seen that the

whole force will go twice through hospital in a year, at that rate. And multiply 1·43 by 52 = 7,436 per 1,000 per annum; and the whole force will go seven times through hospital in a year.

This "sickness" of "1431 per cent." must, however, include the admissions and the remaining in hospital Some remarks will be offered, further on, upon this method of calculating the mortality. But is this a state of things to congratulate a Commander of the Force upon, as being "pleasing" to him "to learn?"

Multiply 0·52 by 52 in the same way, and it will be found that the mortality is 270 per 1,000 per annum;—in other words, that more than one-fourth of the whole population of the army will perish in a year.

2. At a time when every one in the Crimea was expecting cholera, which actually did come, which is shortly after recorded by the Inspector-General himself, the Commander of the Forces is congratulated on the "steadily improving" state of the "health of the army."

During the ten weeks intervening between May 5 and July 14, 1855, 96 per cent. of all the deaths from disease were of the classes usually considered mitigable and zymotic. That is to say that, granting that the remaining four per cent. were not preventible, there might have been saved to the Commander of the Forces a large part of the 96 out of every hundred men he lost from disease.

Is not this important to him to know from his return at a glance?

3. For a Commander in the Field, the number of deaths among his men is, after all, not so necessary for him to know as the rate of inefficiency from sickness in his army, granting that a large amount of that sickness may be mitigated or prevented.

In January 1855 more than half the Infantry of the

Army before Sebastopol* was sick in hospital, and three-fourths of all that sickness zymotic, and so it continued from October 1854 till July 1855. Nay, even in that dreadful week which included the attack on the Redan, June 18th, 1855, even in that week nearly 65 per cent. of all the deaths in hospital were zymotic.

Of what vital importance is it not to a Commander and a Government to know this?

Now take the unit of 1,000 per annum, include the deaths in the General Hospitals at the base of operations, without which it is obvious that no correct result as to the mortality of an army can be obtained, and let us compare the mortality at different periods of our history in the Crimea.

PER 1,000 PER ANNUM.

January	1855	1,173
	1856	21½
May	1855	203
	1856	8
January 1 to May 31	1855	628
	1856	11½
Crimea, May 1856		8
Line at home		18·7
Guards at home		20·4

Thus we were losing in the Crimea, in May 1856, less than half of what we lose in the Line at home, and two-fifths of what we lose in the Guards at home.

What Statistics are requisite for a Commander of the Forces.

It is obvious that what is wanted is for the Commander of the Forces and the Secretary of State for War to be made instantly and continuously acquainted, (both as to an Army at home and in the field,) with not only (1) the real proportion of mortality; (2) the real proportion of disease; but also (3) the *kind* of disease and mortality.

* *Vide* p. 17, where is given the Adjutant-General's Return of Sick (Present and Absent) for the Infantry Divisions before Sebastopol.

Therefore—

1. Present strength,
2. Sick in hospital at a given date,
3. Total admissions since last report,
4. Total deaths since last report,
5. Percentage of sick to present force,
6. Percentage of deaths to present force, *per annum*,
7. Percentage of admissions from zymotic disease to total admissions,
8. Percentage of zymotic cases in Hospital to total sick.
9. Percentage of deaths from zymotic disease to total deaths from disease,
10. Admissions and deaths from wounds,—

at short periods, both Departments should be furnished with a statement of these 10 points, in such a form as that they shall be able to appreciate them at a glance.

It may easily be ascertained what the weekly states of an Army in the field are now, as furnished to the Commander of the Forces by his Principal Medical Officer and the daily states furnished by his Adjutant-General*.

The following is a specimen of what we remember to have seen furnished by the Principal Medical Officer:—

WEEKLY MEDICAL STATE.

1. Strength in field, as given by Adjutant-General, this morning.

* The States, furnished by the Adjutant-General, include,—

1. Present under arms;
2. Sick { Present, Absent;
3. Missing;

and the numbers employed on various duties.

For military purposes these States are, of course, adapted; and it is unquestionably not intended here to offer any impertinent suggestion as to purely military question. It is only mentioned now to show that the information required for the above purpose is not here, either, to be found, since these States show neither the Reinforcements nor the Deaths

2. Admissions.
3. Deaths.
4. Present Sick.
5. Admissions to strength.
6. Deaths to strength.
7. Sick to strength.
8. Decrease of mortality this week;

but nothing as to per-centage "per annum," or as to zymotic disease.

Again, with an Army in the field, to give the admissions and deaths for the Field Hospitals is to give no just idea of the mortality, unless it is also stated how many of those admissions were sent to and died in the General Hospitals at the base of operations.

In the case of the Crimea, till the spring of 1855, no account was rendered of these.

E. g. Published Return.

Crimea.

October 1, 1854—April 1, 1855.

Average Strength.	Admissions.	Deaths.
28,623	52,548	5,359

General Return.

Crimea and Scutari.

October 1, 1854—April 30, 1855.

Average Strength.	Admissions.	Deaths.
28,930	56,057	10,053

The admissions at Scutari are not given, because they were nearly all re-admissions from the Crimea.

When we see the loss *thus* given, the real extent of it strikes us. It stands thus:—

	Strength.	Deaths.
Infantry	23,775	9,015
Cavalry	1,915	280
Artillery and Engineers	3,249	568
Undistinguishable		190
	28,939	10,053

Sir Alexander Tulloch gives the mortality for these seven months, at a percentage for the seven months. It shall now be given per annum:—

Strength of the Army	28,939
Deaths in seven months	10,053
Mortality per annum	60 per 100

Novel Methods of calculating Mortality.

It must now be stated that the statistical returns made at various times are very discordant.

It will be found, also, that some of the methods of calculation employed are quite novel, and in a form to mislead persons who have not closely studied these matters.

The following is an illustration:—

Given a Hospital of 1,000 beds, constantly occupied during one year, into which during the year 10,000 sick are admitted, and 10,000 discharged, viz. 1,260 dead, and the rest cured. Then if we divide the deaths in the year by the *average strength*, as is ordinarily done in determining the mortality of the whole Army, it will be found that the 1,260 deaths in a year out of a mean strength of 1,000 imply that the mortality was at the rate of 126 per *cent.* per *annum*. If this method be employed, it will show the comparative sanitary condition of the sick in two or more such Hospitals.

Again, as the number of deaths (1,260) took place among 10,000 cases, the mortality was at the rate of 12·6 deaths in every 100 cases.

In the case supposed, the new method would make the cases 62,000, out of which the 1,260 deaths occurred, and the mortality of these cases would be stated at 2 per cent.

The way in which this result is obtained is sufficiently simple. 1,000 cases would remain in the Hospital at the beginning of every week; the new method counts the cases remaining every week, or fifty-two times in a year, and adds to them the cases admitted, so that, in addition to the 10,000 cases really treated, it obtains 52,000 fictitious cases, simply by counting the same man rather more than six times; that is, by counting the patients remaining 52 times annually, and adding them to the new patients admitted.

If the number remaining at the beginning of every month were counted, 12,000 would be added to the 10,000 real cases treated.

It is evident that, by counting the cases *remaining* at the beginning of every day, or oftener, the *cases* may be multiplied to any conceivable extent.

Now it is hazardous to offer any conjecture as to the nature of some of the published Returns with which we have been furnished, or to found any calculation upon them, without knowing what they are meant to represent:—*e. g.*

January, 1855.

1.	2.	3.	4.
No. of Sick in Hospital in the Crimea and at Scutari.* (Infantry before Schastopol alone.)	Total Admissions into Hospital in the Crimea.	Total No. of Sick in Lord Raglan's Army.†	Total No. of Cases Treated at Scutari.
12,025	11,200	23,076	23,076

* This is a summary of the Adjutant-General's Weekly Returns, as given at p. 17.

† As given at p. 16.

It is easy to understand Nos. 1 and 2; but what is No. 3? Independently of the fact, elsewhere noted, of its showing the same sum as No. 4, it is difficult to know what it represents. Is it the "cases *admitted*," added to the "cases *remaining*?" And if so, are the latter added *weekly* or *monthly*, or at what successive periods?

But Hospital Statistics should include also a Registration of the causes of Death and a Record of the Treatment of Disease.

But Statistics of a Hospital ought to include not only the nominal list of dead, but the cause of death.

As to the records of the treatment of disease, which ar a subordinate part of Statistics; in some of the Londo Civil Hospitals and in the Military ones of France an Sardinia, the Case-books are kept with such accuracy, that the diagnosis of the primary or secondary disease recorded, with the treatment, and proximate cause of death—if death ensues. In the French Army, the Case-books being sent home, the competent authority abstract the more interesting cases, from which a second selection is made, which is published once or twice a year, as the cases make up a convenient octavo volume, at the expense of Government. Each case is accompanied with the place, time, and circumstances, and the names of the superior and inferior Officers under whose treatment it has been.

Gross Inaccuracy of the very Registration of the Men's Diseases, in British Military Hospitals.

In the British Military Hospitals, the diagnosis is affixed to the card, by order, within twelve hours after admission. If the disease changes, the Surgeon must go through the form of discharging and re-admitting the man, in order to change the ticket, so that, were this rule strictly carried out, the Patient who contracts another disease in Hospital would appear as two men, the first of whom had recovered.

Hasty Diagnosis.

If the Surgeon wishes, for the sake of honesty and science, to change his diagnosis, which he has been obliged prematurely to decide upon, consideration of the short difficulty would probably induce him not to do so. It

Civil Hospitals, this decision, exacted in Military Establishments within twelve hours, is frequently deferred for a period of several days or even weeks.

Way in which the Medical Returns were made at Scutari.

The way the Returns of the Army Medical Department were made at Scutari was as follows:—At first, no Nominal List was sent with the Patients. Afterwards, when such was regularly received at the Principal Medical Officer's Office, stating also the men's diseases, these were not communicated for the guidance of the treating Surgeon. The Patient was interrogated: "What is the matter with you?" "Oh, Sir, I have Diarrhœa," or "Fever," or "Dysentery." Some Assistant Surgeons put down what was thus said as the Diagnosis, and afterwards it was entered in the Returns as the Cause of Death, in the event of a fatal termination to the case.

Or the Patient said, "Oh, Sir, I have pains in my back and my legs." This was entered as Chronic Rheumatism. Thirty-three deaths from "Chronic Rheumatism" have been seen in one Quarterly Return from one Hospital. These cases, so returned as Chronic Rheumatism, were generally Scurvy, and frequently ended in death; but a great number of Medical Officers were so little in favour of the idea that Scurvy prevailed in the Army, that they would not acknowledge the cases as such—even when the *post mortem* appearances demonstrated the nature of the disease. The great number of cases which appear as Fevers, which were not Fevers, will also be remarked. Very few who came down from the Crimea to Scutari, during the first part of the first winter, came with Fever. It was contracted afterwards in Hospital, and was that called Hospital or Camp Fever, and by the French, Typhus. With us it was called Febris e. c., Common Continuous Fever (which means—what?)

It was not till the spring of 1855 that there appeared

in the British Army, among the cases sent down from the Crimea to Scutari, what the French call "Fièvre Typhoïde." The French and Russian camps were decimated in the spring of 1856, with the same Fever which the British had the preceding spring, and from some of the same causes, viz., an inadequate supply of fuel, food, and clothing, combined with want of sanitary precautions.

But, in the British Hospitals, if a man came in with feverish symptoms, it was very common to return him under F. c. c., though afterwards it might prove to be Pneumonia, &c., and therefore the numbers of Feb. c. c. must appear unduly increased.

In the first winter, a great number of those returned as Fever died not in the acute stage, but afterwards in the secondary stage of Consumption, or something else.

What was called Frost-bite was almost always the consequence of Diarrhœa or Dysentery; for, if the man was questioned, he said that he had contracted it in his tent or in bed in Hospital. There was rarely that degree of Frost which would justify its being called Frost-bite. It should more truly have been called Gangrene, the consequence of the depression caused by Scorbutic Dysentery. It was true that the men, when debilitated by bowel-complaint and sent on duty, sometimes fell asleep for a few hours, in the trenches, and awoke frost-bitten; but this was the consequence not of the great degree of cold, but of the state of depression of the men's constitutions. Perhaps but one case could be mentioned of a perfectly healthy man really suffering from Frost-bite—he had lost one toe.

Sketch of the Diseases from which the Army suffered in the Crimea.

The diseases contracted in the Crimea, with their respective causes and periods, might, roughly, be classified thus:—

Time.	Causes.		Diseases.
1854. November December 1855. January to February	Exposure Bad food Deficient clothing Fatigue Damp	Scorbutic Type.	Diarrhœa Dysentery Rheumatism Frost-bite Scurvy
to February March April	Bad drainage " ventilation Overcrowding Nuisances Organic effluvia Malaria Damp	Malarial Type.	Fever " typhoid " continued " remittent Diarrhœa Dysentery Cholera

Inspection of the Medical Register.

After an inspection, the Inspecting Officer determines, by the evidence or rather the neatness of the books, whether the "Treating" Surgeon is a meritorious officer or not. So that often the most active and zealous in his profession is set down as undeserving, because some form has not been complied with; while another, who has filled up all his forms, though it may easily happen without knowledge or skill, is reckoned a most praiseworthy officer.

Absence of reliable Returns of Disease.

In one instance, at Scutari, an Assistant Surgeon was sent from one General Hospital, between eight and nine P.M., to receive upwards of 100 patients at another, whose Names, Regiments, Regimental Numbers, he had to take, and the diagnosis of whose diseases he had to make, and to send in to the Principal Medical Officer's Office, before nine the following morning! Of what value to the Medical Returns was this diagnosis supposed to be?

Five men were dead before morning, whose Names, Diseases, and Regiments must remain for ever unknown, except as subsequently traced back, so far as to strike them off the strength of their Regiments; and for this alleged

neglect, the unfortunate Surgeon received what is called in official slang a "wigging."

One instance may be cited, among many, of the difficulty of obtaining reliable Returns. A Surgeon came down twice from the Crimea in charge of Patients. On one occasion the voyage lasted upwards of three weeks—twelve Orderlies were told off for the service of the Sick, of whom few lived to arrive at Scutari. The Sick were put on board, without lists or returns of any kind; when they arrived at Scutari, they had neither food nor medicines. The Surgeon went on shore and was unable to obtain what he required, owing to confusion and "want of transport" (*sic.* in the Bosphorus) until the case was represented. Finally, by the exertions of the Military Officer on board, the "case was represented" to the Commandant, who ordered an ample supply of everything. The larger portion of the first day on board, the Assistant Surgeon, who was thus in charge of 200—300 Sick, was occupied in making a Nominal Roll of his Patients. In that same vessel, sick were put on board, on one side, at Balaclava, and thrown overboard, dead, on the other.

Of how much value, then, are our Medical Returns?

Neglect of all Pathological Record.

Nearly all of the men treated in the Hospitals of the Bosphorus had been inmates of one of the Hospitals Regimental or General, in the Crimea. In no case did any history of the disease and treatment accompany the Patient. Later in the war, records were sent down, but these went to the Principal Medical Officer's office.

In the case of post mortem investigations, the Examiner had no information given him of the Patient during life. Pathological investigations were therefore of comparatively little value to what they would have been, could disease have been traced up to their source.

Neglect of all Pathological Record.

It must be discouraging and disappointing in the extreme to the zealous and scientific Surgeon to know that his accounts of cases, however interesting and useful, are doomed to remain unclassified and probably unexamined; while with the careless and the ignorant Surgeon, this well-known probability justifies slothfulness and conceals want of knowledge.

The Case-books of the Regimental Surgeons and of those treating sick in Hospital are sent in periodically to the Principal Medical Officer, who forwards them to the Director-General, in whose archives they remain, without hope of examination, since examination without classification and publication would be useless.

Already the mass of valuable matter derived from the Peninsular War and the Expedition to Walcheren has been destroyed, as too bulky for the disposable room at the command of the Director-General; and it is but too probable that the recent records, including doubtless a far greater variety of Medical experience, now demanding fresh space in the Record Chamber, will share the fate of their predecessors.

It may be of little consequence whether a Naturalist, sent on board the frigate which conveyed the bodies of the King and Queen of Otaheite home from England, be or be not allowed by "Their Lordships" at the Admiralty to publish the Sulphurs of the Volcano, or the Flora of the Island; but when the Surgeon is doomed not only to see his Official Records shelved, but to suffer under an absolute decree that his own private memoranda, or even correspondence, shall not see the light, unless by leave and after erasure by the Director General, we may estimate the amount of discouragement to energy, and injury to the advance of science produced by abstracting from the Scientific Treasury of the Nation all that large field of obser-

vation which official advantages place at the command of the Army Surgeon.

Analogous to this system, by which the world is deprived of valuable results, is that by which the visible Material of self-recorded facts has been allowed to perish. Few if no preparations can have been made of bones and amputated limbs, since few or none have been sent home. How can it be expected, when the only encouragement is the probable interment of a preparation in the underground Museum at Fort Pitt, by order of the Director General, that Army Surgeons, in the midst of their labours, should select specimens and send them home, to be afterwards prepared and deposited, if thought worthy of Fort Pitt? This Museum is one of the first in the world; and it is not here meant that to enrich it ought not to be the legitimate object of ambition to the Army Surgeon—but that it ought to be placed in a *locale* worthy of it and accessible to Students.

From what is above stated, it becomes evident that notwithstanding the treatment of gun-shot wounds is less known than any other branch of Surgery, after twelve months of actual campaign and two years of Hospital treatment, no classification will be obtained of the facts recorded in the manner they have been, which can be of any public utility. Even were they published as they have been sent home, no Pathologist could collect from them arranged data from which he could draw valuable conclusions, for the use of those who may make future researches in this branch of Surgery.

Necessity for a Pathological Department in Military General Hospitals.

For the completeness of a Military General Hospital, a separate Pathological element is required. Its officer during the time of his investigations, in order that his Reports may be above suspicion, must be independent of those who treat the patients.

His duty would be to demonstrate in the School, to tabulate such criticisms and illustrations as he might make upon the Statistics of Disease, and to act as Curator of the Museum, unless in the very large Hospitals, where this would be a separate office.

Résumé of the Method in use at Scutari for receiving Sick, and registering their Admissions, Diseases, and Deaths.

It may be thought necessary to give a short resumé of what has been said of the method in use at Scutari, on the opening of the Crimean campaign, for receiving sick and registering their admissions and diseases—this having been, as it were, an improvised scheme of General Hospitals—as well as for recording the results, deaths and burials. I shall be obliged to use some repetition.

Up to the middle of February 1855, the method said to exist was the following:—The Adjutant or his Serjeant stood at the landing-place or hospital gate and took the names of those who were able to speak, receiving a verbal report, from the Officer in charge, of the number who had died during the voyage. At first, there was no arrangement for registering the sick when they were received into Hospital; and the erasure of the man's name from the diet roll was long the only record of his death, excepting the Adjutant's head-roll of burials.

I believe that the Medical Officer in charge always endeavoured to make a nominal roll on the voyage from Balaklava to Scutari; more than one has stated that it took him half a day from his professional duties about the sick to do so. But, whatever this nominal roll was, it went into the Principal Medical Officer's office, and not into the wards; one copy was given, I have been told, to the Deputy Assistant Quartermaster-General on landing; but at what period this was first done I am not aware. It has been stated to me by several Medical Officers that, even as late as March 1855, the Inspecting Medical Officer of Transports, upon going on board, frequently found this

list imperfect, owing to the illness of the Medical Officer in charge, or other unavoidable cause, and had to complete it then and there.

Till the middle of February, or later, we had no bed-tickets, and no regular death returns. It is well known that the sick were put on board at Balaclava without nominal or numerical lists up to February 1855. Upon their admission at Scutari, an Assistant-Surgeon was charged, sometimes late in the evening, to take the names, regiments, regimental number, &c., and to make the diagnosis of perhaps 100 patients before nine the next morning. One-twentieth have been known to die before they could give their names.

After the end of March all this confusion ceased. But it was not till the end of April that a census of the Hospitals was taken, and returns "squared" with the Adjutant-General in the Crimea.

Returns probably existed of which I knew nothing. I am speaking only, first, of what I saw; secondly, of what I was informed of by witnesses on the spot and at the time. The Director-General may have other witnesses and other returns.

Conclusion. A Registrar is necessary.

The conclusion I draw from all this is, not that any one was to blame, for all were burdened with work beyond their strength, but that there was no system ready organized of registration for General Hospitals, and that a Registrar is an essentially necessary Officer for such an institution.

Excess of Burials over Reported Deaths.

In consequence of the great confusion of the Hospitals from the battle of the Alma till a late period of the winter of 1854–55, a number of men were buried from the Hospitals, exceeding in six months the deaths reported in the "orderly room" by 330; but the deaths reported in the orderly room exceed those reported in the Hospital books

In November by	.....	12
„ December	„	143
„ January	„	125
		280

while, as if to make up the lost ground, the medical returns, which had exceeded the orderly room returns

by 12 deaths in October, exceed again
by 253 „ „ February,

265

bringing the sum of deaths very nearly equal. The Adjutant having buried 280 men more than the total number reported by the Inspector-General as dead, the account had to be balanced at a subsequent period.

A census was taken of the Hospitals, April 30, 1855, by which it appeared that 517 non-commissioned officers and soldiers had been buried whose deaths were unrecorded. An official report was then sent up to the Adjutant-General in the Crimea, and they were struck off the strength of the army. The names and regiments of 28 others remained unknown.

Statistics from six different Sources, all different.

I have carefully compared the statistics from six different official sources and none of them agree.

It is possible that, in some of these cases, the numbers of deaths may be the numbers occurring in the several months,—in other cases, the numbers recorded in those months. At the same time, the great discrepancies in the several numbers shake confidence in their accuracy, and render it difficult to make use of them for statistical purposes.

From details inserted in the Appendix, it will be seen

1. That there are four different returns of the deaths on board the transports bringing Sick from Balaclava to Scutari, and that the number reported is different in each separate return. Nay, there is scarcely a single ship for which the three returns agree, which report the ships separately.

2. The Adjutant's head-roll of burials, the most trustworthy record of deaths, exceeded in six months by upwards of 500 the number reported as having died in the Hospitals; and the Adjutant states that this list of burials does not include civilians.

3. The Director-General himself represents the very numbers in the "return of total sick *treated in Lord Raglan's army*"* as having been *treated at Scutari* alone in November, December 1854, and January 1855.

4. The returns of dead at Scutari from October 1 to December 31, 1854, vary as follows:

Adjutant's Return of Burials.	Reported Deaths.	Principal Medical Officer's Return.	Chiefs Return (Infantry alone.)
1,301	1,046	910	795†

Smyrna Hospital did not then exist: and Koulali Hospital did not exist till December, and contained then, as a maximum, but 240 patients.

These sources of discrepancy are therefore eliminated.

The result of my examination of these statistics is simply

* Appendix, Third Report Commission before Sebastopol, p. 877; Second Report, p. 705.

† The deaths of the Cavalry, Artillery, and Engineers, averaged together about one-ninth of those of the Infantry at Scutari, according to the Inspector-General's return for seven months, viz., October 1, 1854 to April 30, 1855. This would not have equalled the numbers, for 9) 795 (88 = 883.

this, that, however satisfactory they may be to the departments who have put them forth, and whichever of them may be correct, exhibiting as they do such palpable diversity, still, to any one not in the secret as to how things which apparently differ so widely are nevertheless identically the same, they convey no trustworthy idea as to the sickness and mortality of the army in the East, and that, for any practical purpose, they are as put forth to the public, who are most interested in the matter, not absolute truths, but only approximations. The calculations which I give, I believe, understate the mortality actually experienced.

Fatal Consequences of the hasty and imperfect Diagnosis, illustrated by the want of notice of the widely spread Scorbutic character of the Men's Diseases in the late War.

The superficial mode of entering Disease, according to the symptoms appearing during the first twelve hours after entrance into Hospital, led to the following result: that, notwithstanding subsequent symptoms displayed themselves and treatment was altered to meet them, the Scorbutic character of disease, although prevailing, if it is said, to the extent of 80 per cent., was never recorded. Consequently, so striking a characteristic of disease, spread over so large a number of Patients, never led to the investigation of the common causes of so general an effect, which it otherwise would have peremptorily commanded.

Had the search been made after the cause which professed 80 per cent. of the disease among our Troops, this being Scorbutic Dysentery and Diarrhœa, &c., no other conclusion could by any possibility have been arrived at than the following: that the disease was caused by salt provisions, cooked in mess-tins capable of containing so small a quantity of water that the salt remained undischarged in that large proportion which is got rid of by cooking as performed in the Navy; the addition to which ration was rum and biscuit. This was the food of the Soldier day after day, while exposed to cold and wet, and

undergoing extreme labour. The compensations of diet usually afforded to the Sailor were nevertheless in store at Balaclava, viz.: rice and lime-juice; and soft bread might have been provided, partly by baking at Balaclava in the existing Russian ovens, and partly by importation from Constantinople, as was subsequently done. Vegetables might have been obtained, potatoes supplying the want of green vegetables during the dead of the winter.

It may fairly, then, be anticipated that, had the Scorbutic taint been reported to have existed to the extent to which it really did, it would have been seen that the death of the British Soldier should rather have been ascribed to his diet (which might have been modified or changed), than to the climate (which at all events was not worse than that of his own country), or even to the over-work in the trenches (which, however excessive, had he been supported by nourishing and well-cooked food, he could have better borne till reinforcements arrived to relieve it.) *

Vital importance of accurate Statistics of Disease.

For an example of the vital importance of accurate Statistics of Disease to a Commander of the Forces and a War Department, the following may be taken:

We derive from Official Returns for January 1855, that there were in that month

Total Admissions into Hospital (Primary)	11,290	Total Deaths in Hospital ..	3,168
Per 1,000 per ann. to strength ..	4,176	Per 1,000 per ann. to strength ..	1172

* This will be considered in greater detail in the Notes on Diet. Here it is enough to say that the food was at once uncooked and insufficient. Even had it all been eaten, which it was not, it would have contained only 2/3 its nutritive value, instead of 2/3 as., the quantity necessary for health. The fact of the food being thus disproportioned to the labour, would have been in itself sufficient to account for a large part of the destruction of the British Army. The want of shelter and of warm clothing did the rest.

Of these, the Admissions and Deaths from Diseases of the Scorbutic type are returned as follows:

	Admissions	Deaths
Scurvy	542	31
Scorbutic Dysentery	181	44
	723	75

Or, 75 deaths from Scorbutic disease in that month, when from two-thirds to three-fourths of all the Disease in the Army were due to the Scorbutic type. The larger part, if not all, of the Admissions and Deaths, recorded below, which are for the same month of January, 1855, may be read "Scorbutic type" or "Bad food," which is the same thing.

		Admissions	Deaths
Scorbutic type	Acute Dysentery * ..	865	210
	Chronic ,, ...	143	578
	Scorbutic ,, ...	181	44
	Diarrhœa	4,191	1,199
	Acute Rheumatism ..	342	58
	Chronic ,, ...	84	9
	Frost-bite	1,413	124
	Scorbutus	542	31
		7,761	2,253

Yet instead of 7,761 admissions, and 2,553 deaths from Scorbutic disease, or bad food, are returned admissions 723, deaths 75.

In the case of Armies in the Field, where half an Army may melt away from such a cause, or be rendered inefficient, just when its services are most wanted, not by

* Acute and Chronic Dysentery furnished a mortality of 28 per cent., and was by far the most fatal disease in this fatal category.

wounds but by disease—as was actually the fact with us in the Crimea, in January 1855,—of what vital importance is it, then, in such a case, for the authorities to be furnished with such information as the above, leading, as it does, directly to the discovery of the true cause—the remedy for which, in our instance, was close at hand.*

Comparison with the amount of Zymotic Disease in a Civil Population.

But what shall we say when we see the proportion in which the Army in the East suffered from Zymotic disease, compared to that in which the Civil Population suffers at home? and the utter insignificance into which sink the Deaths from Wounds of an Army in the field, even when engaged in constant warfare, compared with the Deaths from Zymotic disease? The two Tables annexed give this information; and, when we consider that Zymotic death is as much a "Violent death" as that which has usually been called such, we may indeed say that the one has killed its "thousands," but the other its "tens of thousands!"

TABLE No. 1.

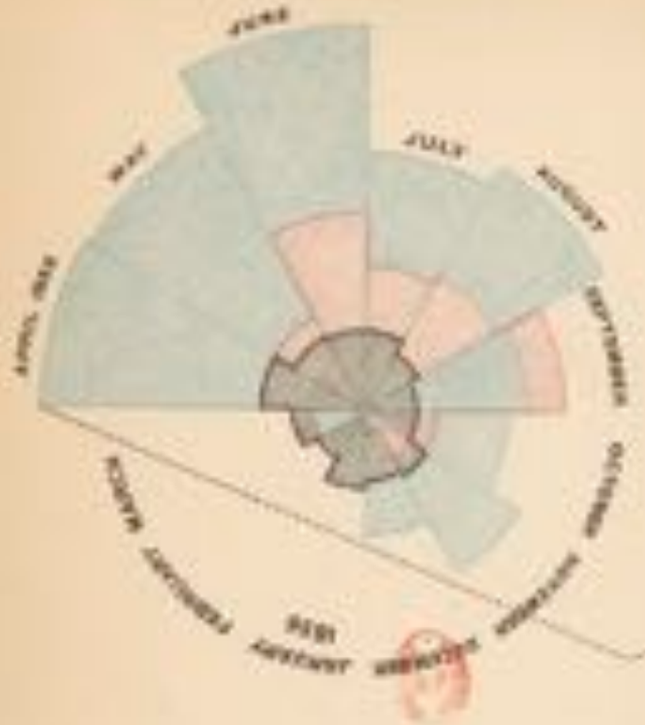
Annual Rate of Mortality per cent. in the Army of the East and in the English Male Population of the Ages 15—45.

Class of Diseases.	Deaths Annually to 100 living.	
	In the Army in the East.	English Male Population, 15—45
1. Zymotic Diseases	18·7	·2
2. Constitutional Diseases	·3	·4
3. Local Diseases	·9	·3
4. Violent Deaths	2·9	·1
All Causes ..	22·3	1·0

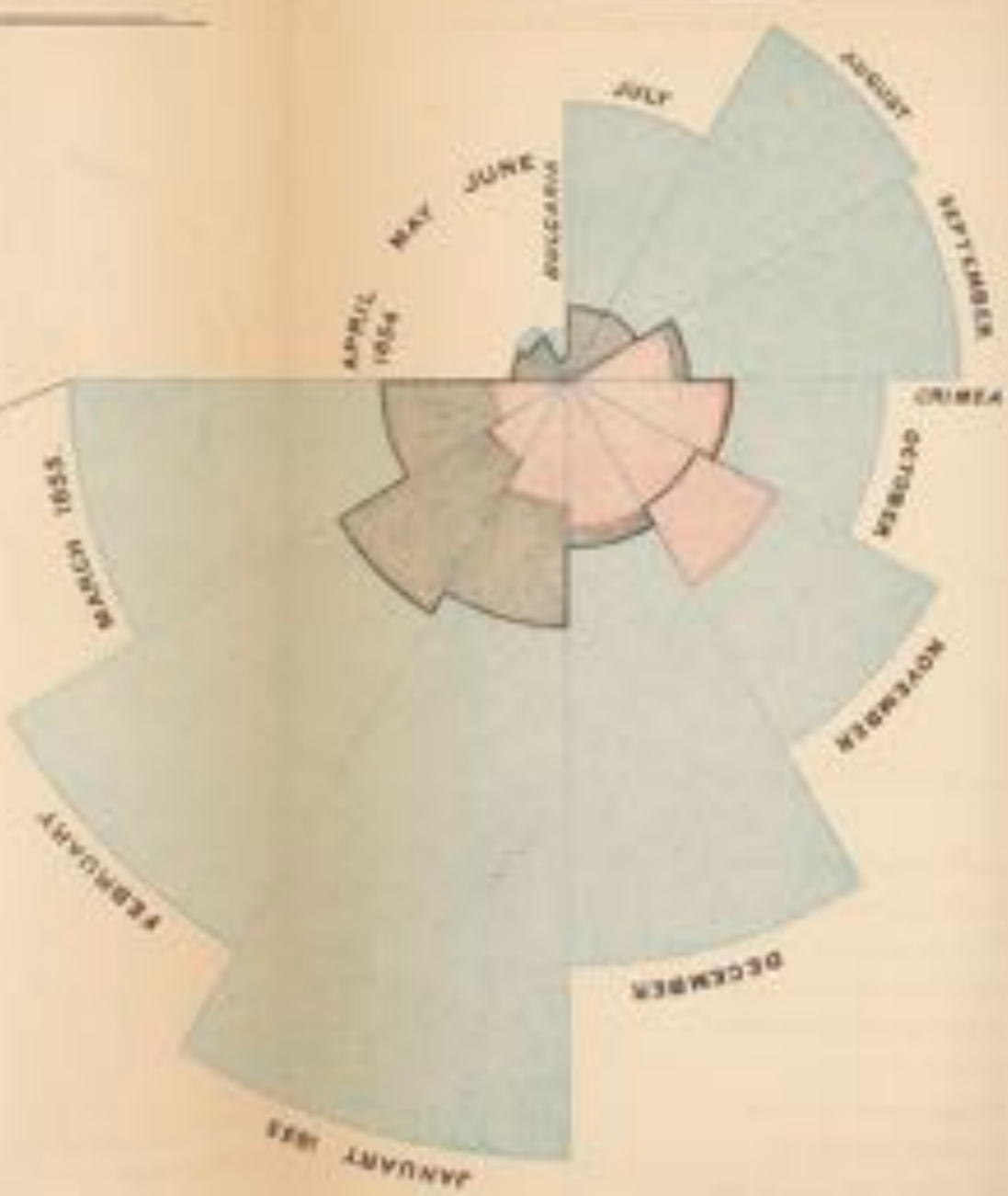
* The whole of General Sir W. Codrington's admirable Evidence, in the Report of the Crimean Commissioners, will corroborate the above, in essential features.

DIAGRAM OF THE CAUSES OF MORTALITY
IN THE ARMY IN THE EAST.

2.
APRIL 1855 to MARCH 1856



1.
APRIL 1854 to MARCH 1855



The Areas of the blue, red, & black wedges are each measured from the centre as the common vertex.

The blue wedges measured from the centre of the circle represent area for area the deaths from Preventable or Mitigable Zymotic diseases, the red wedges measured from the centre the deaths from wounds, & the black wedges measured from the centre the deaths from all other causes.

The black line across the red triangle in Mar.ch 1854 marks the boundary of the deaths from all other causes during the month.

In October 1854, & April 1855, the black area, coincides with the red, in January & February 1855 the blue coincides with the black.

The entire areas may be compared by following the blue, the red, & the black lines enclosing them.

TABLE No. 2.

Table showing the Estimated Average Monthly Strength of the Army; and the Deaths and Annual Rate of Mortality per 1,000 in each month, from April 1854 to March 1856 (inclusive), in the Hospitals of the Army in the East.

Comparison between Deaths from Wounds and Zymotic Deaths, in an Army in time of War.

		Estimated Average Monthly Strength of the Army.	Deaths.			Annual rate of Mortality per 1000.		
			Zymotic Diseases.	Wounds and Injuries.	All other Causes.	Zymotic Diseases.	Wounds and Injuries.	All other Causes.
1854.	April ..	8,571	1	..	5	1·4	..	7·0
	May ..	23,333	12	..	9	6·2	..	4·6
	June ..	28,533	11	..	6	4·7	..	2·5
	July ..	28,722	350	..	23	146·0	..	9·6
	August ..	30,246	938	1	30	328·5	·4	11·9
	September	30,290	788	61	70	312·2	22·1	27·7
	October ..	30,043	500	132	128	197·0	51·7	50·1
	November	29,736	844	287	106	340·6	115·8	42·8
	December	32,779	1,735	114	131	631·5	41·7	48·0
1855.	January ..	32,393	2,761	85	324	1022·3	30·7	120·0
	February	30,939	2,120	42	261	822·8	16·3	140·1
	March ..	30,107	1,305	32	172	485·3	12·8	68·6
	April ..	32,252	477	48	32	177·5	17·9	21·2
	May ..	35,473	508	49	37	171·8	16·6	12·5
	June ..	38,803	802	209	31	247·6	64·5	9·6
	July ..	42,647	382	124	33	107·5	37·7	9·3
	August ..	44,634	483	164	25	129·9	44·1	6·7
	September	47,751	189	276	20	47·5	69·4	5·0
	October ..	46,852	128	53	18	32·8	13·6	4·6
	November	37,853	178	33	32	56·4	10·5	10·1
	December	43,217	91	18	28	25·3	5·0	7·8
1856.	January ..	44,212	42	2	48	11·4	·5	13·0
	February	43,485	24	..	19	6·6	..	5·2
	March ..	46,140	15	..	35	3·9	..	9·1

The Deaths under the head of "Wounds and Injuries" comprise the following Causes:—Luxatio, Sub-Luxatio, Vulnus Sclopitorum, Vulnus Incisum, Contusio, Fractura, Ambustio, and Concussio-Cerebri.

In eight Regiments, viz., the 46th, 95th, 63rd, 33rd, 23rd, 50th, 28th, and 44th, the mortality from disease alone, in seven months, was 73 per cent.; a fact unparalleled in English history, except in the short Burmese war of 1826. Walcheren, so often referred to, gives only the

statistic of 10½ per cent. from disease in seven months, and the Peninsula 12 per cent. in a year.

The 46th presents the apparent anomaly of losing more than its average strength.

That part of the Infantry, actually engaged in the siege throughout these seven months, lost 45 per cent. from disease alone, in these seven months.

The average of the whole force gives a mortality of 39 per cent., including the Highland Brigade, never employed in the trenches, but encamped near Balaclava, the average loss in which was only 24 per cent.; the Cavalry, partially dismounted and therefore not performing picket duty, which therefore lost only 15 per cent.; four Regiments arriving about Christmas, which were sent immediately to the front, and lost 27 per cent.; and four Regiments arriving in January, and remaining three weeks without taking any part of the duty in the front, which lost only 7 per cent.

The Naval Brigade shews the astonishing difference in per centage of mortality from disease of 3½ per cent. instead of 73 per cent. for the eight Regiments above specified.

The mortality from disease among Military Officers, who suffered in action a loss greater in proportion than the men, was about 6 per cent. only, including the deaths from wounds at Scutari, which are not included among the men.

Account of Soldiers' Day, when employed in the Trenches.

The account of one day of a soldier's life in the trenches during the winter of 1854—55 will remove any surprise which the above statistics may have created.

Mustered with great coat and blanket, half an hour before dusk, the soldier marched, through the mud, into the trenches, which, owing to the nature of the ground,

were full of deep holes, out of which the boulders had been dug, filled with water, into which he could not but fall in the darkness: he took his seat with his back to the bank, in a cramped position, to allow of others passing before him along the bottom of the trench, only four feet wide. There he remained, if no alarm occurred, whatever the weather might be, till morning, when he was relieved and arrived again at his quarters.

In the early part of the winter, he was thus on duty in the trenches two nights out of three; later, one night out of two; but the average of duty was, till the termination of the winter, excessive. The 46th Regiment actually served in the trenches six nights out of seven, then ceasing to be able to furnish parties for trench-duties.

The soldier, on his return, had to collect fuel to roast his green coffee, without tools, although the chief part of the fuel consisted of roots. He next ground his coffee between a fragment of shell and a stone, and then boiled it for use. But the majority of the men were too much exhausted to go through this process. They breakfasted on their rum and biscuit, and then lay down on the muddy ground of the tent, without other covering, either above or below, but the great coat and blanket, brought wet from the trenches. In the afternoon, the soldier might be ordered to go from five to seven miles, on fatigue duty, to Balaclava, to fetch the rations of his regiment. On his return, he had again to gather fuel, to boil the salt rations in the mess cans, which did not hold water enough to abstract the salt. A portion only of the salt beef was, therefore, consumed, and it became the duty, every week, of the Quarter Master General's Department to bury what was thrown away, to the amount of hundreds of lbs. per regiment. The salt pork, issued two days out of the seven, containing less salt, was eaten often wholly or partially

raw. Towards dusk, the soldier was either marched again to the trenches or retired to his tent, if not on sentry or picket duty.

He had on either a shirt, which he had worn for six weeks, with swarms of vermin on his person and hair, or was without linen altogether. His kit having been left on board, by order, when he landed at Old Fort, was in very few cases recovered, and that after a period of from six to ten weeks.

He wore, during the winter, a single pair of laced boots, which, being wet through, he was afraid to unlace, lest the heat of the tent should dry them, so that they could not be put on again. Thus, even when asked by the Regimental Surgeon, he denied that he felt numbness in his feet, lest he should be ordered to unlace his boots.

(The French soldier, with his shoes and gaiters, and the sailor with his shoes, obtained warmth to his feet.)

What was done with him when Sick.

A man who has reported himself fit for duty, over night, has not unfrequently been carried back sick by his comrades from trenches in the morning, and has died on his way or a few hours afterwards, so little inclination was there to shirk duty. This does not refer to cases of cholera, which are essentially sudden.

The soldier, if reported sick, was removed from his own tent to the Hospital tent, in most instances precisely similar, for very few Hospital Marquees had been brought to the front. Here the men lay, often in the mud, generally with only salt provisions and biscuit, sometimes without medicine or medical comforts, and with so little room that the Medical Officer could hardly pass between the patients. The Medical Officer, unable thus often to procure medical comforts, medicine, or marquees, sent down his patient, as the most humane means of dealing with him, on a mule or cavalry horse, sometimes led and sometimes not, through

the rain and storm, to Balaclava. Both deaths and frost-bite occasionally occurred on the way, and falls were necessarily frequent. On arriving at Balaclava (the small General Hospital there, formed out of the school-house, containing only 300—400) the large majority of the sick and wounded were laid upon the beach for several hours, foul or fair, awaiting their turn of distribution into transports. (The "Sick Ships" were not organised before January 1855.)

During the voyage the sick man may have been on the decks, in a hammock, or in a bunk. He seldom received anything but water, or tea and biscuit, for the first twelve hours, at least until after the organization of the Sick Ships.

He was detained, previous to sailing from the Crimea, and after arriving in the Bosphorus, on board ship for a period greatly exceeding (as an average) the length of the voyage, which was from 36—60 hours.

On landing, he was carried, if unable to walk, up to the Hospitals, suffering a still further delay, sometimes of hours, the final order for his reception into a particular Hospital or ward not having been issued.

Unfailing endurance of the Men under hardships.

The universal impression is, nevertheless, that, among the men, there never was heard a murmur, and that, from first to last, they continued as eager "to get into Sevastopol" and "to go back to their comrades," as if they never had suffered.

Even when in Hospital, they were never heard to refer to past hardships, otherwise than as a simple matter of necessity "in war-time." *

* On those who saw the simple courage, the enduring patience, the good sense, the strength to suffer without words, of this handful of men defending the position, like the Greeks at Thermopylæ, who drew their blankets over their heads and died without a word, like the Greeks of old, it has made an impression never to be forgotten. Their devotion to one another, when coming to report themselves sick, for fear of throwing more labour

After this short account of a soldier's day, in the first winter of the Campaign, the following statistics of the Sickness and Mortality of the Army, month by month, during the whole Campaign, will be in no way unaccountable. It will be observed that, in January 1855, the Annual Rate of Mortality per 1,000 was 1,174: a higher rate than that which prevailed during the month (September) when the mortality was highest in the year of the Great Plague, 1665.

Deaths and Admissions in the British Army in the East.

Deaths and Admissions into Hospital in the British Army in the East:

1854.	Deaths in Hospital, including Crimea, Scutari, Transports.	Deaths to Force per 1,000 per Annum.	Admissions into Hospital (Primary) to Strength per 1,000 per Annum.
April	6	8·4	168
May	21	10·8	1,224
June	17	7·2	1,116
July	382	150·6	2,160
August	859	340·8	3,384
September ..	939	372	2,676
October.. ..	763	298·8	2,832
November ..	1,237	499·2	3,336
December ..	1,970	721·2	3,888
1855.			
January ..	3,168	1,174·6	4,176
February ..	2,523	*979·2	2,760
March	1,409	561·6	2,316
April	582	223·2	1,716
May	594	202·8	1,044

on their comrades, has made a still deeper impression. There is scarcely any example in history to compare with it. More will be said of this hereafter. But surely the blood of such men calls to us from the ground not for vengeance, but for mercy on their survivors!

* The health of the Army before Sevastopol was then improving. But this enormous per-centage was kept up by the bad state of the Scutari Hospitals, which was growing worse.

DIAGRAMS OF THE MORTALITY IN THE ARMY IN THE EAST.

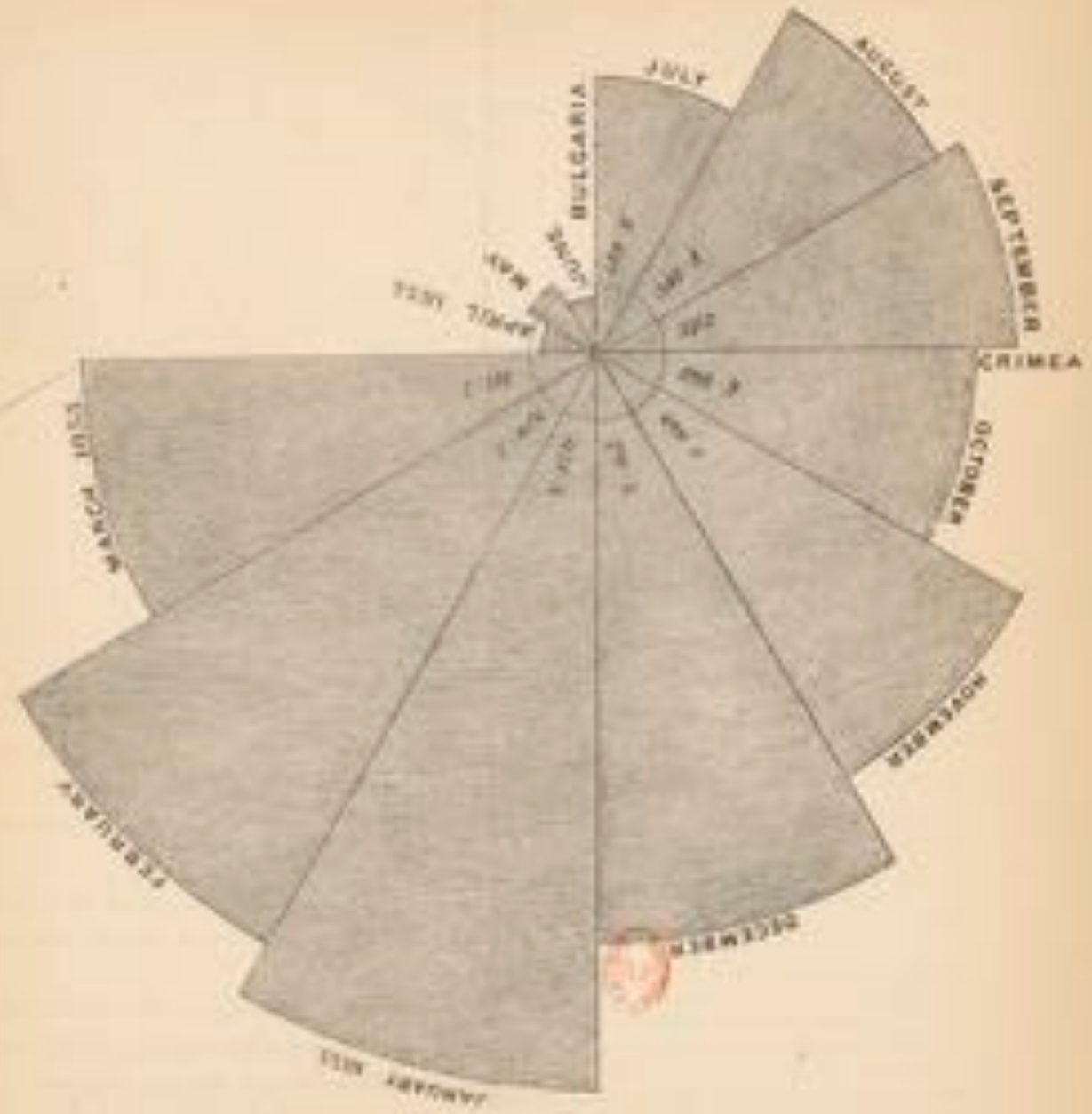
2.

APRIL 1855 to MARCH 1856



1.

APRIL 1854 to MARCH 1855



The dotted circle represents what the Mortality would have been had the Army been as healthy as Manchester - 17·4 per 1000 per Annum.
The Area of each Monthly diagram exhibits the relative Mortality in the Army during the Month.
Each wedge admits of Comparison, area for Area, with every other wedge, and with the Manchester Circle, and each wedge shows the Mortality per 1000 per Annum for the Month.
The dark Area outside the Manchester Circle exhibits the excess of Mortality in the Army for the same year over that of one of the most unhealthy Towns in England.
The figures show the Mortality per 1000 per Annum.

Deaths and Admissions—*continued.*

	Deaths in Hospital, including Crimea, Scutari, Transports.	Deaths to Force, per 1,000 per Annum.	Admissions into Hospital (Primary) to Strength per 1,000 per Annum.
June	1,042	318	3,396
July	349	152·4	2,832
August	672	181·2	2,760
September ..	185	121·2	2,004
October.. ..	190	49·2	1,380
November ..	243	*52·8	1,176
December ..	137	32·4	1,332
1856.†			
January ..	92	21·6	1,116
February ..	43	9·6	924
March	50	10·6	972
April	41	8·4	840
May	29	7·2	720
June	6	2·4	432

* If it be asked how it was that the Mortality in November 1855, being 53 per 1,000, should still be so high, it may be answered there were causes enough.

1. With regard to the Crimea, the whole Army was not hutted till the end of January 1856: half, at least, was still unhutted in December 1855.

And the whole of the excess of Mortality in November was produced by Cholera, arising from the men being crowded together in the old huts (unventilated), from the dampness of the ground, and from the ground being used up, which it soon becomes with a careless army.

2. With regard to Scutari, it was the month of the fatal outbreak of cholera, which began with the German Legion; these troops are not, however, of course, included.

310 out of the Total Deaths, 243, in November 1855 were produced by Cholera.

It might be important to bring out yet more strongly the difference between the cause of the Mortality in the winter of 1854-55, which was chiefly bad food and bad clothing, and that of the summer of 1855, which was neglect of Sanitary measures.

† The total Admissions into Hospital, during the last six months of the occupation, from January to June, 1856, were 21,655, and the Deaths 261, being at the rate of 24 Deaths per 1,000 Admissions per annum. The

Contrast offered by the Navy.

The Naval Brigade, in which the mortality from disease shows so remarkable a difference as that above referred to, were placed under the following circumstances, largely differing from those of the troops.

They obtained far better shelter than the common bell-tent, by burrowing into the sides of the hill, by keeping sheltered ground, by erecting loose stone walls, by covering themselves in with tarpaulin, slate, board, and portions of condemned sails, by making tubular chimneys of pierced canister, &c.

They formed boilers of the empty powder-cans, about two feet cube, with a large orifice on the top, which are used for the great guns. They were served with fuel, chiefly from the ships. Their water was near; indeed, their Commander sunk a well, with well-sinkers obtained from the army.

As a corps attached to the army, they obtained issues of certain necessaries, on application of their active Commanders, irrespective of the long-established forms for issues to the troops.

In the morning, coffee or cocoa was prepared for a sailor, as it would have been on board ship. In the evening, hot soup was served out to him, on his return from the trenches, made for him from salt meat with ample time to soak out the salt, by processes used on board ship or from ox-heads, which, if not thrown away at the neighbouring Commissariat Divisional Slaughter-house, were at least not issued to the troops.

The sailor, having theoretically the same advantages as the soldier, as to extra issues, having his own warm clothing, and the purser's stores at hand, enjoyed a still greater

Deaths to Strength in the Household Troops at home are 24 per 1,000 per annum, according to the calculation given in the Sanitary Section including Invalids.

benefit in the care with which his officers exacted that his wet clothes should be taken from him on his return from the trenches, and dried in a hut at a stove prepared for the purpose; that he should have a pair of dry blankets ready to receive him, and a change of shoes and stockings, till he went on duty again. Oranges were also served out, in pursuance of the custom of the Navy, which classifies acids as additional rations, and not as medical comforts, issuable on the Surgeon's order.

An exception to the above statement is to be made, however, with regard to that small portion of the Naval Brigade, separated and brigaded with the Light Division, which suffered in like manner, being under like circumstances.

Illustration of the imperfect Nomenclature of Disease.

The importance of using a more elaborate and specific nomenclature of disease is shown, from the consideration that the "Febris c. c." (Common Continuous Fever) of the British Military Hospital, a term including Typhus, Typhoid Fever, Relapsing Fever, and Febricula, indicates neither the origin of the disease nor the kind of treatment, inasmuch as it is made to include every kind of fever, together with drunkenness. We want a new heading, "Drunken Fever," to separate these casualties from fevers arising from other causes. All apoplexies, almost without exception, in our Army might be styled "Drunken Apoplexy." A formal posting of the drunken statistics might exercise a salutary influence. In the proposed zoology of Dr. Farr, we find the disease termed "Alcoholismus," which includes "Delirium Tremens." This last is made to appear in Army Statistics under "Diseases of the Brain." But the terms which are used, *e.g.*, in the Sardinian army, and copied from our own Civil Registrar-General's Office (with the addition of

some diseases, incidental to camps), do indicate both the origin of the disease and the mode of cure, and the mode of prevention. General La Marmora was visited, in consequence of a request from home, by one of our Sanitary Commissioners, who was able to discover, from private returns, the absence of vegetable food, or the peculiarities of the encampment, as the remediable cause of the disease.

Another example of want of definition, still stronger than that of Febris c. c., which includes tipsy head-ache, is the heading "All other Diseases," which has been seen to occupy fifty per cent. of a given Register. This is "Hamlet," with half of the "part of Hamlet left out."

If classification means assigning a place to each object, this is not classification.

Necessity of a Statistical Department for the Army in general. Col. Tulloch's Materials.

It is essentially necessary that we should have an Army Statistical Department.

Hitherto all that has been done for the Army in this way has been done by the able Colonel Sir Alexander Tulloch, at first as a labor of love.

From him should now be obtained,

1. A summary of the results of all his statistical enquiries into the mortality and diseases of the Army.

2. A comparison between the mortality of

(*a.*) Officers,

(*b.*) Privates and Non-commissioned Officers, at the several ages specified in his reports,

(*c.*) Distinguishing Cavalry and Infantry,

(*d.*) Distinguishing results in

England and Wales,
Scotland,
Ireland,
Foreign or Colonial Stations.

3. Taking each Station, as

West Coast of Africa,
West Indian Islands,
East Indies,
Mediterranean, &c.,

a statement of

(a.) What the mortality of the Army is collectively, at each of such Stations,

(b.) What the mortality of the Native population and of the Troops at corresponding ages, where this is known.

Now, is it not a fact that the mortality of the British Soldier exceeds the mortality of the Civil population in many of those Stations abroad?

Looking at home, and comparing the mortality of the Soldier, year by year, in ordinary times and in epidemic years, with the mortality of the Civil population, is not the mortality of the Soldier excessive?

To what extent, we ought now to know, is the mortality of the Army excessive? How many in the 1,000 perish annually in excess of the mortality experienced amongst healthy classes of the community?

It has been attempted, in the preceding Section, to give as accurate though short and imperfect answer to this.

The mortality of the general population, as has there been shown, embraces the mortality of vagrants, of nearly 1,000,000 paupers (*vide* Poor Law Returns) and of all the weakest and worst people in the country, as well as the healthy and vigorous. If such classes as the former were excluded, would not the mortality of the residue be greatly below the general average?

Now, in the Army, is there not a double selection constantly at work having a direct tendency to reduce the per-centage of mortality?

The tests of health which the recruit has to undergo, before he can become a soldier, exclude all laboring under actual disease, such as consumption, and some of those predisposed to disease.

Again, if a soldier becomes consumptive, he is discharged or pensioned, in many cases, before he is cured or dead.

Now, what is the annual rate of mortality per 1,000 among soldiers so discharged or pensioned, during the months after discharge,

0—3
3—6
6—9
9—12?

It is to be feared that this is very high, from the imperfect data given at p. 259, Sanitary Section. Now, if the strength of the invalided, one year after discharge from the army at home, and the deaths among them, were added to the strength and deaths of the Army from which they are drawn, would not the mortality be raised considerably higher, as has been shown for five years, 1849—53, in the same Sanitary Notes?

What kinds of diseases are, then, so fatal to the Guards, the Infantry, and the Cavalry at home?

If it is consumption, is not consumption the effect of bad ventilation chiefly? If it is fever, is not fever always preventible?

What are the causes to which the bad Sanitary state of the Army is attributable? and how should these causes be combated?

At home, the Line suffers twice as much from Consumption as men in Civil life, at the same ages. It suffers more than twice as much from Zymotic disease. Now,

there is no *à priori* reason for this. The mere statement of it would excite inquiry into its causes and their remedies, if generally made known.

Comparison of the Mortality of the Line with that of the Civil Population.

Annual Rate of Mortality, per 1,000 living *from All Causes, Zymotic Diseases, Chest and Tubercular Diseases*, and *other Causes*, amongst the *English Male Population* (1848–54), and amongst the *Infantry of the Line*, serving at Home, (1837–46).

Causes of Death.	Annual Rate of Mortality per 1,000 living.	
	Males aged 15 to 45 in England and Wales during the seven years 1848–54.	Infantry of the Line, serving at Home, during the ten years 1837–46.
All Causes	9·7	16·7
Zymotic Diseases	1·9	4·9
Chest and Tubercular Diseases	4·5	9·2
Other Causes	3·3	2·6

The Deaths in England and Wales (1848–54) are taken from the Registrar General's 18th Annual Report, p. 156; and the Deaths in the Infantry of the Line, from Colonel Tulloch's Report of 1855, p. 62.

Now, recurring to the latest date of Colonel Sir A. Tulloch's valuable Reports, which is, we believe, 1853, and the last date in which, referred to, is 1846,—recurring to the non-arrangement for their regular publication, we would ask, is there *any annual* medical and sanitary report whatever published, containing summaries and analyses of the reports of the Medical Officers of the Army?

Why cannot what is done with apparent ease for Civilians, be done for

If the causes of death among 2,000,000 people in London can be printed *weekly*, on the Tuesday following the week, and if the births and deaths for the whole of England and Wales can be printed *quarterly*, within a

Soldiers, in whose case the facilities of Registration are so much greater?

month of the end of every quarter, could not classified returns of the attacks of sickness, and of the mortality of the Army be published periodically, with equal punctuality?

Does not the organization of the Army offer the greatest facilities known for statistical registration?

Could not the *mean strength* of each regiment be determined by monthly musters? Could not the *mean number of sick* from fever, consumption, and other causes be determined by the same method?

Were the *strength* thus determined compared with the *deaths* by the various causes, and with the *attacks of sickness*, a complete view would thus be obtained of the main results of the sanitary or fatal influences to which the regiment had been exposed.

If these results could be collected for *one* regiment, they could be collected for *every* regiment. This follows necessarily from the Army organization.

The practical utility of such information would be greatly increased by its embracing the whole Army, and above all, by its being collected and analysed immediately, the object being for the Secretary of State for the War Department to be able to see the movements of the health of the Army, as clearly as the movements of time on the face of a clock.

The great utility of partial returns, published many years after the events have happened, after the men to which they relate are dead or have been discharged, has been shewn by Sir A. Tulloch's Blue Books. Would not complete returns of the whole facts for every portion of the Army be still more useful than these partial returns?

Would not recent information, punctually supplied, be practically of greater use than the retarded, almost posthumous returns which have hitherto been published in England?

The difference in the efficiency of a healthy and an unhealthy Army has been practically illustrated in the most terrible manner by our late Crimean campaign; where more than half the Infantry was sick in Hospital at once, part of the remaining half was told off to attend upon them, and the remainder only was capable of trench and fatigue duty, and of keeping the position.

It is unquestionable,—and our experience of the way in which, in Civil life, mortality can be, and has been, reduced, need hardly be referred to,—it is unquestionable that the mortality and sickness of the Army in peace may be reduced to one-half, at most, of its present excessive amount. It is a thing beyond all doubt to be done. The degree to which this would affect our system of recruiting, our system of pensioning, the well-being of our men can scarcely be calculated.

One question remains; Are Vital Statistics made a branch of Medical education? Are the Medical Officers examined on this subject? To what extent have published works of Army Medical Officers assisted Sir A. Tulloch in his Statistical researches?

Twenty years hence it will scarcely be credited that a time has been, so late as the year 1857, when there was nothing analogous to our Civil General Register Office in Military organization.

Main end of Statistics.

The main end of Statistics should not be to inform the Government as to how many men have died, but to enable immediate steps to be taken to prevent the extension of disease and mortality.

It is therefore of paramount importance to have special reporting for special occasions: *e. g.*, the Yellow Fever breaks out in consequence of the locality or overcrowding of a Barrack, or Dysentery in consequence of monotony of diet.

If the Government had known, week by week, that Scorbutus was ravaging the Army in the Crimea, the very first appearance of the disease in the weekly states, with a reason why the disease had appeared at all, would have led the Government immediately to have sought for the requisite supplies to arrest it.

If the Medical Officer waits till the time of reporting comes round, all that is accomplished is that the Government know that they have lost a certain number of hundreds of men in a way which might have been prevented.

In France, in the event of an epidemic breaking out in any part of the Army, the facts are noted, day by day, to the "Conseil de Santé," at Paris, who notify them, day by day, to the Minister of War.

It is therefore to be concluded, from the above considerations, that

1. Whatever Statistical system be adopted should be uniform; and in every case where there is likely to be any doubt as to the precise meaning of a nosological term, it ought to be defined.

2. Whatever period is laid down for sending in the Statistical Reports, these periods should be departed from at the first appearance of any epidemic in the Army. And the progress of the disease, with its *causes*, the means adopted to arrest it, and the success of these means, should be reported, day by day, to the War Department, wherever practicable.

3. An Officer should be attached to the Army Medical Department, with suitable assistance, to enable him to make up the Army Statistics with due accuracy.*

4. There being already an authorized and official form of registration for the Mortality in Great Britain, it is is the highest degree important that the form used in the Army should be the same.

5. The Registration of Disease and Mortality would come under the Statistical Department of the Army Medical Department, for all medical and sanitary purposes; while the mortality might be very well transmitted to the Registrar General's Office, and published quarterly.†

6. The forms required for such a system of Army Medical Statistics as are here proposed, are

1. Weekly Regimental State,‡ shewing Strength:

1. Zymotic Diseases under their various heads.

2. Mortality from these.

3. More prominent Diseases of other classes and mortality from these.

4. All other Diseases.

5. Total Admissions during the week.

6. Total Deaths during the week.

7. Per-centage of Admissions from Zymotic Disease to Total Admissions.

8. Per-centage of Deaths from Zymotic Disease to Total Deaths from Disease.

* One Form, made up at home, should be the same as the Registrar-General's Form.

† It appears to follow, from the proposal to transfer the Statistics of Death from the War Department to the Registrar-General's Department, that the same form of Registration should be used.

‡ The Regimental Medical Statistics should be kept on the same Form as that used by the Registrar-General of England.

9. Admissions and Deaths from Wounds.

[This Return to shew the *causes* of Zymotic Disease and Mortality in connection with 1 and 2.]

II. Return, as already proposed, to be made up by the Principal Medical Officer, and sent home, week by week, to the War Department, and also to the Commanding Officer.

APPENDIX I

TO

SECTION XI.

Actual and Proposed Forms for Medical Statistics in the Army.

Medical Statistics should always be drawn so as to indicate the Causation of Disease.

It need hardly be stated that a correct set of Statistics is the basis of all Army hygiene.

Therefore, whatever forms are adopted should have reference not only to numerical data, but to causation.

1. Preventible disease, and especially the whole zymotic class, should be clearly distinguished from other types.

2. We should have an account of all zymotic cases, whence they arise, their nature and causation in

Climates,
Soils,
Defective drainage,
Marshes,
Position of Stations or Garrisons,
Diet,
Duties,
Water,
Barracks, tents, &c.
State of Hospitals,
Ventilation of Barracks and Hospitals,
Overcrowding,
Temperature,
Intemperance.

Every local or personal cause should therefore enter as an

element into the returns, and by due classification of these afterwards, the Government would be kept fully informed, not only of the health of the Army, but of all the conditions influencing it at a particular time and place, as well as of the care with which the Medical and Commanding Officers look after the men.

The weekly State—the weekly State sent to the Commander of the Forces—the weekly State transmitted, as it ought to be regularly, to the Army Medical Department at home, should be so framed as to group together all zymotic and mitigable diseases, in order that, at a glance, the Government at home should be able to tell, to what extent sanitary measures are requisite and to what extent they have been neglected. Any general summary of army disease and mortality should be drawn up on the same principles. All our existing weekly forms and summaries are practically useless, except for simple numerical purposes. Her Majesty's Ministers want to know, in fact, what they are to do to preserve the numerical efficiency of the force, rather than what the force has suffered from sickness and death.

Present form of Classification of Diseases.

The classification annexed below, which is that at present in use, is of scarcely any value as pointing out the *causes* from which our mortality springs: almost as well might the word witchcraft be assigned as a cause.

Fevers
Eruptive Fevers
Diseases of the Lungs
" " Liver
" " Stomach and Bowels
Epidemic Cholera
Diseases of the Brain
Dropsies
Rheumatic Affections
Venereal "
Abscesses and Ulcers
Wounds and Injuries
Corporal Punishment
Diseases of the Eyes
" " Skin
All other Diseases.

Compare with this the following proposed Details for Regimental, Divisional, or Army Weekly Medical State, and for any general summary to be used for immediate practical purposes. Proposed Form.

Week ending

Strength: Officers, Men.

Fevers: Intermittent
" Remittent
" Yellow
" Continued
" Typhoid
" Typhus
" Plague
" Eruptive (Small Pox, Varioloid, Chicken Pox, Miliaria, Scarlet Fever, Measles, Quinsy, Diphtheria)

Erysipelas
Erythema
Pyæmia
Hospital Gangrene
Cholera
Diarrhœa
Dysentery: Acute
" Chronic
" with Liver disease

Scorbutus
Ophthalmia
Scrofula
Phthisis pulmonalis
Catarrh
Influenza
Intemperance
Rheumatism
Carbuncle
Furunculus
Syphilis
Gonorrhœa
Sunstroke
Frost-bite
Foot Inflammation

Wounds and Injuries
Other Diseases of Brain
" " of Chest
" " of Abdomen
" " of Eye
Diseases of Liver
" of Skin
Abscesses and Ulcers
Corporal Punishment

Miscellaneous or unclassified diseases

This form is merely given as a rough illustration of what is here meant. As an equally rough explanation of the suggestion,

it may be stated that the name "Intermittent Fever," conveys the idea, as to its causation, of marshy ground in low temperatures; "Remittent," of marshy ground in high temperatures.

The names of some of the Fevers suggest defective drainage as a cause; but over-crowding, where all other conditions were good in a Crimean hut, would produce Continued Fever; a little more would produce Typhoid Fever; and a little more Typhus. The three Dysenteries have frequently dietetic causes. Phthisis is again mainly owing to over-crowding and bad ventilation.

Were the Sanitary element represented, as it ought to be, in the Army Medical Department, a form like this would immediately suggest causes, to be enquired into, as producing the kind of mortality indicated as predominant at the respective Stations. It is not often, it may be as well to say, that any one cause is to be found operating alone, in *separate* action, as might sometimes be seen in the Crimea.

Considerations for the Construction of a Sanitary Nomenclature of Disease.

The following considerations are suggested as those on which such a Sanitary nomenclature, as is here indicated, might be founded.

1. Nosological arrangements have generally been based on some scientific ground.—Fevers have been classed together; also Cachectic diseases, and constitutional diseases generally, as indicating some common origin or a common constitutional defect.

Again, Diseases of Cavities (head, chest, abdomen) have been classified together, mainly for pathological purposes.

2. Why should there not be an arrangement of diseases according to their *causes*, and with a special view to the removal of such causes, and the prevention of such disease? Why should the attention of the Medical man be always directed to what disease has caused, and not to what has caused the disease; to what it *has done*, and not to its prevention? A Sanitary nomenclature is thus of importance. It recognizes preventible causation.

3. In the present state of Sanitary knowledge, it would be impossible to arrange all known diseases according to their causation; but many of the most important may be so grouped, and experience will, in time, add greatly to the numbers.

For example, we have diseases of Malarial origin, such as intermittent and remittent fevers,—

Diseases from animal exhalations, such as plague, typhus, continued fevers,—

Diseases proceeding partly from the one, partly from the other class of causes, such as cholera, diarrhœa, dysentery,—

Diseases arising from bad food, such as scorbutus, and other blood diseases,—

Diseases, in which several causes co-operate, as, for example, in phthisis, which arises from foul air, want of exercise bad food—in ophthalmia, where foul air alternates with dryness, light, dust, &c.

4. Speaking generally, the whole Zymotic class may be considered mitigable and several of its divisions of disease preventible.

It would be a great means of directing the attention of Medical Officers to the causation, if, in all cases of prevailing Zymotic disease, they were required to state distinctly the cause. If two or three consecutive cases of any such disease happened to appear in a regiment, the cause should be at once searched for, reported, and removed.

5. It would be unsafe at present to lay down *precisely* the diseases and their causes;—the one as being an invariable consequence of the other; because disease is the result of the operation of many causes, and perhaps the *determining* cause is one, which, by itself, and, in the absence of others, would produce no effect. It may be the last straw which breaks the camel's back. It will be enough at present to indicate the importance of the matter.

Classification of Diseases of Crimean Army, according to that of Dr. Farr.

The Diseases of the Crimean Army, which caused the Deaths enumerated at pp. 320, 321, are given here, re-classed, according to the Registrar-General's nomenclature.

GENERAL RETURN showing the Primary Admissions into the Hospitals of the Army in the East, from the 10th April, 1854, to the 30th June, 1856; also the Deaths from Primary as well as Secondary Admissions, together with those occurring on board Transports, conveying Sick and Wounded, during the same period.—Arranged according to the Classification of Causes of Death proposed by Dr. Farr, in the 16th Annual Report of the Registrar-General, pp. 82–86.

Class.	Causes of Death.	Admissions.	Deaths.
	ALL CAUSES	162,123	18,057
	Specified Causes	161,497	17,712

Class.	Causes of Death.	Admissions.	Deaths.
	Diseases.		
I	Zymotic	116,631	14,507
II	Constitutional	823	214
III	Local	25,043	648
IV	Developmental	214	59
V	Violent	22,561	2,374
	(Orders)		
I	1. Miasmatic	168,577	14,503
	2. Esthetic	3,743	4
	3. Dietetic (included in Order 1)	—	—
	4. Parasitic	336	4
II	1. Diathetic	459	91
	2. Tubercular	370	129
III	Diseases of the—		
	1. Nervous System	4,053	137
	2. Organs of Circulation	263	41
	3. Respiratory Organs	2,667	201
	4. Digestive Organs	4,592	44
	5. Urinary Organs	239	1
	6. Organs of Generation	—	—
	7. Organs of Locomotion	129	1
	8. Integumentary System	13,162	33
IV	1—3. Not occurring in the Army	—	—
	4. Diseases of Nutrition	214	13
V	1. Accident	2,484	221
	2. Battle	18,283	1,705
	3. Homicide	—	—
	4. Suicide	20	9
	5. Punishment and Execution	3,774	1
	Causes not specified	826	16
I	Order 1.		
	Small pox	21	4
	Measles	5	2
	Scarlatina	3	3
	Quinsey	924	3
	Erysipelas	75	6
	Phlebitis	3	1
	Typhus (and continued) Fever	25,841	3,493
	Carbuncle	— *	—
	Influenza	9,506	16
	Dysentery	8,378	4,429
	Diarrhœa	44,164	2,355
	Cholera	6,970	4,021
	Ague	2,456	6
	Remittent Fever	2,957	23
	Rheumatism (acute and chronic)	5,044	29

* No admissions or deaths were returned under this head.

Class.	Causes of Death.	Admissions.	Deaths.
	Order 2.		
	Syphilis	3,748	4
	Hydrophobia	—*	—*
	Order 3.		
	Privation	1*	1*
	Purpura and Scurvy (see above, under Dysentery)	2,050	178
	Alcoholism	—*	—*
	Delirium Tremens (includes only other cases not returned.)	281	44
	Order 4.		
	Scabies	257	0
	Worms	68	0
	Dyscrasiæ	1	0
II	Order 1.		
	Gout	—*	—*
	Dropsy	234	63
	Cancer et Tumores	62	1
	Mortification	79	20
	Cachexia	23	0
	Order 2.		
	Scrofula	10	3
	Phthisis	279	116
	Hydrocephalus	1	1
III	Order 1.		
	Cephalitis	11	7
	Apoplexy	87	70
	Paralysis	62	10
	Insanity (Dementia)	44	4
	Epilepsy	251	17
	Tetanus	10	3
	Cephalalgia	128	0
	Neuralgia	28	0
	Ophthalmitis	3,367	6
	Otitis	183	1
	Order 2.		
	Pericarditis	24	4
	Aneurism	9	8
	Heart Disease	127	59
	Varix	58	0
	Palpitatio	45	0
	Order 3.		
	Epistaxis	10	0
	Laryngitis	—*	—*
	Bronchitis	1,653	199

* No admissions or deaths were returned under this head.

Class.	Causes of Death.	Admissions.	Deaths.
	Order 3 (continued).		
	Pleurisy	264	23
	Pneumonia	590	161
	Asthma and Dyspnœa	55	1
	Other Lung Diseases	—	—
	Order 4.		
	Gastritis	29	3
	Enteritis	26	11
	Peritonitis	16	9
	Ascites	—*	—*
	Ulceration of Intestines	—*	—*
	Hernia	191	2
	Ileus et Constipatio	1,862	5
	Intussusception	1	1
	Stricture of Intestines	—*	—*
	Fistula	129	1
	Dyspepsia	966	3
	Hæmorrhois	358	0
	Hæmatemesis	15	4
	Singultus	1	0
	Pancreas	—*	—*
	Hepatitis	251	11
	Jaundice	878	22
	Other Liver Diseases	—*	—*
	Spleen Disease	9	1
	Order 5.		
	Nephritis (and Nephria)	26	2
	Ischuria	39	6
	Nephria (see above)	—	—
	Diabetes	8	1
	Stone	—*	—*
	Hæmaturia	1	0
	Cystitis	9	1
	Stricture of Urethra	159	2
	Hydrocele	15	0
	Varicocele	2	0
	Order 6. (Not applicable to the Army.)		
	Order 7.		
	Arthritis	87	8
	Ostitis and Periostitis	7	0
	Joint Disease	23	1
	Exostosis	2	0
	Necrosis, Caries, &c.	16	0
	Order 8.		
	Phlegmon	8,323	23
	Ulcer	4,696	11
	Skin Diseases	749	2

* No admissions or deaths were returned under this head.

Class.	Causes of Death.	Admissions.	Deaths.
IV	Orders 1—3. (Not applicable to the Army.)		
	Order 4. Atrophy and Debility	214	9
V	Order 1.		
	Gelatio (frostbite)	2,389	463
	Pernio (chilblain)	9	0
	Sunstroke	13	*
	Asphyxia	2	2
	Poisoning	6	0
	Other violent deaths.*	65	65
	Order 2. (It is not stated that all these wounds and injuries were incurred in fighting, but, these being no means of distinction, they have all been referred to this order.)		
	Luxatio	89	1
	Subluxatio	1,453	1
	Vulnus Sclopitorum	10,692	1,766
	„ Incisum	1,270	18
	Contusio	4,006	21
	Fractura	380	14
	Ambustio	399	0
	Concussio Cerebri	4	0
	Order 3.		
	Homicida	—‡	—‡
	Order 4.		
	Suicida†	29	20
	Order 5.		
	Executio	1§	1§
	Punishment	1,779	0
	Causes not specified	926	345

* These are not properly returned, but appear under the collective head of "Accidental, Sudden, Ebriettas, and Cold, &c."

† Unsuccessful attempts at suicide were, apparently, not recorded.

‡ No admissions or deaths were returned under this head.

§ This case was returned simply as hanging.

NOTE.—The names of certain Orders as well as those of certain specific Diseases are omitted, as not applicable to the Army.

Classification of Diseases of Infantry of Line serving at Home, according to that of Dr. Farr.

If this Classification of Causes of Death, as proposed by Dr. Farr, be adopted, then the classes of mortality from diseases most prevalent in the Infantry on Home Stations, as compared with the extent of the same types of disease in Civil life, at the same ages, may be shewn by the following Table.

The differences between this Table and that given at p. 327 will be explained by the two facts:—1. That the diseases are there classified according to the imperfect system of nomenclature in use. 2. That the deaths from accident and "unaccounted for" in the Infantry are there not given, which raise the mortality 1·1 per 1,000.

Deaths and Annual Rate of Mortality per 1,000, from all Causes, Zymotic Diseases, Chest and Tubercular Diseases, and all other Diseases amongst the English Male Population, aged 15-45 (1848-54) and amongst the Infantry of the Line serving at Home (1837-46).

Causes of Death	Deaths		Annual Rate of Mortality per 1,000 living	
	(Males aged 15 to 45, in England & Wales during the 7 Years 1848-54.	(Infantry of the Line (serving at Home) during the 10 Years 1837-46.	(Males aged 15—45, in England & Wales during the 7 Years 1848-54.	(Infantry of the Line (serving at Home) during the 10 Years 1837-46.
All Causes	283,167	2,865	9·8	17·9
Zymotic Diseases	56,347	459	2·0	4·7
Chest and Tubercular Diseases	110,753	1,632	4·5	10·3
All other Diseases (including Violent Deaths)	96,067	504	3·3	3·7
Males, aged 15—45, living in England and Wales, in the middle of 1851			4,130,331	
Aggregate Strength of Infantry of the Line (serving at Home) in 10 years 1837—46			160,588	

Note.—The Deaths in England and Wales (1848—54) are taken from the 18th Annual Report of the Registrar-General, p. 150, and the Population (1851) from the Census Report, Occupations, Vol. I, p. clxx. The

Deaths and aggregate strength of the Infantry of the Line (1837—46) are taken from Sir A. Tulloch's Report on the Health of the Army for 1858, p. 62 and p. 9. At p. 9, in addition to the 2,683 deaths from Disease (p. 62) are returned the particulars of 127 deaths by Violence, leaving, however, 55 deaths unaccounted for—2,683 + 127 + 55 make the above 2,865 deaths.

Bronchitis and Influenza have no place in the Army nomenclature. The "Chronic Catarrh" of the Army Returns is believed to be really "Phthisis" in the great majority of cases; "Acute Catarrh" comprehends, probably, both "Epidemic Catarrh" or Influenza, and Bronchitis. The 55 deaths from "Acute Catarrh" have been treated as Influenza and referred to Zymotic Diseases. The Deaths from Tubercular and Chest Diseases comprise Scrofula, 24 (including Apostema Lumbare, 10, Hydrarthrus, 1); Phthisis, 1,241; Hæmoptysis, 36; Chronic Catarrh, 135; Hydrocephalus, 2; Asthma, 2; Dyspnœa, 7; Pleurisy, 10; Pneumonia, 155. The Zymotic Diseases are, as far as the nomenclature allows, the same as those enumerated in the Registrar-General's 16th Annual Report, pp. 53-5 of the Appendix.

APPENDIX II.

TO

SECTION XI.

Sources of the Statistics used in the Section.

Sources of the Statistics.

I have carefully collated all the statistics from six different official sources.

Inaccuracies and Discrepancies.

The sick appear to have been sent from the front to Balaclava without any accurate account of their numbers—to have been put on board without any steps having been taken to keep a proper register. The number of deaths on board during the passage is reported different in each separate return. When the sick arrived at Scutari, there was, at first, no provision for registering them on landing, or when they were received into Hospital. And, even after death, the only trustworthy record of the fact was the Adjutant's Head Roll of Burials, which exceeded in six months by upwards of 500 the number reported in the Orderly Room as having died in the Hospitals. While, to complete the chain of defects, the return of total sick treated in Lord Raglan's Army, including in it all who were sick both in the Crimea and at Scutari, is used by the Director-General himself as the number treated at Scutari.

The Returns of Dead at Scutari from Oct. 1 to Dec. 31, 1854, vary as follows:—

1. Principal Medical Officer's.	2. Reported Deaths.	3. Burials.	4. Inspector-General's. Infantry alone.*
910	1,046	1,301	735

The sum of these three months has been taken, in order to cover any unavoidable discrepancies arising from Burials not taking place on the same day as the Deaths.† Yet the Return of Burials exceeds in three months that of Deaths reported in the Hospital Books by nearly 400.

Another reason for taking these three months was, in order to eliminate the unavoidable delays in reporting from Smyrna, where the British Army Hospital did not exist till the middle of February, and from Koulali, which was opened December 2.

* *Plus* one-ninth, roughly speaking, for Cavalry, Artillery, and Engineers, *vide* statement, p. xii, of the Mortality of these Arms at Scutari. These figures are quoted from Sir A. Tulloch.

† The burials generally took place within twenty-four hours of the deaths.

1854, but contained during that month a maximum only of 240 patients.

The result of my examination of these Statistics is simply this—that, however satisfactory they may be to the Departments who have put them forth, and however correct they may be, although exhibiting such palpable diversity,—still, to any one not in the secret as to how things which apparently differ so widely are nevertheless identically the same, they convey no trustworthy idea as to the sickness and mortality of the Army in the East—and that, for any practical purpose, they are, as put forth to the public, who are most interested in the matter, but approximations to the truth.

The results can only be regarded as approximations.

I will here put in four sets of returns.

Return No. I.

Deaths on board Sick Transports, between the Crimea and Scutari.

Name of Ship.*	Deaths according to		
	Cumming-Maxwell Return.	House of Commons Return.	Adjutant's Return.
Kangaroo	—	22	—
Dealar	22	10	20
Cambria	—	21	—
Valetta	18	10	25
Andes	15	4	—
Colombo	30	30	57
Arthur the Great	24	30	39
Orient	82 or 83	26	43
Caduceus	114	104	—
Courier	16	33	16
Cornwall	6	6	8
Negotiator	6	6	—
Lady McNaughten	3	3	3
Australia	8	3	12
Cambria	None	—	—
Edinuga	7	6	1
Palmerston	11	7	5
&c. &c. &c.			

In the Adjutant-General's Return from the Crimea, it will be seen that the total number of "deaths in the Infantry, from October 1, 1854, to May 1, 1855," "on board ship or elsewhere" (meaning not on the Bosphorus or in the Crimea) is 715.

Returns from the Medical Officer of each Corps serving in

* The above comparison is made, taking the first seventeen ships in order as their names stand in the return.

the Crimea, and from the Inspector-General of Hospitals at Scutari, show that, during the same period, the number of deaths in Cavalry, Artillery, and Royal Engineers, was, compared with those in the Infantry, thus,*

		Crimea.	Scutari.
Infantry	.. ..	4,963	4,052
Cavalry Artillery Engineers	..	378	470

in other words, the deaths of the Cavalry, Artillery, and Engineers were one-thirteenth of those of the Infantry in the Crimea, and rather more than one-ninth of those at Scutari. Now the mortality on board ship, including all arms of the service, is, according to

Cumming Maxwell Report. Sept. 15, 1854, to Feb. 11, 1855.	House of Commons Report. Same period.	Scutari Adjutant's Report. Same period.	Crimean Adjutant General's Report, Oct. 1, 1854, to† May 1, 1855.
922	915	888	715 + 5% of +

Return No. 11.

From Returns of Adjutant's Office at Scutari.—Recapitulation.

Months.	No. of Burials in each Month.	No. of Deaths reported in each Month.	Excess of Burials over Deaths in each Month.	Remarks.
Sept. 1854	165	78	87	317 of the 345 have been struck off the strength of the Genera Depôt, the other 28 wer men brought ashor either dead or (mostly with no marks to ascer tain their names o regiments.
Oct. „	266	219	47	
Nov. „	268	191	77	
Dec. „	667	536	131	
Jan. 1855	1,473	1,360	113	
Feb. „	1,151	1,076	75	
March „	418	416	2	
April „	165	152	13	
May „	76	76	—	
	4,749	4,204	545	

* 150 Deaths took place in the General Hospital at Balaclava, in the record of which no distinction is made as to the Arm of the Service to which the dead belonged.

† The Deaths from September 15 to October 1 are reported as about 27, from February 11 to May 1 about 27.

Return No. III.

Appendix to Report from the Sebastopol Committee, 2nd Report, p. 705.

Return showing the Total Number of Sick and Wounded treated in Hospital at *Scutari*:

Months.			Total treated.
During November	1854	.. ..	16,846
" December	1854	.. ..	10,470
" January	1855	.. ..	23,076

A. Smith, M.D., *Director-General.*

18, *St. James's-place, 28th March*, 1855.

Appendix to Report from the Sebastopol Committee, p. 470.

No. 1.—Return showing the Total Number of Men of *Lord Raglan's Army* Sick during each Month, from the Landing in Turkey.

MONTHS.	Total Sick or Wounded of all Arms during each Month.	
1854, April	503	
May	1,833	
June	3,498	
July	6,937	
August	11,936	
September	11,693	
October	11,988	
November	16,846	Compare numbers for same months at Scutari, above.
December	19,470	
1855, January	23,076	
To 17 Feb. ... Crimea ...	9,284	
To 25 " ... Scutari ...	6,725	
To 17 " ... Abydos ...	355	
To 25 " ... Gallipoli ..	70	
To 20 " ... Smyrna ...	540	
Total to latest dates in Feb.	16,964	

A. Smith, *Director-General.*

Army and Ordnance Medical Department,
14 *March*, 1855.

RETURN No. IV.

DEATHS AT SCUTARI AND KOULALI HOSPITALS.

October 1, 1854, to April 30, 1855.

	1. Commandant at Scutari	2.* Medical Returns.	3. Head Roll Burials.	4. Reported Deaths.	5. Depôt Returns.	6. Inspector-General (Infantry.†
October ...	—	250	266	239	213	144
November.	—	267	368	291	244	229
December .	—	393	667	536	401	423
January ...	1,489	1,225	1,473	1,360	1,079	1,393
February ..	1,254	1,329	1,151	1,076	1,254	1,261
March	424	555	418	426	324	345
April	—	500	165	152	213	216
						4,653 ‡Rem. 479
	—	4,229	4,508	4,059	3,929	4,132
	At Scutari and Koulali.		At Scutari.			

The above are the returns from six different official sources

* For the first four months of Return 2, read :—

October 1 to November 4	250
November 5 to December 2.	267
December 3 to December 30	393
December 31 to January 31	1,225

Another Principal Medical Officer's Return shows from—

October 1 to November 4	258

being a trifling difference between the two Principal Medical Officers for one easily explainable. According to the latter, the Return of deaths is—

October, 231. November, 279.

This Return, however, could not be taken, because there were no means of ascertaining the mortality, separately, of December 1 and 2.

The "Medical Return" (2) for April is only up to April 28, yet exceeds by 35 the Head Roll of Burials, which is till April 30.

All other figures are copied absolutely as they were found in the different Returns.

† As given by Sir A. Tulloch.

‡ Being Cavalry, Artillery, and Royal Engineers.

The discrepancies in them will no doubt be explained to us at some future time. Smyrna is not included. The Smyrna Hospital was opened to sick February 15, and from that day till March 31, 127 deaths occurred, by the Inspector-General's Return. Returns 1 and 2 purport expressly to be for Scutari and Kouläli—Returns 3, 4, 5 to be for Scutari alone. Return 6 may include Smyrna. Otherwise, being for the "Infantry" alone, it would prove that a part is greater than the whole. For the deaths in the month of March of Infantry alone are greater than those recorded by the other Returns in March for all Arms of the Service. However, the Smyrna supposition does not account for the difference to those unacquainted with these matters—as Return 6 is something less than Return 2 (the Medical Return) for February, although something more for March.

Some light may be thrown upon the discrepancies in the Medical Returns, when it is mentioned that, up to a period variously stated as sooner or later than February, 1855, the Medical Returns of Deaths were made up from the Purveyor's Diet Rolls, upon which the name of the dead man appeared as scratched out, and from verbal or imperfect Reports made by the Medical Officers in charge; that no bed-tickets existed up to this somewhat obscure period; and that it appears uncertain at what period the Medical Officers were required to fill up regular Returns of deaths. I am led to believe this from evidence collected on the spot.

Returns 1 and 2 purport, as has been said, to be for both Scutari and Kouläli; nevertheless the numbers are sometimes greater, sometimes less than Returns 3, 4, 5, which purport to be for Scutari alone. Returns 1 and 5 show the same for February, 1855, although purporting to include different places.

NOTE

TO

PAGES 315, 316.

The Amount of the Soldier's Duties as a Cause of the Mortality in the Crimea.

The severe Duties of the Soldier in the Crimea.

The awful mortality, recorded in those pages, will appear less extraordinary when it is seen what the duties of these men were.

The 95th Regiment, belonging to the Second Division; the 50th, 28th, 44th, belonging to the Third; the 46th and 49th, belonging to the Fourth; the 23rd and 33rd, belonging to the Light Division;—these ill-fated Regiments all lost 73 out of every 100 men, from disease alone, in seven months. They could not, however, have been other than thus swept away—for the excessive labour which, in addition to their privation, they underwent will be seen from the following Extracts:—

Extracts.

"This will be seen better by referring to a summary of the Returns* for some of the months, say January, which gives the following result:—

Rank and File.	Brigade of Guards	2nd Division	3rd Division	4th Division	Light Division	Total
Effective and present under arms	943	2,469	2,068	2,332	2,379	10,291
Detailed for duty of various kinds daily	403	827	1,170	1,431	1,496	5,327

* Returns showing the Rank and File in each of the Infantry Divisions of the Army before Sebastopol.

"The results for December and February were much the same as in January; indeed, it was not till the termination of the winter, when the sick began to return to duty, when considerable drafts and other reinforcements arrived, and when a new division of the ground between the British and French armies was made, that any material alteration took place.

"One obvious cause of this extreme pressure may be traced to the circumstance, that at this time the number of sick in Hospital and at Scutari, considerably exceeded the force fit for duty, as may be seen by the following summary for the month of January:—

	Brigade of Guards	2nd Division	3rd Division	4th Division	Light Division	Total
Sick—Present	462	534	1,023	1,604	1,194	4,156
Sick—Absent	1,003	1,708	1,373	1,502	1,921	7,467
Total Sick..	1,466	2,242	2,396	3,106	3,115	12,023

"So that the 11,367 effectives shown on the preceding page, had to perform not only their own duty but that of the 12,023 who were sick, and this, too, under the most adverse circumstances. So large a number of sick also involved the necessity for many men being withdrawn from duty to attend upon them, and increased the pressure on the remainder.

"The routine of duty in particular regiments is thus described by various officers:—

"Lord West, commanding the 21st Regiment, states that:— 21st Regiment.

"'Those for the day covering party are roused out of their tents at 4 o'clock in the morning, have about a mile and a-half to march down through snow and mud, and get back to their camp about 7 o'clock in the evening, being thus exposed in open trenches for 15 hours to such inclement weather as now prevails. Most of them will go on the following evening at 5 o'clock, and remain out all night till 6 o'clock the following morning; this routine has been kept up incessantly for the last six weeks.'

"Lieutenant-Colonel Maxwell, commanding the 46th Regiment, a corps which was nearly annihilated by sickness in the months of 46th Regiment.

November and December, states that the number of hours his men were in the trenches in every 24, was 12 in the first of these months, and 10½ in the second; and it was stated by the Surgeon and verified by the Lieutenant-Colonel, that at one time the men were in the trenches for six successive nights, and had only one night in bed in the course of a week, but that afterwards the duty was better regulated.

Light Division.

"The duties in the Light Division are thus described by Deputy Inspector-General Alexander, in a letter dated 10th December, 1854:—

"'In the 7th Fusiliers, men were in the trenches 24 hours, without relief, up to or about the 17th November: on the 14th two companies were kept on picquet for 36 hours, when, of course, no cooking took place.

"'In the 19th Regiment, taking the total number of hours for November, viz. 720—304 have been passed by the men either on duty in the trenches or on picquet, which is 10 hours daily for each man, the remaining 14 being passed in bringing water, seeking for fuel, cooking, and other duties, &c. In the 33rd Fusiliers, the average return gives to each man, one night in camp and one on duty; many men, however, had to go on duty with their companies two or three nights running, doing 24 hours' duty to 12 in camp.

"'In the 33rd Regiment, the men, on an average, were something less than one night in their tents, with water and fuel fatigues when off duty; they are in consequence weak and wasted from the incessant and severe duty.

"'In the 77th Regiment, the men were either in the trenches or outlying picquet every second night; on the intervening days, guards besides water and fuel fatigues, &c.

"'In the 88th Regiment, no man has ever more than one night in his tent, has 12 hours in the trenches, and 24 hours on picquet, and then has to look after wood for cooking, water, &c., &c.'

Rifle Brigade. 2nd Battalion.

"A Return and letter from Captain Forman, commanding the right wing of the 2nd Battalion of the Rifle Brigade, also shows that in November that wing was on duty 17 times, namely: 9 in the trenches and 8 on picquet, and that the average daily duty performed by each man was about 10½ hours, in addition to two hours spent in going to and from the trenches, besides the fatigue of procuring wood and water, and other regimental duties.

"In December the amount of duty in that corps is described as being rather less, viz., only about 9 hours in the trenches or picquet exclusive of other duties.

"These few individual instances will be sufficient to show how the system worked, and there appears no reason to suppose that (except

perhaps, in the 46th Regiment) they differed from the ordinary routine of duty in other corps during this period."

Comparison.

"It will be found that after dividing, according to the several arms of the service in which it occurred, the aggregate loss from sickness alone, during the winter of 1854—55, in the Crimean army, including what took place at Scutari, and on the passage, the following results are obtained :—

"The average loss of Infantry, as roughly estimated, was 30 per cent.
But in the Naval Brigade, which took a very prominent part in the operations during the whole siege, it was under ... ... 4 per cent.
The loss of Cavalry was ... ... 15 per cent.
Of Artillery ... ... 18 per cent.
While the loss of Officers, of all arms, was about ... 6 per cent.

"But dividing the Infantry into groups, according to the periods of their arrival in the Crimea and the localities they occupied, the following are the results :—

"The average loss of four Regiments which arrived in and about January, and did not for nearly a month take any part of the duties in the front was only 7 per cent.
The average of four other Regiments, which arrived in December, and were sent immediately to the front, was ... ... 27 per cent.
In the Highland Brigade, stationed at Balaclava, the average was ... ... 24 per cent.
While in the Regiments employed in front, on which the duties of the siege chiefly devolved, the average was ... ... 45 per cent.
And in eight of these Corps which suffered most, it was ... ... 73 per cent.

"This loss, be it observed, occurred within the short period of seven months, and was exclusive of men killed in action, or who died of their wounds. How far it may have been caused by the privations of the troops hereafter referred to—how far attributable to the excessive amount of duty they had to perform, must remain matter of conjecture; but that it could not have been in any important degree the result of climate, must be inferred from the circumstance of this loss having occurred in a country which, by the concurrent testimony of nearly all the Medical Officers, as well as the experience of the following year, appears to have been almost as healthy as Great Britain, except perhaps as regards cholera.

"Out of about 10,000 men who died during these seven months belonging to the Crimean Army, only 1,200 were cut off by that epidemic, the remainder perished by no foeman's hand—no blast of pestilence, but from the slow, though sure, operation of disease, produced by causes, most of which appeared capable at least of mitigation.

"Compared with this, the mortality in our Army on all previous occasions sinks into comparative insignificance; even that of Walcheren, which threw the nation into mourning, and for years convulsed our Senate, did not exceed a fourth part of the average loss recorded. Armies have perished by the sword—they have been overwhelmed by the elements, but never, perhaps, since the hand of the Lord smote the Host of the Assyrians, and they perished in a night, has such a loss from disease been recorded as on this occasion."

It will be at once perceived that the above loss is calculated not as we are accustomed to see it upon the per-centage *per annum*, but upon the per-centage for seven months only. It therefore looks less than it really is. The actual loss, as stated in the text, was at the rate of sixty per cent. per annum of the whole Army, from disease alone, during eight months, viz. October 1854 to May 1855.

Further Remarks on the greater Mortality in certain Corps, with Statistics of the Number constantly Sick.

Details of Mortality in certain Corps.

It has already appeared, in the preceding note, that the mortality in certain Corps was in great excess of the general rate. In the 46th, 95th, 63rd, 33rd, 23rd, 41th, 28th, and 50th Regiments it averaged 73 per cent. during the seven winter months from October 1854 till April 1855, a rate of mortality which would have extinguished the whole of these Regiments in ten months, or, in other words, a mortality of 125 per cent. per annum. The details are presented in the following Table.

Table A.*

Corps	Average Strength of Seven Months	Deaths within that period in the Crimea and Scutari.	Whereof from Wounds & Injuries Received	Remain Mortality from Disease alone.	Add Ten per Cent. for Deaths not Reported.	Total Mortality in each Corps.
46th Regiment	379	405	7	398	40	438
95th "	417	354	32	322	32	354
63rd "	448	353	15	338	34	372
33rd "	424	324	32	292	29	321
23rd "	379	359	21	338	34	372
41th "	368	316	11	305	30	335
28th "	522	276	10	266	27	293
50th "	529	327	19	308	31	339
	3,886	2,714	147	2,567	257	2,824

Admissions into Hospitals shown by Regiments.

The next Table, not the least remarkable, explains itself. It shows, Regiment by Regiment, what the Admissions into Hospital were, and what the Deaths, during those fatal seven months. This has been shown before; but it has not been shown before how much of that mortality was due to the frightful state of the Hospitals at Scutari; how much it depended upon the number which each Regiment was unfortunately enabled to send to those pest-houses.

* As given by Sir A. Tulloch.

The eight Regiments, above mentioned, which were almost annihilated, and the three Regiments of Guards, have been distinguished by the letter S in the column of "Died at Scutari;" the preponderance of Deaths in that terrible column showing how much Scutari contributed to swell the mortality by which these unfortunate Corps were thus swept away.

TABLE B.

GENERAL ABSTRACT, showing the Total Number of Admissions into Hospital and Deaths, together with the Numbers Invalided, of the Troops serving in the Crimea, for the whole period of Seven Months, commencing 1st October, '54, and terminating 30th April, 1855; and including those under treatment at Scutari.

Division and Corps.	Average Strength.	Total. Admitted into Hospital	Total. Died in the Crimea, &c.	Total. Sent to Scutari, &c.	Total. Died at Scutari, &c.	Total. Invalided to England, &c.	Remarks.
2nd Division. 30th Foot	522	934	108	308	95	96	
55th "	695	1,462	61	265	96	109	
68th "	420	949	86	135	42	24	
95th "	417	1,259	109	345	155*	114	
41st "	684	1,323	104	320	94	81	
47th "	637	1,233	91	280	71	102	
49th "	655	1,071	66	274	99	89	
3rd Division. 1st Foot	771	1,848	229	954	119	62	
14th "	‡425	871	8	42	4	8	
34th "	689	1,725	149	310	118	73	
38th "	‡401	623	23	32	16	48	
50th "	529	1,053	231	278	96*	54	
89th "	§433	950	111	129	59	38	
4th "	508	1,044	96	354	65	46	
9th "	309	754	117	217	58	52	
18th "	‡475	836	29	95	18	18	
28th "	522	1,209	173	373	101*	77	
44th "	399	1,140	204	394	112*	65	
4th Division. 17th Foot	§543	840	59	67	23	9	
20th "	§82	1,438	132	870	122	136	
21st "	582	1,388	145	294	133	86	
57th "	716	973	66	189	53	65	
46th "	378	1,573	259	431	146*	94	
68th "	309	3,042	73	229	79	55	
88th Detachment	154	371	3	22			
Rifle Brig., 1st Bat.	601	1,311	124	307	281	176	The Deaths

Each of the four Corps marked ‡ having been in the Crimea for five months only, the Strength has been reduced in a corresponding proportion. Ditto do. marked thus §, ditto ditto for five months only the Strength has been reduced.

Division and Corps.	Average Strength.	Total. Admitted into Hospital.	Died in the Crimea, &c.	Sent to Scutari, &c.	Died at Scutari, &c.	Invalided to England, &c.	Remarks.
1st Division.							
7th Foot	562	783	105	347	125	129	at Scutari include those of both Battalions, as we have no means of separating them.
23rd "	579	949	219	331	140a	115	
33rd "	424	1,194	189	345	135a	144	
34th "	1504	652	54	86	30	22	
97th "	646	695	172	224	86	41	
19th "	548	837	132	276	112	118	
77th "	736	1,147	124	286	96	84	
88th "	624	1,060	81	319	101	105	
90th "	1419	642	95	207	61	25	* Deaths at Scutari included with 1st Battalion.
Rifle Brig. 2nd Bt. n. w.	449	1,114	45	272	*	.	
2nd Division.							
42nd Foot	704	775	72	135	51	30	
49th† "	448	662	183	383	170a	96	
79th "	1330	348	12	43	5	8	
93rd "	714	832	156	241	65	39	
88th "	727	797	83	71	53	62	
Rifle Brig. 2nd Bt. l. w.	192	271	8	43	..	..	Ditto ditto
Grenadier Guards* ..	483	716	65	271	238a	183	Half the strength only included, the Returns being only available for four months.
Coldstream Guards*	478	1,234	115	441	166a	98	
3rd a Fusilier Guards*	553	904	95	353	160a	147	
TOTAL INFANTRY ..	23,775	45,437	4,963	11,167	4,052	3,214	
4th Division.							
1st Dragoons ..	247	220	7	100	23	18	
2nd " ..	205	490	15	126	23	10	
4th Dragoon Guards	250	490	11	62	8	18	
6th Dragoons ..	241	483	20	42	18	23	
5th Dragoon Guards	172	370	9	73	14	30	
8th Dragoons ..	163	427	12	75	19	26	
9th " ..	155	301	3	73	16	25	
11th " ..	143	314	13	70	23	24	
13th " ..	183	256	7	67	15	25	
17th " ..	154	312	6	75	20	25	
TOTAL CAVALRY ..	1,913	3,663	103	779	177	246	

* The Guards Brigade was serving in front up to the end of February, but has been included here with the Force at Balaclava, as it was there at the time the Returns were made up.

† The 49rd was also with the 4th Division, in front, till the end of January, but has been included here with the Force at Balaclava, for the same reason.

Division and Corps.	Average Strength.	Total.						Remark.
		Admitted into Hospital.	Died in the Crimea, &c.	Sent to Scutari, &c.	Died at Scutari, &c.	Invalided to England, &c.		
Royal Artillery. Right Attack	572	606	76	179				
Left "	582	517	43	..				
A Battery "	155	137	12	29				
H "	146	121	6	24				
F "	161	418	10	45				
B and G Batteries	268	285	42	71	258	379		
E Battery	150	169	12	51				
C "	193	447	8	..				
P "	138	239	12	42				
W "	254	381	15	29				
I "	159	317	9	21				
Sappers & Miners. Right and Left Attack	433	1,136	28	91	83	42		
Total Artillery and Engineers	3,249	4,817	275	592	293	421		
Genl. Hospital, Balaclava	..	2,144	190					

It may, from the data here presented, be probably inferred that to the excessive mortality (described above) of certain corps, the condition of the Hospitals at Scutari contributed quite as largely as the amount of military labour. Is to extracts presented in the last note too large a share in to calamitous result has most likely been assigned to the sever pressure of the soldier's duties.

Number constantly Sick.

A third table, which may here follow, gives a view of the amount of men constantly sick, the number of soldiers at a times to be deducted, as ineffective by reason of sickness, fro the Strength of the Army.

There has been no attempt made in any of the elabor Reports of Commission, or Committee, which have been plac before the public, to arrive at this fact, to obtain an estimat for the seven months of disaster in the Crimea, of the numbe "constantly sick." Yet this must, on all occasions, be one o

the most important questions as regards the welfare of an Army.

The fact is, with our imperfect statistics, it is next to impossible to estimate the sickness correctly. The only perfectly correct deduction which can be made with regard to them is that of a well-known statistical authority: "I do not profess to make anything tally which depends on Crimean information."

Statistically, the figures given in Table C are certain to be incorrect, although deduced from Adjutant-General's and Medical Returns. But, for sanitary purposes they give a rough idea of the disabled state of our Army during the seven months in question.

Table C.

	Strength.*	Sick.†	Per-Centage of Sick.	Effectives.
October 1854 ..	18,547	4,508	24·2	14,039
November ..	22,047	6,744	30·5	15,303
December ..	25,776	8,342	32·3	17,434
January, 1855 ..	26,578	11,070	41·6	15,508
February ..	27,045	14,428	49·6	13,617
March	25,003	12,772	51·	12,231
April	23,047	9,982	43·3	13,065

So that, during this period, the average of "constantly Sick" in our Army was 38·9 per cent.

* The Strength here given does not include the Highland Brigade because these troops were not on duty on the plateau before Sevastopol. But it includes the Strength at Scutari, which has been generally omitted. It is derived from Medical Returns, the Sick at Scutari being added and the Highland Brigade deducted. It includes the men on command and the fifteen, and those otherwise employed, and is supposed to be the Strength of the Infantry Divisions before Sevastopol.

† The "Sick" are derived from the Adjutant-General's Returns and are the average of those "Remaining in Hospital," both "Present," *i. e.*, in the Crimea, and "Absent," *i. e.*, at Scutari, &c., on four days in each month, according to those Returns. But the "Absent Sick," to all appearance, include a great many who were dead. These would, however, also be included in the Strength, so that the two errors compensate each other, in some degree.

XII.

Education, Employment, and Promotion of Medical Officers.

The ordinary course of the Army Surgeon may be described as follows:

Present Course of the Army Medical Officer. Admission upon previous Civil Training.

He is taken from the body of Civil Medical Students, and admitted by an examination, consisting of about forty questions, which no great amount of previous study may have qualified him to answer. Whatever amount of scentific information may appear to be represented by the diplomas and papers which he tenders on his entrance into the army, they convey little or no evidence of his practical knowledge. However much the Civil Schools might be disinclined to admit the fact, not above five per cent. of those who obtain diplomas in any Medical School, can have had the opportunity of applying the knowledge required. The young man may be said to have had no clinical education, unless he has happened to have been included in this proportion of five per cent. of the whole body of Students who have filled the offices of Dressers and Clinical Clerks.*

Employment, first, as Assistant Surgeon; immediate responsibility, without adequate supervision or guidance.

After passing his examination the young officer, instead of becoming a military "cadet" or an ensign, having above him some twenty or thirty officers, of superior grade, becomes Assistant-Surgeon to a regiment, the junior of two, sometimes of three.

A very slight or temporary accident of the Regimental Surgeon places the Assistant Surgeon in medical charge

* Some of those who have studied in Edinburgh may have also had the advantage of Hospitary practice.

of his Regimental Hospital and sick, it may be with the cure of very delicate operations; or in charge of large bodies of men, on long voyages, say 350 men on board a troop ship to India.

Up to this period, he has had the same advantages and disadvantages as the student who enters Civil practice, as a certain amount of responsibility is now thrust upon him his superior may be more or less capable or willing to assist him, as the Assistant Surgeon is appointed according to the exigencies of the Service and with no reference to the capacity or experience of his superior or to his ability to impart his own knowledge. He has, nevertheless, the great advantage of early responsibility.

But even his case book (forwarded to the Principal Medical Officer) obtains for him no criticism, which might instruct him by censure, or incite him to exertion by praise, but is forwarded home and shelved.

2ndly, as 2nd Class Staff Surgeon.

In ten years he may become a 2nd Class Staff Surgeon or Regimental Surgeon.

Limited nature of his experience in Regimental Service.

As Regimental Surgeon, he sees service, it may be, in different climates, with the whole responsibility of the Regimental Hospital. But the Regimental Hospital, be it 300 to 800 men, in a cavalry or infantry regiment, unless on very extraordinary occasions, will not include above from 5 to 10 per cent. of the actual strength—practically from twenty-five to one hundred men. But this, although a medical *ex officio* statement of his experience, represented by these numbers, is by no means an actual statement of his experience. For, whereas in a Civil London Hospital every case is a "bad" case, *i. e.*, a "good" case, in the Regimental Hospital every man not capable of doing duty falls under the return of "in Hospital."

* Which means presiding in a Hospital, or in charge of detachments of soldiers.

Premature Termination of this Practical Service, on promotion to the rank of 1st Class Staff Surgeon.

The next step of promotion is that of 1st Class Staff Surgeon, bringing with it an increase of pay. But the zealous and scientific Regimental Surgeon has been known actually to refuse such promotion, thereby allowing himself to be passed over, because he is too much attached to his duties to throw himself out of all future practice and experience.

This extraordinary anomaly in the Service will be explained hereafter.

Simply administrative functions of this officer.

All Military Hospital patients, not being in Regimental Hospitals, are treated by the 2nd Class Staff Surgeon and the grades below him.* Consequently, the rules of the Service require the 1st Class Staff Surgeon to sign and countersign all requisitions on the Purveyor, to keep a variety of books, tabulated statements, returns, accounts, and to exercise general superintendence, as well as to attend boards on the sick, to see to the supply of drugs and medical appliances, and to observe the keeping of the case-books. If he interfere with the treatment of the cases, it is exceptional. He is, however, supposed to answer the application of a junior for advice, in any particular case,—an application perhaps rarely made.

The Junior does not generally consider the Senior as having a practical knowledge superior to what he has himself so recently acquired; he is unwilling to accept his decision, which is rather that of a superior Officer than an opinion after consultation.

The 1st Class Staff Surgeons do not form a consultative body with the Principal Medical Officer of any General Hospital, but are merely his administrative organs.

Functions of the Deputy Inspectors-General and Inspectors-General.

The 1st Class Staff Surgeon rises, in rank, to be Deputy Inspector-General, who is held capable of taking charge of

* First Class Surgeons do occasionally practise at Fort Pitt.

any Hospital, or of an Army, if it does not exceed 10,000 men. The duties of the Deputy Inspector-General are assimilated to those of Inspector-General in every respect, except their extent, which is defined by the numerical strength of the force.

The Principal Medical Officer of an Army is appointed at the recommendation of the Director-General of the Army Medical Department.

Illustration, by an example in the late War.

To illustrate the rules of the Service, the course taken in the appointment of a Principal Medical Officer for the last War was as follows:—

Letters from Dr. Andrew Smith, appointing, and from Lord Hardinge approving, 1st Class Staff Surgeon Burrell, then at Malta, as Principal Medical Officer of the Expeditionary Force, were forwarded to him at Malta, February 20, 1854—intimating at the same time that, if the Force were increased, an Inspector-General must be appointed. Dr. Burrell was ordered to join immediately, but did not do so. He ultimately sailed from Malta for Scutari, April 25, 1854, having been promoted Deputy Inspector-General immediately before.

Dr. Hall subsequently superseded Dr. Burrell,* who retired from the service in consequence. Dr. Hall was then Deputy Inspector-General, in India, was promoted Inspector-General, and joined at Scutari, June 17, 1854.

* Every one acquainted with the wise and active sanitary measures taken by Dr. Burrell, at the General Hospital at Scutari, previous to this unfortunate step—every one who has read his admirable Reports on Typhus Fever, in which he gallantly stood out, single-handed, against the old prejudices concerning Quarantine and the cause of Yellow Fever, which have now fallen to their deserved level, as extinct superstitions—every one at all conversant with such things must have deplored the withdrawal of Dr. Burrell from the post of Principal Medical Officer of the Army in the East, as a most untoward event, and have bitterly felt that, had he remained there, it is possible that the colossal calamity of Scutari might have been spared its place in English history.

It is obvious that since both these Officers joined, the one from Malta, the other from India, neither of them, although they were to have the important charge of Principal Medical Officer of the Expedition, was in England at the time that Expedition set out, so as to have any voice, responsibility, or charge in providing with Medical Stores, &c. those troops, for the health of which they were successively responsible. Consequently, when the Principal Medical Officer subsequently made Requisitions upon Lord Raglan in Bulgaria for ambulance waggons, he did so only to protect himself; as before said, he might as well have made requisition for the moon's egg, as far as there were any probability of its being answered.

Inspections

From first to last, from the moment the young candidate to enter the Army Medical Department presents his diplomas and other documents of civil attainment up to his acceptance of half-pay and ultimate retirement from the Service, no examination takes place upon clinical treatment, upon ability in diagnosis, or such like. Inspections appear to be instituted with the view of ascertaining his neatness and accuracy in summing up his Diet Rolls, his arrangement of medicines and beds, and his exactness and order in book-keeping, returns, case-books, and reports; all which he acquires during his stay at Fort Pitt, Chatham. All future inspections or whatever approximates to examination, have more reference to the above points than to medical treatment.

Logical Defect of the whole course.

In the whole present course and, in like manner, in the arrangements of the Military General Hospitals, the chief logical defect is that the higher a man rises in medical rank, the more absolutely he is removed from medical practice; *e. g.*, the Inspectors General and Deputy Inspectors General have no medical duties; they are

fully employed as Clerks, Bookkeepers, and General Superintendents. The 1st Class Staff Surgeon has only the duty of performing certain operations. The Patients are really treated, medically and surgically, by the 2nd Class Staff Surgeon, the Assistant Surgeon, and Acting Assistant Surgeon.

The duties of Boards, for invaliding, discharging to duty, &c., and the inspection of sick ships at arrival and departure, also fall upon the Deputy Inspectors and 1st Class Staff Surgeons.

The following extract gives a good statement of the matter:—

Cumming-Maxwell Report.

"The supply of medical attendance, if it were judged by a simple comparison of the number of Medical Officers of all ranks on duty, with the number of Patients, would appear larger than it is practically; because the duties of the higher ranks of the Service are almost wholly foreign to the professional treatment of sick or wounded. The duties of the Inspector General and of the Deputy Inspectors are altogether administrative. The former is the Governor of the Hospitals, the latter assist him in the work of general superintendence and control. The sick and wounded are treated by 2nd Class Staff Surgeons and Assistant Surgeons, to each of whom wards are assigned. Over a number of these wards, forming a division, a First Class Staff Surgeon is placed, and his duties should consist properly in superintending the labours of the Officers under him, in attending in consultation upon every severe case in his division, and in performing all operations. These duties, however, with the exception of the last-mentioned one, he has been practically unable to discharge in these Hospitals. Owing to the want, on the part of a large proportion of the Assistant Surgeons employed here, not of Medical skill or zeal, but of experience, and especially of practical acquaintance with the habits of the class of Patients under their treatment, much time is necessarily consumed daily by the First Class Staff Surgeon in revising their diet rolls, or catalogue of articles of food and drink prescribed by them for each Patient; and yet I

is difficult for him to perform this task satisfactorily, owing to the little knowledge which he has of the cases. He is, further, daily engaged in seeing to the cleanliness of the wards, the distribution of the meals, the collection of the daily returns of his inferior Officers, and the compilation from them of his own. Lastly, he is incessantly called upon, at every period of the day, to inquire into the reality of the alleged wants of articles of Purveyor's stores arising in his division, and of countersigning the requisitions of his subordinate Officers for them, when he has satisfied himself that the things are needed. These multifarious avocations leave him practically no time for attending to the most important of all his duties, and those which he is by education and experience best fitted to perform."

Proposition for the Medical Service of General Hospitals

It is proposed, therefore, in any Military General Hospital that the Principal Medical Officer, under the Governor, should be responsible for all stores, strictly medical, which should be in charge of the Apothecary in Chief.

That he should have the absolute command of all Medical Officers (except in such matters not belonging to the Medical Service, in which they should fall under the general control of the Governor), having obtained these Officers, in answer to his requirements reported to the Director General.

That the internal duties which he should perform in the Hospital should be the reception, charge of and dismissal of the sick.

That he should have command over the Orderlies and Nurses, as far as their duties are under the Medical Department.

That he should advise with the Sanitary Officer and Steward, and form the Chief in what may be considered the Council of the Governor, consisting of himself, these Officers, and the Superintendent of Hospital Attendants.

That he should keep all reports relative to the treatment of the sick, and the result of their cases; as well as to the conduct of the Medical and other Officers.

That he should either treat himself or superintend the treatment of the cases.

That he should superintend the Medical statistics and record select cases.

The Medical Department of a Hospital, relieved of the duties of Governor, of Steward, &c., as before stated, will become purely Medical; with its distinctive, 1, Sanitary, 2, Pathological, and 3, Statistical Departments.

1. The Purveyor should receive orders from the Treating Medical Officer.

It has been suggested that, for facility of action, the Purveyor should continue to be immediately dependent upon the Principal Medical Officer. Let the Purveyor be a servant of the Governor, as has elsewhere been more fully proposed, and not of the Principal Medical Officer at all. Let the Purveyor or Steward have charge of all Hospital stores requisite for Patients in Hospital, and let none of them be, as at present, under the Barrack Department. Let him supply all diets, extras, &c. ordered by the Prescribing Officer, whoever he may be. No Clerk or Purveyor is to withhold anything ordered by the Medical Officer, as is practically sometimes the case with us, and logically often with the French Intendance. For this would tend to do injustice to the patient, whose only protector is the Medical Officer treating him, who supplies him with all that is, in his opinion, necessary, partly from the Purveyor and partly from the Dispensary. But if the treating officer have no authority over the Purveyor, excepting through the Principal Medical Officer, a third party is introduced almost irresponsible in the particular case, and the zeal of the treating officer is cooled in the measure that his opinion is negatived.

The "treating" officer, whose case-books are open, is, of course, amenable for any extravagance, malversation, or bad judgment, as to the use of his supplies, in the same manner as, in the management of a ship, the officer of the watch is in charge, who "expends sails" and risks masts and spars according to his judgment—the only check thought necessary being that his conduct is recorded in the log-book, hour by hour, during his charge, he being responsible, and there being open means for his being called to account.

2. There should be no absolute veto allowed to the Principal Medical Officer.

The veto of the Principal Medical Officer, so called, though he is not "principal" in the treatment, should not be absolute upon any supplies requested by those Officers who do treat.

They ought to have whatever is requisite, holding them responsible for the use of it; but, to be so, they must have more power than at present.

Whoever is in charge of or treating the Patients is the best judge of what they want. Besides, he cannot fairly be held responsible for treatment, should requisites, which he deems necessary, be withheld from him. Therefore should everything deemed requisite by the Prescribing Officer be allowed.

It is here necessary to observe, that the Principal Medical Officer in the late war has stated that the Regimental Officers made requisitions for medicines which were not in store, and that he gave them others, which he considered to be as good, although they did not.

This complaint of the Principal Medical Officer is precisely analogous to that of the Principal Medical Officer at Scutari, that the prescribing Officers were unreasonably lavish in their use of "Extras."

The remedy in both cases is obvious.

Propositions.

1. Let there be a Military Pharmacopœia, fixed upon

1. Of a

Military Pharmacopœia

by the most distinguished men of the Medical profession in Europe, Civil and Military. Such names cannot fail to conciliate confidence in the Army Medical Profession. Let them decide what medicines and appliances are really essential to the health of an Army and compatible with reasonable means of transport. Their dictum will be accepted. Whereas now it is true that an unreasonable bulk is required in the supplies of medicines demanded.

2. Of a Scheme of Hospital Diets.

2. Let a Scheme of Hospital Diets be laid down by the greatest Dietetic Authorities of the age, so that the use of "extras" will be almost unnecessary.

Suggestions for the course of the Army Medical Officer.

We now begin to trace the course of the young Medical recruit, such as we would propose that it should be. Assuming that he has a complete student's education, and also a practical education (to be treated of in the next paper), he would first become an Assistant Regimental Surgeon, from which grade, after examination, he would be competent to enter a Hospital.

Being an Assistant Surgeon, therefore, he would rise through the grades of Assistant Pathologist, Surgeon and Pathologist interchangeably, next Consulting Surgeon, Inspector of Divisional Hospitals, both in peace and in war; Inspector of General Standing Hospitals; Surgeon in Chief to the whole Army.

During this period he would take the turn of service of his grade with a Regiment.*

The service with the Regiment would be judiciously appointed, so that he would see service in different parts of the globe.

When passing through the Standing General Hospital at home, he would have the advantage of its Lectures and Museums.

* The whole of these grades would be under the control of a Director General.

The extraordinary anomaly would thus cease, in the British Army, of the Medical Officer having ascended through four grades to what may be assumed as his maturity in medical and surgical requirements, and of his then practically ceasing to be a Medical Officer, and beginning, for the first time in his life, to be an Administrative Officer.

For according to this present system, in his inspections, he does not *necessarily* interfere with the Medical or Surgical treatment of the Patients who are under the care of an Assistant Staff Surgeon, although he is held responsible.

In fact, Medical Officers of these superior grades assume the functions of Chief Clerks of the Hospital, and are loaded with all kinds of returns, from the first reception to the ultimate disposal of the Patient,—an amount of business hardly to be conceived by those who have not observed it on service; where all the checks and counter-checks, adapted for the purposes of economy at home, are applied to circumstances wholly different, on foreign service, in time of war.

Suggestions for a Hospital Course for Military Medical Officers.

Necessity of a Preparatory Hospital Course for Military Medical Officers.

As there exists one large Military Hospital for the Artillery at Woolwich, containing accommodation for more than 500 patients, and another is preparing, near Southampton, the "Royal Victoria Hospital," for double the number, it would seem that the selection of one of these places is necessary for the formation of a Military Medical School. As has been already stated, whatever

Want of Practice of

Civil Students, before entering the Army.

amount of scientific information appears to be represented by the diplomas and papers presented by the Civil Student on his entrance into the Army, they convey little or no evidence of his practical knowledge. But, as his entrance into the Army instantly introduces him into practice, and in a very short time submits patients to his charge, it seems necessary that a school of that kind which exercises the pupil in practical knowledge, should intervene between his entrance into the Army and his regimental service. In this sense, the Medical School would rather be a course of application of the results of study than a curriculum of science.

Certificates of previous Practice.

The offices of "Resident Medical Officer" and "House Surgeon," are generally held, in a Civil Hospital, not by students but by qualified men. About five per cent of the students who obtain diplomas may have had some practice as Dressers or Clinical Clerks. From the certificates given on leaving, it might be shown in figures not only if they have ever been Dressers, or Clinical Clerks, but what other practical knowledge they may have had the opportunity to acquire.

The candidates should be selected by competition, and should be practically examined. Students, who have never dissected, have been known to obtain certificates of having done so. Therefore, let them be practically examined at the Hospital, before they are admitted as Acting Assistant Surgeons. Let it form an important part of the examination. Without a good knowledge of Anatomy and Physiology, no man can ever become a good scientific practitioner.

Tests of Practical capacity.

It is, consequently, also most important that the Tutors appointed to teach the Courses, which will be indicated, should be thoroughly practical men.

The Pupils in a Military Hospital School would be not strictly Students, but Probationers, and the Teachers not Professors, but Tutors.

The subjects of study might be divided into four:

Four Hospital Courses, in which Tuition should be given to the Probationers.

I. Clinical Medicine.
II. Practical Surgery.
III. Pathology and Morbid Anatomy.
IV. Military Hygiene, and Sanitary Economy.

1. Clinical Medicine, including the practice of various methods of investigating the history of disease, of examining the patient, and recording his Medical history, practising Auscultation and Percussion, &c., to determine the diseased state,—the application of the microscope,—notation of progressive phases of disease on the admission-card and in the case-book.

   The Nosological classification of the Registrar-General should be adopted instead of that of Cullen, the last edition of whose work is 1785. See the Registrar-General's 16th Report; Appendix.

2. Practical Surgery, including operations on the dead body, a sufficient number of these being allowed to give the student adequate practice in application of splints and bandages, stitching wounds, ligature of arteries, amputations and disarticulations of limbs, resection of joints, introduction of probes and tubes, lithotomy, tracheotomy, and laryngotomy, special operations on the face, operations for lachrymal fistulæ, operations on the eye.

   For modes of supply for these operations, *vide* Anatomy Act.

3. Pathology and Morbid Anatomy, teaching the open-

ing of dead bodies for pathological purposes, the recording in a scientific manner the results of the investigation in connection with the history of the disease, the distinguishing between results of post mortem change, pseudo-morbid appearances and genuine results of disease, the preservation of parts for illustration, the dissection, maceration, and drying of parts, with the art of injection, the preservation of microscopic objects illustrative of disease and morbid growths, study of comparative pathology of animals.

h. Military Hygiene.*

a. Whole subject of examining recruits.

b. Medical history of previous campaigns, topical and geological position of camps, conditions of military health or disease, analysis of the experience of the past for the purpose of preventing future disaster.

c. Critical observation on hutting, critical analysis of cooking, dieting, and clothing; sanitary criticism on encamping ground; on barracks, hospitals, and quarters; study of the requirements of sick transport; analysis of food and water, *vide* Sir John Pringle on the Diseases of the Army when Physician to the Forces, 1752.

One Year should be occupied in this course of Practical Instruction.

The courses detailed, fairly carried out, may be considered to employ the first year of the Medical Officer's life. He has had no formal lectures, or at most one a week, from the Teacher of Clinical Medicine; he has been in charge of the sick in Hospital, and thereby

* The subjects essential for this, by far the most important Course of the whole, have been more fully indicated in the Section on Sanitary matters.

gained his own real education, so that the nation has profited both ways. The supposition is that he would receive the pay of Acting Assistant-Surgeon at the Military Hospital, to wit, 5*s.* per day or 90*l.* per annum.

Appointment (after Examination) to a regular Vacancy.

The young Surgeon is now better qualified for duty than his former Civil fellow-student; he therefore becomes a candidate for the first vacancy in a regiment, as soon as he has passed his examination, as hereafter to be determined.

All Officers, on completing the Hospital Course, should invariably be appointed to a Regiment, and not to the Staff.

Opportunity to be allowed for subsequent Study.

As in Sandhurst, the Regimental Officer is allowed to return to College for Senior Departmental Instruction in surveying, fortification, and pyrotechnics; so the Regimental Surgeon, especially if from a foreign station, should be allowed to enter the "Hospital Course," and enjoy the advantages of its Library and Museum.

Leave must be given in order to enable men to re-enter the Hospital Course.

Probable Number of Probationers.

As to the number of the Probationers, the following approximation can be given.

The strength of the Medical Department on a Peace Establishment appears to be—

Regimental.		Staff.	
Army	335	England	55
Ordnance....	50	Ireland.....	22
		Colonies	128
	385		205
Total		590	

giving about thirty annual appointments to the Service.

Supernumeration.

An increased retiring allowance should be granted to induce men to leave the Service, in order to cause fresh blood, as it were, to pass through the Department. The greater proportion serve between thirty and forty years: and it is not the best who stay so long.

Distribution of Classes.

In case of any pressing emergency, the maximum of one year might be decreased; but it would be dangerous to the honour of the Establishment to allow any circumstances to diminish the course much below one year. Any expedient would be better than this, the principle being once established.

Assuming ten as the outside number which could, profitably to themselves, be allowed for a Clinical Class, and six for a Dissecting Class; assuming also, that the course, divided into four sections, will require three months for each, these Clinical and Dissecting Sections need be attended by only fifteen at a time, a number which would allow the Clinical Section to be divided into two sets of Probationers, and the Dissecting into three.

But, practically, as the fourth or Sanitary Course would be carried on by Lectures and viva voce Examinations, with the whole number even at one time, the other three could be distributed over the whole period instead of three-fourths of it.

Upon this basis the number of Tutors may be calculated.

Civilians would probably be wanted as Tutors.

The expense of this establishment will depend primarily upon whether the Tutors are Military Men or not; but the best men should be taken, wherever they can be found in Military or Civil practice. Military Medical Officers have, however, been out of the way of the acquirement for teaching. It will be said, on the other hand, that eminent civilians will not leave their practice to accept

such a post. Military men, too, of high standing, as appears by the Army List, would either be required at their respective posts, or would be so near the usual period of retirement, as that it would be unfair to impose upon them this novel, special, and laborious service. The choice, then, seems to revert (at all events for the next few years), to civilians.

But it is not necessarily the men in the greatest practice who form the best teachers. On the contrary, the man who is less immersed in the hurry of a lucrative profession is the more likely to be able to demonstrate the rules of his own practice, or the practice which he refers to the rules of his Science, learnt at no very remote period, and improved by habits of observation. The busy professional man finds so many exceptions to the rules of the Science (with which he begins life), that he goes on, from day to day, forming new habits of practice, and (although a scientific man) acts upon empirical experience, having no time to philosophize in his study, or explain even to himself, the principles of his course. But the man less absorbed by the hurry of life, classifies the cases he excepts from his former rules, under the force of experience, and thereby continually forms new rules, and these form the guides of the student while economising his time.

Men of professional attainments and mental power are, it is presumed, to be found for this purpose, who would consider themselves sufficiently remunerated at from 500*l.* to 800*l.* per annum; with a rule that they should retire at not later than sixty years of age, receiving a pension not exceeding a fourth of the salary, at any time after having performed fifteen years' service. They are, of course, supposed to have periodical leave of absence.

The aggregate expense of these Tutors may be esti-

mated by the consideration that four* would be the largest number required, and as, after a very few years, at least three of the four would be appointed from the Medical Staff of the Army, the amount drawn from the public purse would be diminished by the merging of all or a part of their pay in the salary. At the same time, these appointments would form a legitimate reward, both in honour and salary, to members of the Army Medical Department.

Subsidiary Notes on this Subject.

Need of a Dispensary in connection with the Hospital.

1. As the balance of opinion might be to debar the Tutors from private practice, that which would be in any case advisable, would become almost indispensable, that there should be a Dispensary for out-patients attached to the Hospital, for the practice of the Probationers, who would be also allowed to visit the Dispensary patients at their own homes when it was necessary; the whole under supervision, as at Edinburgh, of the Tutor.

Examiners for the Annual Examination.

2. To give the Army and Public proper confidence in the Hospital Course as a School, it is obvious that an examining body should exist, placed beyond suspicion as to capacity and impartiality towards individuals. This would be easily formed upon the principle of the great Endowed Schools of England, viz., the adding to the

* Two Chairs of Military Surgery already exist, viz., at Edinburgh and Dublin. It is only proposed, therefore, to increase the number of the Chairs by two.

Head Masters and Tutors of the School a Professor from one of the Universities for the periodical examination. With a moderate honorarium, it would not be difficult to obtain from the great London Schools of Medicine, Professors of each of the four subjects to assist in the examination, forming a Board with the Tutors of the School.

The best men should be taken, and only, if Military and Civilian Medical men be equal in merit, should the preference then be given to the Military.

Weekly Examination.

3. Besides these annual examinations, it is assumed that there would be a weekly examination, which would consist of a critical analysis of the cases of the week with the Clinical Tutor, with instructional and interlocutory remarks, drawing out the knowledge of the individual pupil, thus affording means for a Book of Remarks to be kept by the Tutor, which, at a future period, would afford the test of the pupil's progress; the existence of the book being of course known to the pupil, although he would have no access to its contents. The same, *ceteris paribus*, would take place in the Dissecting and Pathological Departments. The usual certificates of attendance upon Lectures, given alike in Medical Schools and in the Theological Department of the Universities, afford no other information than that the Student has been present at certain courses given by the respective Professors, whereas the register referred to would be an appeal to almost daily facts, recorded on the responsibility of the Tutor.

The whole Institution should be immediately under the control of the War Department.

4. The independence of this new Army School of Medicine and Surgery is one of the chief objects to be contended for by those interested in its utility, permanence and public estimation. Its practical independence would involve immediate dependence upon the War

Department, which, in creating the School, would simultaneously lay down rules for its guidance as well as for the means of its maintenance and for its influence upon the Service. In the latter would be involved due attention to the just pretensions of the Pupils, in giving them a legitimate share in the turn of appointment on promotion, especially during the period which would elapse before all the Medical Officers appointed have passed through the Army Medical School. A Senate should be formed of the Tutors.

The Director-General who makes the appointments to the Army Medical Department, should not interfere in the Army Medical School, except in so far as having a voice in the appointment of the Tutors of the School, as well as in its primary regulations fixed by the War Department. If it were otherwise, not only the honour and practical usefulness of the Tutors would be interfered with, and the dignity of the Institution, representing the scientific dictum of the War Department, lowered, but the power which distributes appointments to vacancies would take a prejudiced view, owing to its partialities and partial information of the attainments of the Probationers; the result being that the appointment to a vacancy would not emanate solely from the testimony given by the Tutors and Examiners on all those points which form the data for the recommendation of the Probationer to Her Majesty's Service.

The present tendency of action seems to be that certain things in the War Department can be done independently

* The first appointments must be opened to public competition, and the best men selected. So should the Professorships of Military Surgery,* which men are now being appointed, be open to all candidates, and not given to favourites.

of its high officers, viz., the Schools at Sandhurst and at Woolwich, the Staff Education (involving a fixed rule) and the Sanitary Commission in the East; the above observations are, therefore, not travelling beyond precedent; and it is hoped that they are supported upon grounds of sufficient reason.

Distinctions for Successful Study

5. It will be sufficient to quote the precedent of the University of London, to insist upon Honorary Distinctions, such as Gold Medals and Fellowships; to the latter of which, however, may be added Paid Fellowships. Suppose two a year, up to the number of ten or twenty, paid 25*l.* to 50*l.* each, for the junior and senior respectively, involving an outlay for the first year of 75*l.*, and an ultimate maximum of outlay of 750*l.*

Proposed Army Medical Career.

Duties of the Medical Officer, as Regimental Surgeon, as 1st Class Staff Surgeon, either in a General Hospital,

After obtaining his first rank upon leaving the Medical School, the young Officer would become Assistant Regimental Surgeon, and in due course, Regimental Surgeon, or its equivalent in rank, 2nd Class Staff Surgeon. On being promoted to 1st Class Staff Surgeon, he would find that the duties, now performed by that grade, have been almost entirely undertaken by the Steward of the Hospital and the Governor. He would still have the power of reporting and making requisitions, and his duties would be those of really superintending the medical treatment of the sick; he would treat a certain number of Patients, with an Assistant Surgeon attached to him; he would also be Consulting Surgeon; he would assist on Boards, for discharge or invaliding, if he himself be the treating Officer, with another; or if he is not the treating Officer, in connection with that Officer; and the Governor being,

ex officio, the reporting Officer, in cases of discharge, be, as recording Officer would be, in these cases, the third Member on the Board.

or as Inspector of the Regimental Hospitals of a Division;

If called to administer the superior duties of several Regimental Hospitals of a Division, instead of those of one General Hospital, he would assume the title, *pro tem.* of Inspector, and be at the same time Consulting Surgeon of the Division.

As Inspector-General on an Expedition;

There would, of course, be an Inspector General for the whole Expeditionary Force.

When the Army was disbanded, these two last being only temporary ranks, the holder of them would return 1st Class Staff Surgeon, with his actual services recorded; the advantage of which would be that, in future appointments, the whole of the 1st Class Staff Surgeons would be open to the choice of the Director General, without his being bound by the trammels of rank or seniority.

As Pathologist

The office of Pathologist would be discharged by a 1st Class Staff Surgeon, the Medical School excepted.

There would be one in each General Hospital, who while acting as Pathologist, would cease to treat the Patients. This would be necessary, in order to keep his Pathological Reports above suspicion.

It is understood that in the Medical School, and in each of the General Hospitals, there would be an Apothecary with his Dispensers, as by the regulation of the last war.

With all Regiments, too, there ought to be some one to dispense, not however having the rank of a Commissioned Officer.

Comment on the proposed Plan.

Upon all this it is to be remarked, that the object is not to have one name or another for any rank, but to reduce the Superintending Ranks and increase the Executive ones.

The 1st Class Surgeons should be Executive Officers.

Let the 1st Class Staff Surgeon be an executive Officer—it matters not then what he is called—let him prescribe for Patients, in the same manner as Surgeons and Physicians do in Civil Hospitals. Let there be Assistant Surgeons, in charge of a certain number of Patients, who accompany the 1st Class Staff Surgeon in his visits, take down his prescriptions, diets, &c., for the Patients, and see them carried out; who also register cases of importance, not, as at present, any case that comes in; this occupies much valuable time, and is of no real use. The Admission and Discharge Book is all that is necessary for the greater number of cases.*

Leaving only the Deputy Inspector-General as Superintending Officer.

If the 1st Class Staff Surgeon is made an Executive Officer, then there will be only two superintending ranks, which is all that is necessary, and the numbers in each of them would thereby be increased. Too few boons already

* A. Fortnath, Esq., Surgeon, Royal Dragoons.

Camp near Kadikoi, Crimea, January 15, 1855.

Sir,—In answering the queries of the Commission, I find by the copy that I have retained, that I omitted to offer a suggestion, which I humbly conceive would be of some importance; viz.,—

That every soldier should be furnished with a book, similar to his account book, in which each time he was admitted to, or discharged from hospital, should be entered along with columns for disease, when and where contracted, exciting cause, symptoms on admission, peculiar symptoms, treatment, result, duration. This book to be in place of medical reports, which might be reserved for uncommon cases and for death reports. The book to be kept either in the possession of the hospital orderly, or troop or company serjeant, and to be produced each time the man reports himself sick.

By this means the man's previous medical history would be seen at a glance—a great help to a medical officer, who has frequently great difficulty at arriving at the truth, especially on being newly appointed to the regiment, and with men sent to general hospitals, or in invaliding.

I have, &c.,

(Signed) A. Fortnath, M.D.,
Surgeon, Royal Dragoons.

exist in the Service, to induce the best men to enter or to remain in it. Let good selections for promotion be made, and there is no danger of men being unfitted. In this case, it would be ungracious to replace a man in an inferior position. It would also prevent men from acting independently. They would be too much under the power of the Authorities, and too many now, it is to be feared, would act so as to please them and thus to obtain other good appointments. In proof of which, how few men spoke out in the Crimean war, and how are these men treated!

Thus, should the government and direction of the Army Medical Department remain as it now is, but the 1st Class Staff Surgeon be made, as he ought to be, an Executive Officer, the Deputy Inspectors General and Inspectors General should be continued, as they now are, as permanent superintending ranks, should be increased in numbers, and the choice of a Principal Medical Officer for any Expeditionary Force be unlimited among them.

Consequent New Scale of Payment.

It follows upon this arrangement that a different scale and principle of pay should be adopted.*

Assuming that an Acting Assistant Surgeon continued upon this rank during his stay in the Army Medical School, he would receive 5*s.* per day and his quarters and rations; and 7*s.* per day, with quarters and mess-room, for the first three years as Assistant Surgeon.

After 3 years	10*s.*
„ 5 „	12*s.*

* The suggestions made by the Army Medical Officers themselves on this subject are annexed. It will only be remarked, upon these, that they have strong grounds of justice: for, no comparison can fairly be instituted between Medical and Military Officers as to pay. The expensive education of the former, their comparative age,—the Ensign often entering

Regimental or 2nd Class Staff Surgeon:

Under	10	years	13*s.*
After	„	„	15*s.*
„	15	„	19*s.*
„	20	„	22*s.*
„	25	„	24*s.*

After 15 years' service, the Regimental Surgeon should have the relative rank of, and the 2nd Class Staff Surgeon be promoted to, 1st Class Staff Surgeon.

While serving in the office of Inspectors of Division, or of Inspector General of an Expeditionary Force, such pay and allowances should be granted as should be considered proper during the service.

The half-pay should be two-thirds of the full pay of the rank and time of service.

---

the age of 16, the Medical Officer at the age of 23,—entitle the Medical Department to a higher rate of pay.

Suggestions for the Improvements required in the Pay and Status of Officers of the Army Medical Department.

1. That the following changes be made in the Titles of Army Medical Officers:—

Asist. Staff Surgeon ..... Asist. Surgeon ..... Regt. ... Surgeon ..... Regt. ...	.. to remain unaltered.
Staff Surgeon ..... 2nd Class..	.. to be styled Staff Surgeon.
Staff Surgeon ..... 1st Class ..	.. Brigade Surgeon, or Surgeon of Brigade.
Deputy Inspector General	.. Division Surgeon, or Surgeon of Division.
Inspector General	.. Surgeon General.

Standing Commission of Inspection.

As it is necessary, both for the good of the Service and the protection of the Soldier, that absolute uniformity

2. That the following be the relative Rank and Pay of different grades of Assistant Surgeons.

Relative Rank.		Daily rate of Pay.		
On first appointment.	After 5 yrs. service in rank.	On first appointment.	After a full pay service in the rank. 5 years.	10 years.
Lieutenant	Captain.	10s. (a)	11s. 6d. (b)	13s.

(a) This amount of pay is considered but a fair remuneration in consequence of age on entrance, speciality of Education, and inability to sell.

(b) As corresponding to the pay of a Captain, which rank they are recommended to receive after 5 years.

3. Regimental Surgeons, and Staff Surgeons 2nd Class, or, according to proposed Title for the latter, Staff Surgeons :—

Relative Rank.	Daily rate of Pay.			
	On first appointment.	After a full pay service in the rank. 3 years.	6 years.	9 years.
Major	17s. 6d.	20s.	22s. 6d.	24s.

4. 1st Class Staff Surgeons, or Brigade Surgeons :—

Relative Rank.	Daily Rate of Pay.		
	On first appointment.	After a full pay service in the rank. 2 years.	4 years.
Lieutenant-Colonel, with a step of rank after 3 years' service under the same conditions as the more purely Military Officer.	25s.	28s.	30s

in the Military Medical Service should be kept throughout, and the talents, acquirements (by service or otherwise) and assiduity of the various Officers should be perfectly well known and reported by fitting authority, it may be inferred that a Standing Commission of Inspection is the best, if not the only, way of securing these advantages, at least under present arrangements.

Its duties would be pretty well defined by saying that they should be compounded of those pointed out in the Instructions of the three Commissions of Enquiry into Scutari Hospitals, into Supplies of the Army, and of Sanitary Enquiry, minus the Executive Powers which were entrusted to those Commissioners, with a view to remedy a disastrous and urgent state of affairs; if such strong

Duties.

5. Deputy Inspector-General, or Division-Surgeon :—

Relative Rank.	Daily Rate of Pay.		
	On first appointment.	After a full pay service in the rank. 8 years.	6 years.
Colonel	22s.	35s.	37s. 6d.

6. Inspector-General, or Surgeon-General :—

Relative Rank.	Daily Rate of Pay.	
	On first appointment.	Without further increase.
Major-General.....	50s.	

7. Half Pay.—Medical Officers of all Ranks to have the unqualified right to retire after 20 years' full pay service; on pay according to the subjoined scale. After 35 years' full pay service, retirement to be compulsory for all Ranks.

and additional powers were wanted, they could always be added by the Executive, for the special occasion.

Scale of Half Pay after Full Pay Service in all Ranks:—

RANK.		Under 4 years	Between 4 and 10	Between 10 and 16	Between 16 and 24	Between 24 and 30
		s. d.	s. d.	s. d.	s. d.	s. d.
Assistant Surgeon—Regimental and Staff	on retirement	4 0	4 9	5 6	6 6	7 6
	on reduction	5 6	6 6	7 6	9 0	9 0
Surgeon—Regimental and Staff	on retirement	..	9 0	11 6	15 0	17 6
	on reduction	..	11 6	13 0	18 0	18 0
Staff Surgeon, 1st Class, or Brigade Surgeon ...	on retirement	..	..	14 0	20 0	23 0
	on reduction	..	..	16 0	22 0	27 0
Deputy Inspector-General, or Division Surgeon ..	on retirement	..	..	19 0	25 0	30 0
	on reduction	..	..	21 0	28 0	33 0
Inspector General, or Surgeon General	on retirement	..	..	..	33 0	40 0
	on reduction	..	..	..	37 0	42 0

8. Relative Rank.—To have effect in choice of Quarters—In Lodging—Servants—Forage and Field Allowances—Honorary Distinctions—Brevet Rank—Funeral Honours—Good Service Money—Full Pay Retirement—In mixed Boards—Courts Martial and Courts of Enquiry. Medical Officers have no desire to sit on Courts Martial, or Military Courts of Enquiry, but if required by Military Authority so to do, to assume the position, and take place according to relative rank.

9. On Courts Martial for trial of a Medical Officer, and on Courts of Enquiry concerning the conduct of Medical Officers, and the nature of Hospital and Medical occurrences, a portion of such Courts to be Medical Officers.

10. That a medical charge allowance, equivalent to a command allowance as given to the more purely Military Officers, should be granted to Medical Officers under similar circumstances both at home and abroad.

11. That Medical Officers should not be called upon to perform extra duties without receiving additional pay; when other Officers in the Army in similar cases receive extra allowances.

12. That there should be a defined and limited period for holding all stations both at home and abroad.

13. Any Officer who on his turn for Foreign Service arriving, shall be found unfit and never likely to be fit for Foreign Service, to be placed on Half Pay until sufficiently recovered to take his service abroad.

14. That the leave of Medical Officers should be the same as that of

Periodical Inspections.

As the British Forces extend over every part of the world, it should be so arranged that every Force should be visited by a Commission once a year, the Commissions being perfectly similar as to the Instructions given them, and their own rules of conduct, and taking different Divisions of Inspection in successive years.

It may be doubted whether, in the Australian Colonies and New Zealand, where the Garrisons have been so greatly reduced, and are likely to be still more so, as the Colonies become progressively self-protective, a Commission with identical duties could not be formed by the Governors and Chief Military Authority. India would, of course, form one District, including all its Presidencies—Canada and the West Indies would form another—Great Britain and the Mediterranean Commands might be included in another. Much time would be saved by forwarding a set of preliminary questions, so that the answers

ular Officers in the Army, and that a certain proportion of Medical Officers be allowed to study in some of the larger schools at home or abroad, on the same principle that Officers are permitted to complete their education at Sandhurst.

13. That Medical Officers be relieved from the duties of Dispenser and Clerk, and that competent persons be appointed to discharge those functions.

14. That on War Service, the Transport for the conveyance of Medical Stores and the Ambulance for the carriage of the Sick and Wounded, be a distinct branch of the General Transport Service, at the immediate disposal of the Chief Medical Officer of the Expedition in communication with the General Commanding; and that also the Provisioning the Sick be entrusted to a distinct branch of the Commissariat under the superintendance of the Chief Medical Officer of the Army.

15. The principle adopted in these recommendations is, that Medical Officers, without assuming the power of military command, should receive the substantive advantages and privileges corresponding with their relative rank.

16. These suggestions are further based upon the resolutions laid before Parliament by the Select Committee of the House of Commons, on the Medical Department of the Army, dated the 3rd July, 1856, of which Augustus Stafford, Esq., M.P., was Chairman.

should be ready on the arrival of the Commissioners, and every available means should be taken to shorten the periods of enquiry; so that what would become an annual duty should be effected within a reasonable time, and without unjustifiable expense.

Special Inspections.

Besides the periodical Inspections, it should be within the power of the Commissioners, either in consequence of an order, or on sufficient evidence of the desirableness of a visit, or *mere motu*, to make any special Inspection; in the last two cases, of course, specifying afterwards why such expense was incurred—for an Inspection, unexpected and without notice, is far more valuable than any other can be; as many instances, which might be cited, shew.

Character of the Inspections made in the Crimea.

The formally announced inspections of the Inspector-General to three of the five General Hospitals in the Crimea resulted only in giving a great deal of trouble for the purpose of getting up a smart appearance, different from the general state of things and created by numerous little stratagems; while the convenience and comfort of the patients, even to the deferring the serving of their meals, was sacrificed to this little display of eye-service for the benefit of the Inspector-General. When His Royal Highness the present Commander-in-Chief kindly inspected the Hospitals at Scutari, an inspection in which he passed several hours, his presence and the interest he expressed in his gracious manner to the Patients had a great effect upon their minds. As the dinner hour was one of the many hours he passed in the Hospital, it so happened that a raw mutton chop, carried to one of the Patients, was brought under his notice. This raw mutton chop again figures in the investigation before the Committee of the House of Commons, strange as it may appear in Dr. Menzies' evidence. He states that it caused an enquiry as to the state of the cooking, and that the in-

Purveyors gave an explanation. This was no other than that the bad cooking arose from the incessant interference of Miss Nightingale and her Nurses in the General Kitchen.* The evidence of the Cook, taken afterwards in the presence of the Commandant, shewed that Miss Nightingale and her Nurses never set foot in the General Kitchen. In fact, it was scarcely possible that they should. Yet, with this parade of enquiry, and the ingeniously fictitious reply, the fact of the abominable cooking, the worse serving of the General Kitchen, and of the Purveyor's arrangements, irrespective of any fault in the Cook, existed up to and after the period of His Royal Highness's visit, in December, 1854, till the arrival of M. Soyer, in March, 1855.

Commission at the Seat of War.

In the event of a future war, placing, as the last did, from 3,000 to 10,000 Patients at one moment under the charge of Medical Officers, ample employment would be afforded for one Commission at the seat of war alone.

Reports.

Valuable as the extensive Library of Blue Books may be, collected with such industry by the British Parliament and Government, no individual volume now existing can be of more importance to the Country than the future Reports of such a Commission would be. Not only would

Dr. Menzies' Evidence.

* "10,370. Was it in writing or verbally that you complained to Mr. Wreford?—I think verbally. I sent for him on this occasion, and pointed out to him the state that the meat was in.

"10,371. That was in December?—Yes; and his explanation to me, or the explanation of the other purveyor, Mr. Stuart, was, that the kitchen had been occupied by Miss Nightingale a great deal, so that the Hospital cooks had not an opportunity of cooking the patients' dinners properly.

"10,372. He ascribed the insufficiency of the cooking of the patients' dinners to the interference of Miss Nightingale in the kitchen?—It was mentioned to me so at the time.

"10,373. *Sir J. Pakington.*] How did Miss Nightingale occupy the kitchen?—In cooking extra comforts for the sick; in preparing arrowroot, and various other things.

they afford testimony of facts and records of valuable opinions, with the inferences drawn upon the spot, but they would form a mass of illustrative Medical facts and sanitary conditions affecting troops, with the methods of relieving the sufferings of an Army by skill, science, and precaution, which would be of the greatest value to future Armies, who must ever depend for their well-being upon the forethought of their Commander and Chief Departmental Officers. No responsible Officer could, in future, escape from this; whereas the casual works of a Pringle, a Jackson, and a Guthrie are brought to the knowledge of few, and are binding upon none, great as is their value. Not only have these recorded facts given no experience to our late Expedition, but thousands of instructive Medical reports have, as before stated, perished unexamined in the general returns of the Walcheren and Peninsular Campaigns.

Composition.

The Commission of Inspection might consist of three Members—a Field Officer, a Medical Sanitary Officer and a man of business, of competent acquirements, with their Secretary. The two Officers should be of a rank superior to the Military and Medical Officers, respectively, of the Hospitals which they inspect, as many evils might be raised from the Military and Medical Service, and they might otherwise be placed under the orders of the very men whom they have inspected.

Division of Duties.

The general discipline of the Orderlies and Soldiers attached to the Hospital, the kits and accoutrements of the Patients, and all that belonged to their state at admission and discharge, their mode of transport, and any Military Stores applicable to their use, would come under the inspection of the Military Member of the Commission, as well as the general state of the buildings. To the Medical Officer would fall the examination of the Medical

Stores and their modes of supply, the Cooking Department and its utensils and apparatus, the state of the wards, the sanitary state of the building, the water supply, the state of the Cemetery, the Medical treatment of the Patients, as illustrated by the Case-books, the conduct of the Medical Officers, and their arrangements for duty. To the third Member, the man of business, would be allotted the examination into the Steward's Stores, and the mode of supply, the expenditure for repairs of the building, drains, &c., the accounts of all kinds, wages and salaries, and the arrangement of the Statistical Returns of the Medical Department. They would of course collectively draw up their Report. They should have power to call in an Engineer Officer, or in default of obtaining one, even a Civil Engineer, when occasion should appear to require it.

They should have power to make, besides their Report home, urgent Reports to the Commander of the Forces, or to the General Officer commanding in the District.

Malingering.

Besides the loose Statistics and the antiquated Nosology of 1785, which are to be found in the Army Medical Department, another instance can be cited, in which its science and acumen have not risen with the advance of the times. This is the supposed prevalence of malingering. No competent witness who was fully acquainted with the Hospitals during the late War would be found to assert that much shirking of duty brought the men into them. On the contrary, the prevalent feeling among the men was an earnest desire to return to the ranks. A Text-book, which forms a subject of study for Medical Officers, was written on the subject by the late Dr. Gavin, "On the

feigned Diseases of Soldiers and Sailors," which was placed upon the shelves of the Official Library by the partiality of Sir George Ballingall, the late Professor of Military Surgery at Edinburgh. Like Walter Scott's "Demonology and Witchcraft," this book was written on the principle of raking up all the wonders of a past and credulous age, in modern and agreeable language, instead of the original Black-Letter Annals of King James. Consequently, it attains a certain amount of false credit from its recent date and the few modern instances interwoven with the more piquant anecdotes.

That an amount of amusement and occupation is found among soldiers of a certain character in the exercise of their capacity for deception is not to be denied. Is it not so in the whole of civil life—among both sexes? Witness the well authenticated story of "The Female Jesuit," the not infrequent instances of feigned madness in civil life, and the crowd of impostors who inflict upon themselves considerable pain by exposure without clothing, and even by wounds and fictitious distortions.

But as modern Science and attentive humanity have driven witchcraft from the tribunals of our country, so must the improvement in science, good feeling and caution of the Medical Officers dispel that unreasoning belief in malingering which once pervaded the Service.

The uneducated soldier, in times past, was dispirited by the long period of service always before his imagination, and wearied with garrison life and dull routine, which perhaps he was no longer able to relieve, by drunkenness and riot, with the jovialities of his town quarters.

He would, towards the middle or end of the time of his service, resort to malingering as a pastime and exercise of ingenuity, and would afterwards obstinately persist in it as a point of honour, with a reckless determination of

getting his discharge and suffering any punishment in default of success.

The case however is now altered. The service is terminable. He enlists for ten years only. And, though the proviso of war is added, this can scarcely add more than one year to his time, in his apprehension. His barracks are not so uncomfortable, his amusements are not confined to such as formed the old barrack life of an illiterate man. Even his correspondence increases his self-respect, and reminds him that he belongs to a circle, however small, of a civil home. If then we add this to the positive fact of the non-existence of malingering during the excitement of actual warfare, we shall have reduced this phantom—which seems an "*idée fixe*" in some minds—to its real proportions. The ghost will be reduced to the smock-frock, turnip and candle.

The very fact of the Medical Officer's attention being turned to malingering, as if it were a class of Disease, has indisposed him to persevering study into the causes of the symptoms before him; while his loose notions of the duties of exact diagnosis have led him, heretofore, to mistake obscure indications of disease (which really require weeks or even months of observation—*vide* the evidence of Civil Hospitals)— for proof that no disease exists.

The Surgeon, when in doubt, aware of the impatience of the Adjutant and the sarcasm of the Serjeant, will feel urged to pronounce a dictum; so that the want of moral courage, science, or patience (in the Surgeon) will always tend to the verdict of malingering against the Soldier.

In illustration of the above, it may be stated that a man has been known to die in his hospital bed a few days after he was pronounced a malingerer, and another in camp to shoot himself, his honour being wounded, on being ordered

for duty, when he considered himself entitled to exemption on account of sickness.

On the other hand, the broken collar bone has been constantly displaced, after setting, by a real malingerer, when the Surgeon, having the symptoms submitted to him both by his eye and his hand, never dreamt that he was the victim of deception.

The Director-General's Office.

It remains to consider the formation of the Director-General's Office. While granting that the office of Director-General should be vested in one man, it may safely be asserted that, as it is quite impossible for any one man to fill all the functions, scientific and administrative, which ought to devolve upon him, the administrative branch should be divided from the scientific, sanitary, and statistical, in which he should be assisted by Officers specially competent.

The Administrative branch should be separated from the Scientific, Sanitary, and Statistical.

It is impossible to imagine a wider field than the Medical Department of the British Army has at its command for the collection of facts, in all quarters of the globe, relating to Natural History, Botany, Geology, influences of Climate, Ethnology, and whatever bears upon the health of mankind. This great body of intelligent men, many of whom have time upon their hands, would readily, on encouragement, send home valuable papers and objects worthy of the Museums of the War Department of Great Britain.

Functions of the Scientific Department.

It would require a man of the highest scientific attainments in the kingdom, and with a grasp of mind equal to the subject, to deal with such a mass of varied information. Not only a portion of it should be classified, so as

to be ready for use, and applicable to the main object, viz., the health of the British Soldier, to whatever quarter of the globe he may be sent; but the same Officer who does this would preserve, publish (at the expense of Government), and furnish to Scientific Societies a mass of information which would be economically obtained, and essentially useful to the British nation, and which is now utterly lost: and this is the case although, not unfrequently, from the energy of some Scientific Society, or the facility of some man high in office, or the remarks of some troublesome Member of Parliament, Expeditions are sent out for objects of scientific enquiry, at a vast expense, *e. g.*, the magnetic observations ordered by Government at the Cape, and the voyage of the Beagle. Yet the Medical Officer, who might be aiding these interesting researches, is left in discouragement, and frequently in idleness, in some out-port, when he would be willing, if noticed, beneficially to employ his talents.

And, during the collection of these scientific observations, a very important knowledge would be insensibly obtained of the personal character, industry, and scientific attainments of the respective Medical Officers scattered through the world.

A more specific object would be the collecting of materials from the Case-books of Medical and Surgical treatment, which would be given in a very different way from what they are now, were it known that they would be published. A volume would thus be formed, such as is usually published at Paris, containing the most interesting cases, detailed in a way which will be really useful, and signed by the several Medical Officers who have had the Patients in charge.

This Scientific Officer, forming part of the Director-General's Board, would discharge duties, and obtain ad-

vantages, which are now totally neglected, not from any fault of the Department, but because there is neither time, office, room, nor *personnel* to conduct the enquiry.

Whoever shall administer these additional duties of the Department should be a party to the reception of all Reports from the Commissioners of Enquiry and otherwise. He should have a voice in all appointments and promotions.

The above are merely rough notes to show the vast opportunities which lie ready, but unused, within the grasp of the Medical Department of such an army as that of England.

General Question as to the re-constitution of the Director-General's Office.

The re-constitution of the Director-General's Office is hardly a question for me to deal with, except in the way.

It has been indicated in the Section on Sanitary Matters, pp. 268—270, how it might be re-constituted with a Medical, a Statistical, and a Sanitary branch—the Director-General being the administrative head. A sketch is here subjoined, as suggestive of what the constitution and duties would be according to this plan.

Proposed Organization of the Army Medical Department.

1. Director-General.

I. *Director-General*—

To be the sole executive head.

To preside at the Council and conduct the business.

To be the medium of communication between the Council and the Executive Government and *vice versâ*.

Official communications to be sent from the office in his name.

Selections of Officers to be recommended for promotion, to be made by the Director-General on his own responsibility, after receiving the opinions of his Council.

All recommendations for promotion to be accompanied with a written account of services, and full reasons for the guidance of the Commander-in-Chief.

The Director-General to be alone responsible as regards the performance of duties devolving upon the Officers of his Department.

The Director-General to submit to his Council all propositions, except matters of routine, for their advice, which advice shall be minuted; the Director-General being, notwithstanding, guided or not by the opinions of his colleagues, as he may consider to be necessary.

II. *Scientific Council*— 2. Scientific Council.

To consist of the Chiefs of the three branches—

1. Medical Administration.
2. Sanitary.
3. Statistical.

These are to form the Council of the Director-General, to give advice or opinions on all subjects submitted to them, and to work the details, each within his own branch.

III. *Secretary*, for minutes and correspondence. 3. Secretary.

Of the Members of the Scientific Council,—

1. The Chief of the *Medical* Branch—

To take charge of all the details of medical arrangements, of Hospitals, attendants, equipments; all correspondence and representations on the subject to be referred to him; and his advice, on all matters purely medical, to be submitted to the Council. Duties of the three Members of the Scientific Council, respectively.

2. The Chief of the *Sanitary* Branch—

To prepare instructions for the guidance of Medical

Officers in carrying out general, as well as special sanitary duties, to give advice on all subjects connected with his Department.

To devise measures for meeting any emergency that may occur from outbreaks of epidemic disease in regiments or garrisons.

All sanitary reports, relating to every Department of the Service, to be submitted to him.

To make such proposals, with reference to sanitary matters, as he would think necessary for the benefit of the Service.

To prepare reports on the sanitary state of the Army for periodical publication.

To give advice on the plans of all Hospitals and Barracks about to be constructed.

To make such periodical sanitary inspections, and to conduct such sanitary inquiries as shall not interfere materially with his duties on the Council.

To prepare instructions for sanitary inspections.

Inspectors-General and Deputy Inspectors-General to make sanitary inspections throughout the districts, to advise with Commanding and Medical Officers, and to report to the Director-General for the Council.

In the case of Armies in the field, a Sanitary Officer to be attached to the Quarter-Master General's Department.

A similar appointment to be made for General Hospitals at the base of operations.

The Commanding Officers of regiments to consult Medical Officers in writing on all subjects connected with the health of the troops; Medical Officers to reply in writing, and, besides, to recommend to the Commanding Officer, in writing, any steps that they may consider necessary for preserving the health of the troops.

If the Commanding Officer sees it necessary to do

ngard such recommendation, to note the reason for such disregard in writing, and the documents to be transmitted to the War Department.

The case to be considered by the Chief of the Sanitary Department and laid before the Medical Council and transmitted, after it has been decided upon, to the Secretary of State for War.

3. The Chief of the *Statistical* Branch.

The Army Medical Statistics to be kept on the same form as that used by the Registrar-General for England.

Such forms to be issued by the Statistical Branch to all regiments and Regimental and General Hospitals in the Service.

The weekly and regimental states to be improved on these principles, and to have the zymotic diseases classified together, to be transmitted to the Army Medical Department without delay, there to be classified, abstracted, and arranged under direction of the Chief.

An attested table of mortality to be sent to the Registrar-General for registry.

Questions referring to statistical details to be settled by the Chief, and statistical reports published at short intervals.

Addenda, as to the Selection of the Principal Medical Officer of an Army on an Expedition, the System of Seniority and that of "Confidential Reports."

Selection of Principal Medical Officer.

We have scarcely as yet noticed the system of selecting the Principal Medical Officer of the Army from the Inspectors and Deputy Inspectors, 14 of whom, without

Dr. M'Lachlan, at the commencement of the late War, had 597 years' service; or from 40 to 53 years' servi each.* By earlier and compulsory Retirement; by re ducing the Superintending Ranks, which are now thre viz., Inspector, Deputy Inspector, and Staff Surgeo 1st Class,† to the two first, and greatly increasing thei numbers; by making the Principal Medical Officer, *e officio*, Senior to all, and always appointing him at once t England, or close at hand, when an Army is going ou this singular system might be, at least, improved.

Appointment of a Principal Medical Officer to an Expeditionary Force.

With regard to the appointment of a Principal Medic Officer with the Army, it is to be observed, that it i etiquette for a Principal Medical Officer of an Army o 20,000 men to be an Inspector-General; of an Army o 10,000 men, to be a Deputy Inspector-General only. Without offering an opinion as to the relative eligibi of the two men, (Dr. Burrell and Dr. Hall, who we thus successively appointed Principal Medical Officers t the Army in the East), it may be observed that the rem

Mr. Guthrie's opinion on Medical Officers' Retirement. Vide Naval and Military Commissioners' Report, 1840, p. 199.

* Mr. Guthrie says that a Medical Officer who has served thirty years is comparatively speaking, more or less inefficient, and probably fifty-fo years of age, and, therefore, a Staff Surgeon should, as well as a Regimental Surgeon, retire after thirty years' service.

He objects to any Medical Officer being employed out of his special sta in a lower capacity.

He states that every Regimental Officer is called for to the front, wh when a single man is wounded. (The Staff is with the Field Hospitals, o *out of shot.*) "In every siege, a Medical Officer is always sent into the fir of the trenches, and they have, at all assaults, marched with the rear They are thus, in fact, exposed to a great part of the dangers of the fi and afterwards to those of their own profession, which crowded Hospit engender, and which have been often most fatal. In both instances th are obliged to show a degree of moral courage and devotion, which will b greatly encouraged by favourable considerations."

† This rank might more properly be described as a mixed executive a superintending rank, or sometimes one and sometimes the other.

alleged for superseding the former was that he was only a 1st Class Staff Surgeon, while Dr. Hall was a Deputy Inspector-General, and that it would not be etiquette to give a Medical Officer two steps at once, in order to make him capable of holding the post of Principal Medical Officer to an Army of 20,000 men. This leads us to a consideration very important to the Service.

The number was small and the age great of those, among whom an Officer to fill so important and difficult a post could be selected; for the fifteen Senior Medical Officers of the Service, being Inspectors-General and Deputy Inspectors, had, at that time, seen among them 624 years' service, *i. e.*, had an average of 41½ years' service each, and could not be much less than 64½ years of age each, as the Medical Officers generally enter the Service at about 23 years of age. *Vide* Hart's Army List, 1 Jan., 1854.

It is farther to be observed, that when a step becomes vacant, it is usual for the Officer immediately below on that Station to succeed to it. So that, *e. g.* Dr. Burrell was senior to Dr. Hall in service, although a step below him in rank. There does not appear therefore to be even the rule of seniority for promotion; it depends on accident to a certain degree how the number is filled up, from which a man, capable by etiquette of occupying the highest position, can be selected; in other words, who is to fill the most important office.

There were besides fifteen Staff Surgeons, 1st Class, who had seen 511 years' service, who were, therefore, necessarily between 50 and 60 years of age.

The question would here arise, whether, by compelling retirement after a certain number of years' service, by simplifying the gradation of ranks,—perhaps entirely doing away with that of 1st Class Staff Surgeon, and greatly

increasing the number of Deputy Inspectors (Regimental and 2nd Class Staff Surgeons passing immediately to that rank), it would not be possible to secure a better, less aged, and more numerous class from which to select Principal Medical Officers of Armies?

We may farther observe that, although the Director-General of the Army Medical Department recommends only (viz.: for promotion and appointment) to the Commander-in-Chief for his approval, yet the Commander-in-Chief never withholds his approval.

Sir James M'Grigor, on his appointment to the Office of Director-General, received certain "Instructions from the Commander-in-Chief," among which was one to "be governed by the usual rule of seniority, as far as in his judgment circumstances will permit." He states that

Vide Naval and Military Commissioners' Report, 1840, p. 329, Appendix. Want of System in Promotion.

"Unless by the proceedings of a Court of Enquiry or of a Court Martial there appears anything to warrant an officer being passed over, he invariably adopts the rule of seniority*[1] in

* To note the entire want of system which now prevails in the promotion of Medical Officers, although Sir J. M'Grigor stated "it was by seniority," it is only necessary to refer to the fact that there were, according to Hart's Army List, April 1, 1855,—

13 Inspectors, Deputy-Inspectors, and Staff Surgeons, 1st Class, who had never been Surgeons of Regiments;* that there were—

---

* "Have you done it (viz., compounded your own medicines) for any protracted length of time when you were a Regimental Officer?" Dr. Smith: "Yes."—"You were a Regimental Assistant Surgeon?" "I was."—"For how long a period?" "I was in the 9th Regiment, for not very long; but I also was in other Regiments, and I always did it."—"As a Regimental Surgeon, did you do it, or did you delegate that duty to your Assistant Surgeon?" "I never delegated duties; the Assistant Surgeon made up his own medicines, and I made up mine."

the Service, in recommending the promotion of Assistant Surgeons to Regimental Surgeoncies, of Regimental Surgeons to be Staff Surgeons, and of Staff Surgeons to be Assistant Inspectors of Hospitals" (this is a rank not now existing) "but, in recommending to the two higher ranks, viz., those of Deputy Inspector-General and Inspector-General of Hospitals, he finds it expedient to adopt a different line: he makes a selection and recommends (from the knowledge he possesses of the merits and talents of all) an officer who unites, with a thorough knowledge of the Service and of the professional duties, talent for arrangement and habits of business, together with discretion, discernment, and conciliatory manners, and who can, from his character in the Service, command the respect of those acting under him."

Without at all entering here into the merits of the system of promotion by seniority, it is to be noticed that these "Instructions," above quoted, are by no means

22 Assistant Surgeons, of more than 9 years' service;
37 Surgeons under 9 years' service;
10 Surgeons above 18 years' service;
18 Staff Surgeons, 1st Class, under 15 years' service;
8 Staff Surgeons, 1st Class, varying from 23 to 50 years' service, and therefore verging towards 70 years of age.

It was customary to offer a Medical Officer, after long tropical service, the West Indies, in order to give him a chance for promotion. If he declined, he lost that chance.

Dr. Smith admits that he failed to get men as proper candidates for the Army Medical Department, in the late War. *Vide* Stafford's Committee, p. 26, Q. 357-366.

Q. "How long were you Surgeon to a Regiment?" "I was about seven months Acting Surgeon of the 6th."

Q. "When you state that you were Acting Surgeon, do you mean that you were Assistant Surgeon?" "I was Acting Surgeon in charge of the 6th, about seven months; and then I was about eight or nine months in the same position with the Cape Mounted Rifles, as Acting Surgeon."

Q. "Were you ever a Regimental Surgeon at all?" "I was never a Regimental Surgeon."

what are now observed. On the contrary, the Medical Officer has not that protection against the personal likes and dislikes of his Chief, which the Military Officer has. For these are not counteracted by the rule of seniority, which is laid down indeed, but not adhered to.

"Confidential Reports." *Vide* Stafford's Committee, Sir G. Wetherall, p. 195, Q. 3260, 3268, 3270, 3272-3.

The "Confidential Report"* system obtains alike among the Military and Medical Officers; but its effects are very different. Among Military Officers, if a "Confidential Report" is made to the Commander-in-Chief, by a Commanding Officer against a Subaltern, the matter, if considered sufficiently important, is referred back to the Commanding Officer. He is instructed to inform the Subaltern of the charge brought against him—a Court of Enquiry is held, and the Subaltern has the means of explanation.

On the other hand, if a "Confidential Report" is made to the Director-General, by the Principal Medical Officer, against a Medical Officer, the latter may see for years his promotion deferred, but will never know to what this is due, nor of what he is accused. He has no means of ju-

Dr. A. Smith's Opinion.

* Dr. Smith admits that "the Principal Medical Officers vary, like all other persons, in integrity as well as in capacity," that "there might be charges brought against medical officers who are perfectly guiltless, but which may stand as bars to their promotion, and which charges they might never hear of." He admits that "Confidential Reports" are made only "as to general conduct and general efficiency of a medical officer; not as to instance does he recollect, in his time, as to any extraordinary manner of treating the sick." He says "they do not descend into particulars as minute as the treatment of diseases"—the very particulars, one would have thought, which would have been the most useful ones in the "Confidential Report" of a medical officer to his medical chief, upon his solicitations.

He says that the "established rule, with regard to promotion to the higher ranks, is *selection*," that he "has occasionally taken seniority of rank as his guide, but that he is not justified in doing so, because he is told that the filling up of the superior vacancies is to be by selection;" that "in the case of appointing Dr. Hall," he made use "partly of selection but principally of seniority of rank."

tifying himself. It is a complete "Inquisition" affair, and he is wholly "*on secret*." And these "Confidential Reports," as well as other reports, examinations, inspections, &c., are by no means so framed as to determine what a candid ignoramus would think the inspections of the Principal Medical Officer should determine, viz., the professional capacity of the Medical Subaltern, his treatment of disease, surgical skill, medical knowledge, &c. These inspections and reports refer to his conduct, of which it would appear that the Commanding Officer would be the better judge, and even to such matters as neatness in making out Returns, Diet Rolls, &c. without blots, the order of the beds, the arrangement of the medicine bottles, &c.

Vide Stafford's Committee, p. 23, Q. 327-8, 366.

On the other hand, the Commander-in-Chief, according to the evidence of the Adjutant-General, exerts but little authority over Medical Officers, as the Director-General can save a Medical Officer, who has committed an offence that might be followed by a Court Martial in a Military Officer, by transferring the offender to another Regiment, if a Regimental Surgeon, to the great scandal of the respectable members of the profession. And, while, on account of the few unfortunate instances which have occurred, a Medical Officer is not allowed to have more than a bottle of wine in his possession, for his sick, for fear that he should drink it, a Staff Surgeon 1st Class has been known, after eight months' drinking, to cut his throat in a fit of Delirium Tremens.

Vide Stafford's Committee, p. 193, Q. 3260-3273.

Were the responsibility of the Director-General full and open, these things could not happen. But it is a system of "Confidential Report," a system where one man depends upon the personal judgment (not to call it fancy) of one man, and where there is neither the control of

public opinion, of the rule of seniority, of private competition nor of public examination.

It is impossible that science can prosper under such a system.

Again, the Regimental Surgeon is much more independent, much less looked after (necessarily) than the 2nd Class Staff Surgeon in a Hospital. Yet, instead of transferring the peccant member to the Staff, where he would be inspected, it is to be feared that he is often transferred to another Regiment. And here we are speaking in deference, not in opposition, to the feelings of the most respectable and far larger portion of the Medical Department.

Summary of Objections felt to the present System of Superintendence as it would be exercised in General Hospitals, in which, however, alone, the Medical Officer could find a proper Professional Sphere.

To sum up, and in this summary I am expressing the views of nine-tenths of the most honourable and ablest men of the Army Medical Department.

The real object and glory of the medical profession are, obviously, medical skill and practice. If a good Medical Officer be appointed to do something else, his services are lost for that which he has spent his life in acquiring.

There is, doubtless, a portion of the Army Medical Department who like to keep the housekeeping and bookkeeping in their own hands. They think that it multiplies the number and the powers of the department. This is a very small portion. But they do not consider how impossible it is to raise the true dignity of the department, to attract the best men into it, as long as this is the case.

To make high-priced labour do what low-priced labour can do, to make men at 7*s.* 6*d.* a-day do what men at 1*s.* 6*d.* a-day could just as well perform, is the true way to degrade a scientific department.

But I do not see how it is possible, without the organization of large permanent establishments, in which alone

a proper administrative staff could be trained, to make the army surgeon other than a sort of maid of all-work.

The real objection to General Hospitals in the minds of Army Medical Officers, is a most legitimate and unanswerable one under the present system.

A Regimental Surgeon is master, as he ought to be, of his own practice in his Regimental Hospital. The practising Surgeon in the General Hospital is not.

With the slightest knowledge of human nature, with the commonest sense, it is obvious that the inspections, as now conducted in General Hospitals, the system of superintendence and subordination of scientific acquirement to rank, must destroy in a man his sense of responsibility, and (the most important quality, the latest acquired, in a man of action, which a medical man must be) his self-reliance.

Therefore, do Surgeons under the present *régime* most reasonably and justly object to be anything but Regimental Surgeons.

Inspections ought to be merely for the purpose of collecting facts, with the view of enabling the authorities to act upon them.

The sole purpose in educating and examining the Medical Officer is to fit him for medical practice. If he is not fit to practise, he is not fit to be a Medical Officer: and yet, he is to be subjected to weekly interference in his practice and in petty details much better left to himself.

The only rationale of superintendence is, when it comes from a superintendent better qualified than the superintended, which the treating Surgeon, in the Army Medical Department, does not feel to be the case in most instances. For the superintendent has, in most instances, ceased to practise.

The evil inflicted by the "confidential reports" is not

so much the injury to individuals, severely as this is sometimes felt, as the lowering of the whole moral tone of the department, the danger of depriving a man of his conscientiousness, his sense of responsibility, his true dignity. For Army Medical Men are like all other medical men. And such interference with their practice and their reputation would be fatal to all. No increase of pay will raise the department while these things are suffered to exist. It is a "working in the dark," an undermining most injurious to the essential honour of this or any other department.*

Pay and Promotion.

The grievances of which all Army Medical Officers complain, are

The system of administration at the War Department, including as it does

Uncertainty,

Apparent injustice,

An offensive system of inspection,

Promotion to the Inspecting Ranks of men who have not the confidence of the profession,

Insufficiency of pay,

The apparently unfair length of time before retirement,

Insufficiency of rank.

The Director-General's proposal of an improved scale of pay, the annual cost to the country of which would be £217,763, or £50,000 more than the present rates, is presumed to be the salve to all the wounds.

* Throughout the evidence taken by the late Committee on the Army Medical Department, it appears assumed that Confidential Reports are made solely by superior Medical Officers on their juniors. It would conduce to Her Majesty's Service to ascertain whether or not Confidential Reports are made generally by Medical Officers on each other; and to ascertain to what extent confidential reports are made by Members of local Heads of other Departments, on Medical Officers and other servants of Her Majesty, stationed or not stationed in the same Hospital as the makers of the Confidential Report.

His remedy would, however, have no effect upon the constitutions of honourable men; for his panacea is merely more pay and vanity.

Necessary Changes.

In any future re-arrangement of the pay and promotion, it appears to be necessary,

1. That the Medical Officer should have a reasonable certainty as to his rise in his profession.

2. That the principle of seniority should be strictly adhered to, except in the Inspecting Ranks.

3. That the present anomalies, so much complained of, of juniors in rank receiving the same pay as their seniors—of seniors being inspected as to their medical treatment by juniors, should be avoided, and that, as far as practicable, every step in the progress of the Medical Officer, from his entering the Service until the period of his being selected for the rank of Deputy Inspector-General, should be fixed by regulation, known to the whole service, and adhered to.

4. That in every instance of selection, and in every instance of recommendation for honours, the reasons should be stated fully in writing, and made known to the Service; and that, in any case where any charge is made against any Medical Officer, likely to interfere with his interests, such charge should be made in writing, and communicated immediately to the officer against whom it has been made, and that, in any record of the charge, the answer to it should be given verbatim.

The Army Medical Department is not the only one, in which discontents prevail from similar causes. The District Poor Law Medical Officers have constantly complained, for many years past, of the small amount of remuneration allowed for their services, and of the treatment they have received from guardians and vestries.

The evils, resulting from such differences, have been so

great that nothing short of the poverty of the Medical Officers, or a humane desire to be a martyr in the cause of the poor, would have ensured the continuance of the services of these men.

One of the most common objections, stated by the Par Law Medical Officers, is that their opinions in matters with which they are most conversant, are disregarded, and their recommendations treated with contempt.

There is thus a close resemblance between the cause of discontent in both professions.

It unfortunately happens, however, in the Army, that much of the discontent is occasioned by the administration of the department itself. And the result is that the *esprit de corps*, which it is desirable to uphold, is to a large extent wanting.

It has been stated before a Committee of the House of Commons, that the interest of the service requires a departure from rules. It must appear, to all who have well considered the subject, that the interest of the service can only be guarded by laying down rules and by adhering to them.

The true principle upon which promotion should proceed appears to be the following:—

When young men enter the Service, they have their experience mostly to gain; and it is not until after many years' service that the true capabilities of a man can be ascertained. The highest capability of a Medical Officer is the capability of treating the Sick and Wounded. And no man should be selected into the inspectorial rank on this account. The inspectorial talent, which is the only talent that ought to form the basis of selection into the rank, is one which, in the vast majority of instances, requires age for its development.

It would be perfectly safe, therefore, to give the pro-

ciple of seniority free course, until a man, by length of service alone, arrives at the highest executive rank.

Selection to inspectorial offices should rest upon this principle, that the Director-General, being himself personally responsible for the administration of his Department, should have the power of selecting his representatives. But, at the same time, the Army Medical Service should feel that its interests, in the executive ranks, are thoroughly protected against what it might consider an invidious interference with its rights of progress by seniority.

Confidential Reports must be utterly abolished. No increase of pay will compensate a man for a stab in the dark; and every statement to his prejudice should be sent verbatim to him directly for a reply.

It may be expected, under an improved system, that a better educated, more intelligent and honourable set of men will enter the Service. But we must not expect to obtain such a class solely by increase of pay. The class we are most desirous of obtaining consists of those men who, while they look for a fair remuneration for their services, look at least as much to fair, honourable, and gentlemanly treatment, and a proper recognition of their services, as amongst the most prominent reasons for desiring to enter the public service.

Substantive Rank.

As to Substantive Rank, would it not be much better in every sense for the service that the Medical Department should be quite separate and distinct from the Army? that it should devote its whole time to the prevention and cure of disease, and not be called upon to perform any duties which are now discharged by Officers in regiments?

The principle of substantive rank infers a greater or less disregard of the specialties of the medical profession, and

a greater or less participation in military duties, for which the Medical Officer is not competent.

Would it not be better to limit the Medical Officer's duties in regard to all courts and boards, simply to appearing before them and giving advice and information when required?

Relative Rank. With respect to Relative Rank, the true principle appears to be this that, while the Medical Officer is treated as becomes his education and position as a gentleman, his relative rank, and the advantages following from it, should be at least one grade lower than that of the Commanding Officer to whom he is attached.

It would not answer in practice for the Commanding Officer to be a Brigadier General, and the Chief Medical Officer to be a Major-General.

If the Army Medical Department were, as it ought to be, totally separated from the combatant part of the Army, its true position, in the Army List, would be out of the Army hierarchy and apart by itself.

Addenda as to the Organization of General Hospitals.

As there must be General Hospitals, a System for their Government is necessary.

It does not appear to be necessary to raise again the old discussion whether there ought or ought not to be General Hospitals, because there must be General Hospitals. Experience has established their necessity in every war. If they are an evil, let the evil be made as light as possible by good organization.

But this has not even been attempted. And in what war have not our General Hospitals been signal failures? Take the early part of George II.'s reign, take Colchester, take the last and most fatal instance—Scutari.

As this has been the case, and as this always will be the case until some scheme for their government be formed, is it not advisable at least to go into the question of the organization of General Hospitals.

General Hospitals at the base of operations, where this is at a distance from the Army, must necessarily fall through, between the two authorities, the Commander of the Forces engaged in active operations, and the Departments at home, unless there be a Governing Head with commensurate responsibility on the spot.

If it is said that the General Officer commanding in the district is the governing power, it is obvious that the Commander of the Forces will give the man least wanted in the front for the purpose. A Governor sent from home for the Hospital (and that alone), known for his powers of administration, might have a chance of being appreciated on account of efficiency, and not of inefficiency.

A single Officer should be the Governor.

In all similar institutions we seek for an executive head, to be on the spot in order to answer for failure, to have the unquestioned responsibility of governing—a responsibility which shall be his and no one's else.

If the experience of the failure of the Scutari Hospitals will not teach us this lesson, no stronger argument can be used.

His Duties.

Such an Officer should have full power to obtain—

Labour,
Transport,
Supplies,

the labour and land transport by hire when not obtainable from the Military Train. The sea transport he must obtain by application to the Admiral on the station. His supplies must not be dependent on the irresponsible Commissariat. But whether his steward be a Commis-

sariat Officer detached for the duty, or a Purveyor, is not the place here to discuss.

If it is feared that there will be clashing in the market with the Commissariat, it need only be mentioned that the articles of supply for a Hospital are different from those for an army. The French bake a different bread for their Hospitals; and we are allowed, as it is, to give 1*d.* per lb. more for our Hospital meat.

That the responsibility for all supplies should rest upon one person and not upon two, as at present (viz. the Purveyor and the Commissariat), seems to be an axiom in Government. At least we may leave the onus of disproving it to be so to others.

Care of Civil Hospitals.

A Civil Hospital has one treasurer, who administers the finance of all the wards. It has one Committee, who manages the supply of all the wards. It has one Secretary, who manages the correspondence for all the wards. It has one House Governor or Superintendent for all the wards; one kitchen which cooks for all the wards; one laundry which washes for all the wards; one surgery; one apothecary; one pharmacy and laboratory for all the wards; one set of attendants, under one head; one set of accounts; one system of supply. It has one set of officers; one operating theatre; one dissecting room.

There is not a bad case in the Hospital which may not have the advantage of the advice of all the best officers in the institution; there is not a surgeon or physician who may not be called into consultation by all the rest. I have never known an instance where the interests of a patient were sacrificed to the interests of an individual officer. So strong is the professional spirit in Civil medical life, that the experience of each man becomes the common property of all the rest. There is nothing like this in the Military Hospital.

The Director-General has admitted that Scutari was a "crowded and polluted Hospital," but the remedy suggested is sending the sick home, and this on March 16, 1855.

It would have seemed as though the remedy would have been that of some scheme for governing the Hospitals, including that of sanitary reform.

Were such a scheme established, and were also a complete sanitary element organized at home, the necessity of a standing Commission of Inspection, as hereafter advocated, would be greatly diminished.

The duties of the Governor have been fully discussed in another place, as also those of the Sanitary Officer.

Addenda in Illustration of the Utility of a Standing Commission of Enquiry.

A Standing Commission of Enquiry would have been of the greatest service at Scutari.

The utility of a "Standing Commission of Enquiry" into Military Hospitals, or of some similar authority, may be advocated on the grounds of the example afforded by Scutari; and, so far from this being a bad one, it can scarcely be hoped (even if a campaign were to take place among the towns of Belgium, so thickly scattered over the country), that any buildings could be found approaching in capacity and good arrangement to the Barrack and General Hospital erected by Sultan Abdul Medjid, the former being calculated to hold 10,000 troops. It fell to the lot of our Army as a Hospital, after the breaking-up of our adjacent Camp, and the moving of our base of operations, successively to Varna, Old Fort, and Balaclava. The General Hospital was full before the battle of the Alma, with the exception of about 300 beds. (The Sultan's Quarters, in both Hospitals, were reserved). A

portion of the Barrack was required for stores; and nearly a third was in such bad repair as to be unfit for the accommodation of sick. In this state of things, the wounded from Alma arrived in such a condition that it was absolutely necessary to land them, and sick and wounded continued to arrive till the end of September, and all through October, till a mass of wounded again arrived from Inkermann, November 9th. Yet, during this period, the Commandant and Medical Officer had no means whatever of practically enlarging the building by repairs; and, amidst their doubts and difficulties, they issued no peremptory orders to the Purveyor for the cleaning out of the portion fit for the reception of the sick and wounded. The doubts, indeed, were sufficiently serious to have justified the (then) Purveyor in refusing such an order, unless either of the above-named Officers would make himself personally responsible.

Had a Commission or Governor existed, not only would the requirements of the sick have been clearly foreseen but, at any rate, upon the embarcation at Varna, the authority and funds would have been present to carry out all the necessary preparations for receiving the sick and wounded, with the ample means which existed close to the capital of 650,000 inhabitants, by which very means what was afterwards done was actually effected.

Even before the Battle of Inkermann had been fought the British Ambassador had received orders, which not only enabled but exhorted him to provide for the wants of the British Hospitals promptly and liberally. Nothing, however, was practically done; farther than a diplomatic invitation to the Seraskier's Department to repair the Barracks, to which the Seraskier replied by that demand for time and consideration, which is the first form of Turkish etiquette. A few days after the wounded arrived

the question of repairs was urged upon the Ambassador; but neither by Commandant, Medical Officer, nor Purveyor. After another delay, the hopes of negotiation were abandoned, and the repairs ordered. In the meantime, the sick had greatly suffered from over-crowding, in damp and ruinous quarters. By the energy of the Engineer Officer, the repairs were effected with 100 Greek workmen, and six or seven Sappers and Miners. The reserved Sultan's Quarters were then obtained, by the interference of the Ambassador, on application, but not made by the Authorities above cited. As to the furnishing of the necessaries for the Sick and for the Extra-diet Kitchens, formed by the Nursing Establishment, which were refused by the Purveyor, the Ambassador sent articles to the value of £83, according to a list furnished him. When the enormous wants of the wounded from Inkermann appeared, a second and larger catalogue of requirements was forwarded to him; of which the Ambassador, after a fortnight's delay, with great civility, acknowledged the receipt—it was the only answer received.

As it was already ascertained what the Purveyor would and what he would not provide, the wants of the sick and wounded, proved by the Requisitions of the Medical Officers, were supplied from sources not official.—*Vide* "*Hospitals Commission*" *Report*, 1855.

From this short abstract of events at Scutari, from July to November, 1854, it will be seen that every one of these great evils, the weight of which was partially prevented from falling upon the sufferers, would have been entirely arrested, had a Standing Commission, such as has been before described, existed; or a Governor, with commensurate power and responsibility, on the spot. The want of vigour would have been supplied by a normal authority, emanating from the proper source—in other words, from

the War Department, —and forming in fact a component part of its machinery.

Correspondence of Lord Stratford and Dr. Menzies.

The letters of Lord Stratford de Redcliffe and Dr. Menzies,* shew that on October 24, 1854, the Ambassador at Constantinople had announced to the Chief of the Hospitals at Scutari the power he had of supplying their wants. But this officer (34 days after the Alma and 27 days after the occupation of Balaclava and the commencement of the siege) denied that they had pressing wants.

These letters shew that the Ambassador's letter of November 2, partially replied to on November 5, received a further (still inadequate) reply on November 20, after an order from Head Quarters, dated November 12; consequently, the Principal Medical Officer practically refused to acknowledge the Ambassador's supreme authority for supply.

The Principal Medical Officer, after stating the "want of means for heating the Wards and Corridors," November 5, makes no application for Stoves in the List, p. 263; nor does he "require" Bedsteads, though he had previously stated that they were not supplied by the Turks. He even contents himself with "200 sets of bedding," while in daily expectation of another Action, in certain anticipation of frightful sickness, and after receiving, only ten days before, 1,100 wounded from Inkermann. On November 19, just two months after the base of operations at Varna was broken up, he complains of the non-arrival of Hospital stores from Varna, and still expects them—which stores at Varna were 36 hours distant only—nay, even a Greek boat (in September) could have conveyed a message.

* *Vide* Report upon the state of the Hospitals of the British Army in the Crimea and Scutari, pp. 261, 262, 263.

had the Admiral refused to send one for the pressing wants of the sick.*

It might be as well to mention, that the non-reception of the stores from Varna has been made, like the loss of the Prince, the scape-goat of all our deficiencies. These stores arrived December 4, and proved a mere drop in the ocean.

The Ambassador writes that the particular wants, expressed by the Principal Medical Officer, in his letter of October 26,—viz., Turkish bedding and articles, such as tables and chairs, stoves, &c., "have been mentioned to the Seraskier in general terms," he (the Ambassador) "premising that bedsteads, stoves, tables and chairs are the objects immediately wanting."

But the fact is that the British merchants of Pera, hearing deplorable accounts from Scutari, did, after having their offered contributions rejected at Scutari, apply to the Ambassador to ascertain the truth of the wants of the sick.

Between the Alma and Inkermann, when sick first occupied the Barrack Hospital, Dr .M'Grigor, who was in charge there, was allowed to engage three Civil Surgeons from Pera, one of whom shortly after died. Yet, though Dr. M'Grigor and his assistants were labouring 20 hours per diem, and though the Barrack Hospital was in a most filthy state, the services of Dr. Hamlin and ten of the Armenian Students, who offered themselves to assist the sick, were refused, as also those of a German Surgeon. Dr. Hamlin was the head of the American

* A fortnight before, he reports to Rear-Admiral Boxer, dated "Scutari, November 5, 1854," (the very day of Inkermann,) that he has received "peremptory orders to provide for a large number of sick and wounded," he requests that a steamer may be sent to Varna for the bedding and stores left there, and asks for boards and trestles.

Mission at Bebec, on the Bosphorus; he made the offer by the unanimous wish of the American Board of Missions; he himself had studied medicine, and was practically experienced in the diseases and resources of the country.

From the foregoing it may be gathered that, after the great battle and the commencement of operations, viz. October 20, when it was deemed necessary in London to send out a Commission, 17 Medical Officers, and a Corps of Female Nurses, the Authorities of the Army Medical Department (theoretically dependent upon the Commander-of-the-Forces), had no means of supplying their own wants and virtually refused the extrinsic and extraordinary assistance of the Ambassador, specially authorized. The few wants of the Hospital which were absolutely defined, and which were not one-twentieth part of those which really existed, were, as these documents prove, left to be supplied "immediately" by the intelligence, liberality, and humanity of the Seraskier (the Turkish Minister of War). Nor was this all: he was only "generally" informed of what these wants were.

Yet it appears that, even for this small and partial admission to the Ambassador of what the deficiencies were which then existed in our Hospitals, the Principal Medical Officer of Scutari was called to account by his chief at home, for he writes:—

"Scutari, 5th December, 1854," that he "distinctly stated to Lord Stratford that the sick and wounded had received every care and attention;" and he "begs to report that there has been *no want*." He again states "I hope you will clearly understand that it was not an absolute want of those articles that made me ask for them, but perhaps an excessive degree of anxiety regarding the charge which I had, and which led me to deem

mine, whatever might occur, that, did I err, it should at last be on the safe side."

These words sound almost like a jest to one who remembers the condition of the Barrack Hospital at that time. On December 4, the Engineer Officer reports that "in about a fortnight the whole number of stoves required will be erected, but to speak with any certainty about even the probable time of completion of a work, for the execution of which I am dependent on Turks, is out of the question." Yet, at this time, the Inspector-General, whatever may be thought of the propriety of the alternative, candidly admitted that he was obliged to keep in the foul air, in order to keep out the cold.

To end this singular and "sad eventful" history, which has only been given to show the necessity of some scheme of organization for General Hospitals, or, in default of this, for some standing Commission of Inspection; Dr. Menzies reports to Major Sillery, dated "Scutari, August 21, 1854," that he has received instructions from the Inspector-General to prepare additional accommodation in barracks for the sick and wounded from the Army in the field, and requests that the range of buildings facing Constantinople and half the range facing the Sea of Marmora (both stories) be purified and lime-washed, with the passages.

It thus appears that he had ample time for preparation, ample notice having been given.

Two months afterwards, he reports to Lord Stratford de Redcliffe, dated "Scutari, October 26, 1854," in that unfortunate letter, (of which the partial report has already been cited, but for which partial report, such as it was, being too great an admission, he had to make so abject an apology,) that the Hospitals are satisfactorily supplied, up to the present time, with all that is required for the com-

fort and sustenance of the sick, and that more is expected daily from England; that there has been no deficiency in the Hospital supplies, and that the quality has improved. He asks the loan of Turkish bedding, utensils, and stores, and states that there is no want of surgical appliances.

Dr. Menzies therefore confessed that he made the application, although there was no need of it—apparently for the double purpose of satisfying his own Department that no blame could be attached to it; while, at the same time, the deficiency really existing was made up by the Turkish Government. Dr. Menzies tells Dr. Smith that there was no need of anything, and yet he applies to Lord Stratford for bedding; and, in proof that there was no need of anything, he adduces a letter from Mr. Wreford which proves that the beds were wanted. At the same time that Lord Stratford was empowered by the British Government to provide liberally everything that was requisite, the benevolent intention of the Government was frustrated by the fear which the Principal Medical Officer had of the censure of his Department.

The months of September, October, and November were wasted for almost all purposes of preparation for the army of sick and wounded, which had begun to pour in.

And the fatal effects of this delay were never recovered till the winter was over.

XIII.

Notes as to Pay and Stoppages.

Stoppages.

Stoppages are deductions of pay to meet the different amounts of expense to which the soldier puts the Government.

Those for his Ration at this present time are,—

1. 4½*d.* for troops at home.
2. 3½*d.* „ serving abroad.
3. 4½*d.* „ at Hong Kong.*
4. 5*d.* „ at an out-post,* Cape of Good Hope.
5. 5*d.* „ on board ship.
6. 6*d.* „ „ with spirits, or an equivalent in tea and sugar.
7. 3½*d.* for troops in the field.
8. 4½*d.* „ „ in the Crimea.*
9. 3½*d.* in Hospital for wounds received in action [abroad].
10. 4½*d.* in Hospital for wounds received in action [at home].
11. 9*d.* in Hospital for sickness on Foreign service.
12. 10*d.* „ for sickness at Home.
13. 6*d.* „ on board ship.

The stoppages for sickness were lowered to the amount of the stoppages for wounds, by an Order given about Christmas, 1854, in the late War, which was made to take effect from the battle of Alma. The higher charge in Hospital had evidently been made with a view to discourage malingering.

* The Ration marked * receives an addition of coffee, sugar, &c.

As the man's accounts in the Regiment are made up during his absence, subject to stoppages, before the nature of them can be ascertained from the Returns of the Paymaster in Hospital and others, the highest amount is entered against him. When his accounts are received from Hospital and otherwise, the balance, if any, is placed to his credit, and the next settlement will appear in his "little book." This system engenders a want of confidence in the soldier, who, not being able to comprehend the details, always thinks himself, in some way or other, defrauded.

It would be a far greater satisfaction to the soldier, and no loss would accrue to the Government, if one uniform rate of stoppage were determined; in other words, if, his diet being "found" for him, whether in or out of Hospital, whether on ship-board or in the field, he were to receive a net pay.

By the above means, a great amount of labour and expense to the Paymaster's Office, either with the Regiment or in Hospital, would be saved.

Remittances.

It will be remarked that, as a great object in armies, or foreign service, ought to be to prevent drunkenness, and to enable the soldier to remit money home, the same facility should be afforded to the soldier which has lately been given to the sailor, for placing his money in the Savings' Bank of his Regiment, when he receives his pay. And the experiment, tried in the last campaign by direct private means, and afterwards by a Money Order Office, sufficiently proves how highly advantageous to the Army, as a point of discipline, and to the country, as a point of economy, this facility given to the soldier must have been.

By private means, about 1,000*l.* per month was transmitted home in small sums of 20*s.* and 30*s.* each.

The amount transmitted home by the Money Order Offices was £71,000 in six months, *i.e.* from January, 1856, when they were established, till the Army went home.

Terms of the Number and Amount of Money Orders issued to the Army in the East, at Balaclava, Constantinople, Head Quarters, and Scutari, during the late War.

Offices.	Period.	Money Orders issued.		
		Number.	Amount.	
	1856.		£	s. d.
Balaklava	January 30 to July 9 inclusive	5,195	16,942	4 10
Constantinople	January 18 to Aug. 19 „	6,333	30,019	11 4
Head Quarters	January 28 to June 30 „	4,450	12,901	11 3
Scutari	January 18 to July 20 „	3,402	11,572	3 1
	Total	19,380	£71,435	10 6

(Signed) J. R. JACKSON,
Money Order Office, November 21, 1856. *Controller.*

The ordinary way of remitting money home is difficult to the soldier, inasmuch as he must first get leave of his Commanding Officer, or, if in Hospital, of his Medical Officer, to send at all. He must next sign a form at the Paymaster's Office; a delay then occurs, in the case of Hospital, of five or six weeks, for the comparison of regimental books; forms and certificates are then to be sent by the person receiving the money. But, not unfrequently, if a change of residence has occurred, from the length of delay, the money is lost altogether.

On the other hand, a man, having money, and no safe means of keeping it about his person or knapsack, or being apprehensive of being killed in action or sent sick

to Hospital, has been known, by his own statement, either to have drunk or gambled as much as £10 or £20, on the eve of going into action or to the trenches., because, he would add, "he had no means of sending it to his wife or mother." Others would place the money in the hands of some accidental private friend.

The 6*d*. per day additional field-pay in the Crimea was but an additional incentive to drunkenness.

The soldier ought to have, on going abroad, the privilege of the sailor, to leave his standing order for pay to his family.

Connection of a Fixed Ration and an Uniform Stoppage.

The question of an uniform stoppage is now under consideration, by the War Department; that of the Ration and Hospital Diet for the Army is inseparable from it. For, hitherto, it has been considered that the Soldier buys certain articles from the Commissariat, who sells them to him at a certain price, and certain other articles he buys in the market. The sanitary arrangement or composition of the Soldier's diet has been nearly or altogether left to himself; and, although the soldier is almost entirely dependent for his circumstances upon superior authority, Government has not appeared to consider itself responsible.

Now, if an uniform Stoppage be adopted, the new principle would be virtually established, viz., that the soldier should receive a net pay, and the country find him with whatever is necessary for him, whether in or out of Hospital, whether in the field, in barracks, or on board ship.

It is essential, therefore, to fix what is the Ration first to preserve the man in the highest state of physical efficiency, and also what is the Hospital diet most likely to restore him.

A Commission, formed of such men as Drs. Christie

K. D. Thomson, Lyon Playfair, (a military man being added to the number) would settle the question at once, and carry the public opinion of the country with them; for the names of these men stand highest in Europe in Dietetic Science.

Any examination as to the facts of the immense confusion of the present system of Stoppages, would show that the doing away with this, by economising the number and time of the Office Clerks employed in adjusting the Balance of Pay due to the men, would go far to compensate to the country the (undoubtedly) greater expense of Hospital Diet over Ration.

Just as on the other hand the facts of our present cumbrous machinery of Hospital Extra Diets would show the advantages of forming a scheme of Hospital Diets. This need not be very complicated in a Military Hospital, in which females, children, and old people are excluded.

At the Edinburgh Infirmary there are nine Diets, of which the respective costs are $2\frac{1}{2}d.$, $4\frac{3}{4}d.$, $4\frac{1}{2}d.$, $5\frac{3}{4}d.$, $3\frac{1}{2}d.$, $4d.$, $3\frac{1}{4}d.$, $4d.$, and $4d.$ per diem.*

(They were composed by Dr. Christison).

The modifications required by a Military Hospital would be regulated by

1. The effects of climate upon constitution in men on Colonial service.

2. The fact of all the patients being male adults, which simplifies the number of diets required.

* The rest mentioned above would be different in England, Scotland, and the Colonies. It does not, of course, include that of stimulants. It is only given to show that an uniform stoppage of (say) 7*d.* would not be so to below the actual cost as is generally supposed.

XIV.

Notes on the Dieting and Cooking of the Army.

Cooking of the Army.

The cooking for the Army has not advanced with the requirements of the times, in the art of preparing the greatest variety and best combination of the most nourishing food with rapidity and simplicity.

Hospital Kitchens and Camp Kitchens.

In the Hospitals, kitchens consist of nothing more than simple boilers, with sometimes a small oven, but scarcely any other appliances for Extra Diets; in camps, the soldier is restricted to two utensils, his mess-can, which should be used only for holding his food when prepared, but which has been used to a very great extent also for cooking it, and his camp-kettle (in the late Campaign of tin), for cooking the mess of five men, though not holding sufficient water for the purpose.

It is admitted that, in the using of these utensils, viz. in constructing a fireplace for cooking in the open air, the Oriental is superior to either the French or the British.

While the uninstructed British Soldier frequently does not even raise a wall, but lights a gipsy fire upon the surface, the Sapper and Miner, taught upon a principle, cuts nicks in the soil, like the French, to a transverse notch; but the Turkish Soldier cuts a trench, six inches deep and six inches wide, in a curve against a bank, natural or artificial not less than two feet high. He cuts a few trenches of like size in the earth, radiating inwards from the curve near trench; he places his kettles upon the intersection of these trenches, and the result is a steady draught leading upwards against the bank: no blast of air blows through any one trench so as to disturb the fire.



Sardinian Regimental Kitchen P. 403



An English Soldier's Kitchen.



A Scotch Soldier's Kitchen.



Turkish Soldier's Kitchen. At P 402, the same is described, as cursed. It varies according to the nature of the ground.

The Sardinian Regimental Kitchens were extremely good.

In the French Divisional Field Hospitals, the kitchen is a large hut, with a huge brick or stone chimney arched over a hearth below, two feet from the ground, on which roasting with small spits, grilling with gridirons, and boiling with *pots-au-feu* suspended, are performed. In an extensive Hospital they have, besides, large boilers set in brickwork. French Field Hospital Kitchens.

In the French Hospitals, at Constantinople, besides the Extra Diet Kitchens, and the Tisanerie, which belonged to the Pharmacie, there was the General Kitchen, which was fitted with large coppers only, in which the meat, beef, was slowly boiled from four to five hours. Being, also, cut up, not into messes skewered together, as in the British Hospitals, but into individual portions,—it was much more thoroughly boiled.

In the British Field Hospital in the front, when it was prepared for wounded, in the beginning of June 1855, the Medical Officer had no other kitchen for his patients than two or three camp-kettles at the angle of two low walls, without any protection; and he afterwards obtained, with great difficulty, an order for a hut and a small cast-iron stove. British Field Hospital Kitchens.

On September 8, 1855, whatever the kitchens may have been, they were not capable of cooking beef-tea for the wounded, lemonade, &c., which were supplied by M. Soyer from his kitchens.

As for the Regimental Hospital Kitchens, they consisted of nothing more than a few camp-kettles, placed in the air over a fire, screened by one or possibly two walls, and in a few cases covered with a bit of board, or fragment of packing case, or tarpaulin.

The General Kitchen of the Monastery Hospital of

St. George was highly creditable and efficient; that of the General Hospital at Balaclava passable; that of the Castle Hospital on the Heights of Balaclava inefficient, till reformed by M. Soyer; those of the two General Hospitals of the Land Transport Corps produced partially uneatable food, till three of M. Soyer's Portable Boilers were supplied to each. All these five Hospitals had, however, Extra Diet Kitchens, under charge of the Nurses, added to them by Miss Nightingale, in most cases under direction of M. Soyer.*

Regimental Kitchens in the Camp at Aldershot.

In the Camp at Aldershot, the Regimental Kitchen is a large corrugated iron hut, having in its centre a lofty brick chimney, on the base of which two wide brick flues extend along the floor; each pierced in its upper surface for three or four small moveable cauldrons. The ends of the flues, where the fires are fed, afford a small roasting kitchen for Officers, being provided with a front grate. The advantage of this scheme is its simplicity and cleanliness; its disadvantage, that it involves a large heavy iron hut, of which the chimney bricks must be left on the ground, if the troops move, and that the draught in the flues is so fierce that the boiling is too rapidly performed. Much of the nutritive value of the food is thus lost.

There is, at Aldershot, a small counterpart, for the open air, which, however, is made of square tiles, with a tall chimney which has an iron flue in the centre.

A cooking plan, similar to this, was adopted in the Crimea for one half the Regiment of the 17th Lancers, while for the other half M. Soyer's Portable Boilers were provided.

Cooking Service in the Crimea.

The French in the Crimea, according to their custom

* She used, in all, the admirable small stoves of Little, or of Smith of Glasgow. The latter are perhaps preferable.

told off 10 men per Company to cook for the rest; but, in the English Army, this could not at first be done.

It appears that the Guards, for the first month or more after going to the Crimea, cooked and fetched water and fuel individually; but afterwards some combined plan was formed. It appears also that it was thought unadviseable, as withdrawing too many men from the ranks, that men should be told off by General Order for cooking.*

The practice of men cooking individually was pursued in the Regiments of the Line from the landing in the Crimea up to about the beginning of January 1855, or when the camp-kettles, thrown away, had been replaced. After that period, it seems to have been the practice to tell off two men per company to cook.

It is obvious that, in the British Army, neither the mess-cans, which were provisionally used, nor the camp-kettles, calculated for five, could boil a sufficient quantity of food together, in the manner most advantageous for the process; and that, although cooks were told off for the Army generally by January 1855, the cooking was a rude and rapid affair, generally carried on behind a wall in the open air. Had even a roofless room of stone and mud been constructed, it would have been an improvement.

The cooks appear to have been without the slightest instruction, and their only principle of action was to hasten through the work as quickly as possible, and retire out of the wind and rain,—or at another season of the year, out of the burning sun. They had no instructions as to soaking salt meat. There was no emulation, nor were any orders or superintendence given with a view to cause the imitation of any adroit contrivance.

Cooking seems to have been generally considered the affair of the men entirely, though there were some

* The Officers are cooked for by the servants allowed them.

exceptions: and it appears to have been erroneously supposed that self-preservation would be motive enough to induce them to learn and practise an Art essential to their life and health. The Medical Department, as it appears, neither obtained General Orders to convey their advice to the Army as to the management of their Rations, nor made any Reports with a view of obtaining useful reproofs of neglect and ignorance, although some zealous and conscientious members of that Department never ceased to send in their remonstrances.

Soyer's Portable Boilers, and Little's Stoves.

Supposing it to be conceded, that a process of cooking for more than five produces more palatable and nutritious food with greater economy than that used at present, and considering the great number of camp-kettles which practically were thrown away, even when men had no knapsacks, and the weight, inconvenience, and amount of breakage which they incur, it seems that M. Soyer's Portable Boilers are preferable for the use of an Army even in the field.

One of these weighs only 80–90 lbs., made of malleable iron, which will last in good repair for a great length of time.

Two of these, with one of Little's Stoves, can be carried on one mule; *i. e.*, are together less than 240 lbs. weight. They require very little fuel, and will cook meat, vegetables and tea, for 120 men—Little's Stove cooks Extra for Sick or for Officers.—And, if Little's Stove be carried by other means, 60 lbs. of fuel may be carried with the two boilers. Allowing the mule and its load for one Company alone, ten mules will be required for the whole Regiment. Two men, which is the number now told off, are sufficient to conduct the mules and carry on the cooking. One of these men would be the permanent Cook, and the other would be exchanged, so as to let all the men

learn a certain amount of cooking. (The French, who tell off 10 men per cent. to cook, waste a great amount of strength.) The additional transport necessary is compensated by the decrease of labour for the men, and the great security for their having a nourishing diet.

It is said that there is risk of killing, laming, or losing the mule—but the risk of losing the camp-kettle has been proved; and the men will, at all events, only have to fall back on their mess-cans as before, or apply to the next Company for a "turn" at their Boilers. This particular mule would not run more risk than the horses of Superior Officers, or of the Artillery. It is only in case of forced marches that any danger would exist; and in these the men carry their own cooked Rations.

The gain of this kind of kitchen is enormous in point of fuel, since it does not consume one-fourth part of what is ordinarily used; where Government pays for fuel, therefore, as in the last War, the pecuniary saving is great.

Lord Raglan's "General Order" allowed a ration of 3 lbs. wood or ¾ lb. charcoal per man. And it would appear from the General Order dated December 16, 1854, that 1½ rations of fuel were then allowed per man. One meal cooked for a whole Company in two of Soyer's Stoves consumes only about 25 lbs. wood. Even estimating the three meals per diem as expending 75 lbs fuel, which they do not, one-fourth only would be consumed of the 300 lbs. allowed per Company. The saving may therefore be calculated, especially in summer, when the soldier lights his fire only to cook and not to warm himself.

The construction of these Boilers is such, that their transmission and renewal by the Commissariat is no more difficult than that of the camp-kettles replaced in the Crimea.

Soyer's Stoves will boil, stew, bake and steam, in short, do everything but grill; ensuring that variety in cooking which is proved essential to health. A few of his Receipts are here annexed, which were found most useful in the Crimea.

Soyer's Receipts.

(No. 1.) SOYER'S FOOD FOR THE TROOPS.—TO COOK FOR A REGIMENT OF 1,000 MEN:—

Head Quarters, 20th June, 1855.

Place 20 Stoves in a row, in the open air or under cover.

Put 30 quarts of Water in each Boiler, 50 lbs. of Ration Meat, 4 squares from a cake of dried Vegetables—or, if fresh mixed Vegetables are issued, 12 lbs. weight—10 small table spoonfuls of salt, 1 ditto of pepper, light the fire, simmer gently from two hours to two hours and a half, skim the fat from the top, and serve.

It will require only two cooks per regiment, the provision and water being carried to the kitchen by fatigue-parties.

(No. 2.) SOYER'S BIVOUAC COOKERY FOR THE ARMY.—STEWED SALT BEEF AND PORK.—FOR A COMPANY OF 100 MEN OR A REGIMENT OF 1,000 MEN:—

Head Quarters, 12th June, 1855.

Put in a Boiler, of well-soaked Beef 30 lbs., cut in pieces of a quarter-of-a-pound each.

20 lbs. of Pork.
1½ lb. of Sugar.
8 lbs. of Onions sliced.
25 quarts of Water.
4 lbs. of Rice.

Simmer gently for three hours, skim the fat off the top, and serve.

NOTE.—How to soak the Meat.—Put 50 lbs. of Meat in each Boiler, having filled them with Water, and let soak all night; and prior to using it, wash it and squeeze it with your hands to extract the Salt.

In case the Meat is still too salt, boil it for two minutes, throw away the Water, and put fresh to your Stew.

By closely following the above receipt you will have an excellent dish.

(No. 3.) SOYER'S RECEIPT TO COOK SALT MEAT FOR 50 MEN:—

Head Quarters, Crimea, 12th May, 1856.

1. Put 50 lbs. of Meat in the Boiler.
2. Fill with Water, and let soak all night.
3. Next Morning wash the Meat well.
4. Fill with fresh Water, and Boil gently Three Hours.

P.S.—Skim off the fat, which, when cold, is an excellent substitute for Butter.

(No. 4.) SOYER'S ARMY SOUP FOR 50 MEN:—

Head Quarters, 12*th May*, 1856.

1. Put in the boiler 30 quarts, 7½ gallons, or 5½ camp kettles of water.
2. Add to it 50 lbs. of Meat, either Beef or Mutton.
3. The rations of preserved or fresh Vegetables.
4. Ten small table spoonfuls of Salt.
5. Simmer Three Hours, and serve.

P.S.—When Rice is issued, put it in when boiling.
Three pounds will be sufficient.
About 8 pounds of fresh Vegetables.
Or 4 squares from a cake of preserved ditto.
A table spoonful of Pepper, if handy.

Skim off the fat, which, when cold, is an excellent substitute for Butter.

(No. 5.) SOYER'S BIVOUAC COOKERY.—SOYER'S FOOD FOR 100 MEN, USING TWO STOVES:—

Paris, 26th April, 1857.

Cut or chop 50 lbs. of fresh Beef in pieces of about a quarter-

of-a-pound each; put in the Boiler, with Ten Table spoonfuls of Salt, two ditto of Pepper, four ditto of Sugar, Onions 7 lbs cut in slices: light the fire now, and then stir the Meat with a spatula, let it stew from 20 to 30 minutes, or till it forms a thick gravy, then add a pound and a half of Flour; mix all together, put in the Boiler 18 quarts of Water, stir well for a minute or two, regulate the Stove to a moderate heat, and let simmer for about Two Hours. Mutton, Pork, or Veal, can be Stewed in a similar manner, but will take half-an-hour less Cooking.

NOTE.—A pound of Rice may be added with great advantage, ditto plain Dumplings, ditto Potatoes, as well as mixed Vegetables.

For a Regiment of 1,000 Men use 20 Stoves.

(No. 6.) THE BIVOUAC STOVE:—

Paris, 28th April, 1857.

Each Stove will consume not more than from 12 to 15 lbs of fuel, and allowing 20 Stoves to a Regiment, the consumption would be 300 lbs. per thousand men.

The allowance per Man is, I believe, 3½ lbs. each, which gives a total of 3,500 lbs. per thousand men.

The economy of fuel would consequently be 3,200 lbs per Regiment daily. Coal will burn with the same advantage.

Salt Beef, Pork, Irish Stew, Stewed Beef, Tea, Coffee, &c. can be prepared in these Stoves, and with the same economy.

They can also be fitted with an Apparatus for Baking, Roasting, and Steaming.

Philosophy of Diet.

Since Liebig and his followers, the nutritive properties of food, both for men and animals, have been largely studied; and almost every Article of Diet has been reduced to a scale of nutrition, with this object.

Dr. Christison's

Dr. Christison has laid down eight principles, for testing

the nutritive value of any dietary, which are so important that they will be here given in his own words :— Eight Principles.

1. "All articles of food used by man consist of one or more, and generally several nutritive principles; and most of them contain water and an indigestible cellular tissue. The two latter must, of course, be deducted in estimating nutritive value.

2. "The nutritive principles consist of two sets—one of which maintains respiration, and the other repairs the waste constantly incurred by the animal textures in the exercise of their functions. As the respiratory principles commonly abound in carbon, they are sometimes called carboniferous, while the reparative principles, because they all contain nitrogen, are termed nitrogenous.

3. "Experience has shown that the most successful dietaries for bodies of men, deduced from practical observation, contain carboniferous and nitrogenous food in the proportion of about three of the former to one of the latter, by weight. During two-and-twenty years that my attention has been turned to the present subject, not a single exception has occurred to me.

4. "Hence it is obvious that the least weight of food in the rough state will be required, first, when there is least moisture and cellular tissue in it; and secondly when the carboniferous and nitrogenous principles are nearest the proportion of three to one.

5. "Of the various nutritive principles belonging to each set, some may replace one another; some are better than others; some are probably essential. This branch of the science of the subject is unfortunately still imperfect.

6. "Two things however are certain—that nitrogenous may replace carboniferous food, for supporting respiration, though at a great loss; but that carboniferous food (without nitrogen) cannot replace nitrogenous food, for repairing textural waste.

7. "The daily amount of nutritive principles of both sets must increase with exercise and exposure, otherwise the body quickly loses weight, and ere long becomes diseased. If the above proportion between the two sets be maintained, the weight of real nutriment per day varies, for adults at an active

age, between seventeen and thirty-six ounces; the former being enough for prisoners confined for short terms, the latter being required for keeping up the athletic constitution, or that which is capable of great continuous muscular efforts, as in prize-running and other similar feats.

8. "Dietaries ought never to be estimated by the rough weight of their constituents, without distinct reference to the real nutriment in these, as determined by physiological and chemical inquiry.

"Keeping these principles in view, and with the help of a simple table, it is not difficult to fix the dietary advisable for any body of men, according to their occupation. It is also, in general, easy to detect the source of error in unsuccessful dietaries. For example: any scientific person conversant with the present subject could have foretold, as a certain consequence, sooner or later, of their dietary, that the British troops would fall into the calamitous state of health which befell them last winter in the Crimea."

The whole of Dr. Christison's paper, from which these extracts are taken, will be given in the Appendix, as being too valuable for a word to be omitted. One of his Tables only will be added here.

Table referred to in Dr. Christison's Observations on Diet.

STANDARD TABLE OF NUTRIMENT, 1849.

	Per centage of Nutriment.		
	Carbonifarous.	Nitrogenous.	Totals.
Wheat-flour	71·25	16·25	87·5
Bread	51·5	10·5	62·0
Oatmeal	65·75	16·25	82·0
Barley (Pearl)	67·0	15·0	82·0
Peas	55·5	24·5	80·0
Potatoes	24·5	2·5	27·0
Carrots	8·5	1·5	10·0
Turnips	5·7	0·3	6·0
Cabbage	6·7	0·3	7·0
Lean of Beef and Mutton ..	0·0	27·0	27·0
Fat of Meat	100·0	0·0	100·0
Average Beef and Mutton ..	15·0	20·25	35·25
Bacon	62·5	8·36	70·86
Skimmed Milk Cheese ..	0·4	64·6	65·0
White Fish	0·0	21·0	21·0
New Milk	8·0	4·5	12·5
Skimmed Milk	5·5	4·5	10·0
Buttermilk	1·0	6·0	7·0
Beef Tea (strong)	0·0	1.44	1·44
Beef Tea, and meat decoction of Broth	0·0	0·72	0·72

Doubtless for the soldier, there is a question of bulk as well as of nutritive power; this, however, has been tested in our Northern expeditions. Our preserved meat, pemmican and meat biscuit, preserved and compressed vegetables, the same with gelatine, have been invented in consequence, and largely used in our Naval expeditions.

But, besides this, in salt provisions there are many gradations between the salt junk of the Navy, guaranteed for three years, the delicate Hamburg beef, and the Westphalian ham. There is the pickling used for domestic purposes, and largely in the United States; there is the pickled beef, with dried crystallization of salt upon it;

both suffieing for the conservation of food for many months. A process analogous to the old Tartar plan of compressing thin lamine of beef, dried in the sun, between hot plates of metal, would probably produce preserved meat extremely compact and capable of being restored by boiling, in great measure, to its nutritive state. Any of these are obviously preferable to the present salt beef and salt pork, prepared for a time which, with Steam Navigation, is wholly unnecessary as far as the soldier is concerned.

It is also most important to remember, with regard to salt provisions (and for this statement we have Dr. Christison's authority), that the danger of this kind of food is not only that, already mentioned, of the salt not being sufficiently discharged by the process of cooking, but of its nutritive value being lost by the very process necessary to make it eatable in any sufficient quantity. Dr. Christison states, "neither by physiological experiment, nor by chemical analysis, is the nutritive value of salt meat scientifically known." He also says "Meat highly salted must be so thoroughly steeped in cold water, to remove the salt, before it is eatable in large quantities, that much of its most nutritive constituents must be washed out, viz., its albumen and sapid extract called osmazome." And again, he says, "salt meat is assumed to equal fresh meat in nutritiveness—an extremely dubious assumption; but there is no authority by which to fix its true value. My persuasion is that, apart from the tendency of the protracted use of such food to favour the development of disease, its nutritive value has been much over-rated."

The Philosophy of Food has proved that not only quality, nutritive power, but also variety in diet must be consulted to preserve the man in health; so that how

we have a farther point in which the present army diet is defective.

There is also the consideration of supplying vegetables in a certain ratio to meat, and in a much greater proportion to salt meat; and again, though bread, rice, Indian meal, oatmeal and biscuit may all be considered farinaceous, biscuit is an improper food for troops with incipient scurvy, as they are unable to eat it from the pain it occasions the gums. Biscuit, also, being a kind of unleavened bread, composed merely of flour and water, makes a greater call upon enfeebled digestions, under any circumstances, than bread.

Eight-and-twenty ounces of real nutriment have been laid down as the full ration by Dr. Christison; the articles being well chosen, this should consist of—

21 oz. carboniferous
7 oz. nitrogenous

The former maintains respiration, the latter repairs the waste incurred by the animal textures. Proposed Army Ration.

The proposed Dietary, given in the Crimean Commissioners' Report, is—

Soft Bread	24 oz.
Fresh Vegetables	8
Rice or Barley	2
Fresh Meat	16
*Coffee, roasted and ground	1
Sugar	2
	3 lb. 5 oz.

* It is difficult to over-value the proposed addition of tea and coffee to the soldier's rations. They possess a renovating power, in circumstances of mental fatigue, which is constantly experienced in Civil Life, and which

Spirits	½ pint
Weekly Mustard	½ oz.
Pepper	½
Salt	½

This contains 20 oz. Carboniferous
6 oz. Nitrogenous or Reparative

26 oz. total real nutriment

* Substitutions for—

24 oz.	Soft Bread,	16 oz.	Biscuit.
8 „	Fresh Vegetables,	2 „	Preserved Vegetables
1 „	Coffee,	½ „	Tea.

This contains the difference of about ½ oz. less Carboniferous, more nitrogenous, and a trifle less total real nutriment than the former.

"In both of these scales," however, writes Dr. Christison, "the total quantity falls a little short of what appears the most advisable. In all other respects, the Dietary seems unexceptionably good. It cannot be said that the die-

I have often heard Officers, who served in the Spanish Campaign as well as in the late Burmese War, describe in the strongest terms. This however, is not all, for it has been recently shown, by a very curious physiological inquiry, that both of them, and especially coffee, possess the singular property of diminishing materially the wear and tear of the soft tissues of the body in the exercise of its functions in an active occupation."—Dr. Christison.

* Other substitutions, not mentioned above, might be Oatmeal or Cheese: the former contains—

Carboniferous 62·75 Nitrogenous 16·25

Wheat flour contains—

Carboniferous 71·25 Nitrogenous 10·75

Cheese is wholly nitrogenous.

ency will certainly occasion ill health, but there is too little to keep up the strength and energy of the men in circumstances of unusual exertion. "Any material reduction," adds Dr. Christison, "below 28 oz. will certainly not answer; and under unusual exertion kept up for days continuously, as in forced marches, or forced siege labour, the quantity should for the time be greater if possible."

The food of the British soldier * in the Crimea, "during the greater part of November and December 1854, and also in a great measure during January, 1855," was, as given in the table annexed.

	Ounces of Nutritive Principle.	Wanted there in	
		Carbonaceous.	Nitrogenous.
British Soldier in the Crimea receiving daily—			
1 lb. salt meat			
1 lb. Biscuit	23·52	14·6	6·92
2 oz. sugar			
Coffee, not used; rice, uncertain; beer, none.			
British Ration, daily nutriment, exclusive of beer	23·5	20·90	7·54
Russian Soldier, daily nutriment..	32·46	26·69	6·37

* "Now, it is in evidence that the soldier in the Crimea did not consume his salt meat, and that, in many instances, he lived entirely on his biscuit and rum, while the salt meat was thrown away daily in large quantities; but supposing it had been otherwise, and that the whole had been consumed by him as well as his sugar, he would still, according to the above scales, have had less *nutriment* than the Russian soldier by nearly ten ounces, and less than the British sailor by about five ounces per day, though Dr. Christison's calculation assumes, what he admits is not likely to be the case, that salt meat retains the same amount of nutriment as fresh.

"Even had the soldier in the Crimea continued to receive the allowance of rice, and been able to use his coffee, these, including the extra biscuit, would have afforded less nutriment than the rations of either of the other two items, notwithstanding the demand for food which constant labour, want of rest, and exposure, must necessarily have created."

The most generous diet in Civil Life is the Yorkshire Farm Labourer's:—

	Rough Weight in Ounces	Proximate Nutritive Principles.		
		Carbonaceous	Nitrogenous	Total
Bread	40	20·0	4·2	24·2
Milk	30	1·65	1·35	3·0
Beef	18	2·7	3·64	6·34
Bacon	7	4·44	0·56	5·0
Vegetables ..	4	0·33	0·07	0·4
Beer	60	5·49	0·43	6·0
Total daily ounces ..		35·21	10·23	45·44

The present Army Ration is—

At home, Bread 16 oz.
Meat 12 oz., uncooked.
Abroad.. Bread 16 oz., or Biscuit 12 oz.
Meat 16 oz., uncooked (either fresh or salt).

This is charged to the men at a stoppage of 3½*d.* per day abroad, 4½*d.* per day at home: it costs the Government about 6*d.* The men purchase their own coffee, sugar, pepper, salt, potatoes, &c., which is paid for out of what is called the "mess" money. The whole sum, thus paid by the soldier at home, generally amounts to 8½*d.* a day, including the 4½*d.* stopped for the regular ration, and ½*d.* for washing.

The Crimean Commissioners have given a calculation by which it appeared that the soldier could be therewith supplied with a ration at 6*d.* a day, being 2½*d.* in addition to the 3½*d.* for bread and meat already stopped, comprising in addition to bread and meat,

2 oz. Compressed Vegetables
2 oz. Rice
1 oz. Coffee
2 oz. Sugar

The cost of these articles is little more than 2*d*. The ration of Rum costs about ½*d*.; but this is usually considered as a gratuity of the country to the soldier.

Hospital Diet.

The subject of Hospital Diets appears to us so important, as to make us wish to say a few more words upon it.

Two principal facts now established in relation to the chemistry of food, which, in the last twenty years, has risen, by the researches of Drs. Liebig, Christison, Playfair and others, to the rank of an applicable Science, are the following:

Necessity of Variety

1. The necessity of variety in food, as an essential element of health, such is the number of materials required to preserve the human frame. In sickness it is still more important, because, the frame being in a morbid state, it is scarcely possible to prescribe beforehand, with certainty, what it will be able to digest and assimilate. The so-called "fancies" of disease are valuable indications.

and of good Cooking.

2. The importance of cooking, in the matter of digestibility and nutritive value of food.

Absence, at the present time, of any attempt at variety. Perpetual Boiled Meat both in Rations and in Hospital.

Yet so little were either of these elements of health understood in the late War, or are they understood up to this hour in the Diets, Rations, and Cooking of both sick and healthy men in the Army, that we still see the everlasting sameness of Ration, the eternal boiled meat of the "full," "half," and "low diet" of the Hospital Kitchen. As Sir Richard Airey states, "the man lives upon boiled meat for 21 years."

Extras—the necessity and the abuse of them.

In the War Hospitals it was practically learnt, though never theoretically acknowledged, that, in order to make the patient eat at all, he must not be fed on this hard, boiled, never varying meat of "full" or "half diet." Hence the wasteful and violent expenditure of extras, which, in the hands of inexperienced young men, often justly excited the criticism of their seniors.

But no attempt was made to compose a better or more varied diet, hardly any to improve the system of cooking. One or two Army Surgeons suggested, that a "Fever Diet" and a "Dysentery Diet" should be composed of suitable materials, and made "Regulation Diet," in order to save the writing of (say) 1,000 extras for 200 or 300 men daily,—the combination of which extras in each Diet was often (and necessarily so) ill-composed by inexperienced Surgeons. Nothing, however, of this kind was done; and, up to the last day of the patient's convalescence, it was found necessary to feed him on extras. The time of the seniors was almost entirely taken up with purely administrative duties. They had no leisure to superintend the Dietetic Prescriptions of their juniors, and these were accordingly left to make as good a use as they could of their unassisted invention.

It has been stated by the highest authorities, that the principal wants in the Diet of the Troops in the Crimea were vegetable acid and fat; cheese would have been a most important element of diet, and a portable one. It is not to be supposed that disease, engendered by too monotonous and insufficient Diet, would be corrected by one equally monotonous. The instinctive craving of the men in Hospital for butter, cheese, milk, for the fat of bacon, for fruit, pickles, jam, and such like articles of food, will be remembered by many; and, under requisition from the Medical Officers, we always sought to satisfy it.

But here again is an instance of the non-definition of the respective duties of the several Medical ranks; a requisition for butter, signed by the Assistant Surgeon in charge of the Ward, countersigned by the Deputy Inspector-General in charge of the Hospital, having been thus answered,—the 1st Class Staff Surgeon, in charge of the Division of the Hospital, and the Inspector-General in charge of the Station, when going their rounds, threw the butter out of the window of the ward, unaware, it is true, that it had been obtained upon Requisition of the other two Officers.*

Necessity of a distinct Diet Table for Soldiers in Hospital, so as to dispense with the use of Extras.

It is not necessary to say more, in order to prove the importance of Dieting and Cooking as sanitary and therapeutic agents, as well as the necessity of philosophically determining the principles upon which these are to be practically worked out, in order that never again may be heard that confusion of ideas about "spoiling" the man, or "too much indulgence" of the soldier, but that it

* I would here add a criticism which, being strictly unprofessional, will, it is hoped, disarm censure. It is this. The inspections appeared to be made more with regard to the appearance of the wards than to the health or diet of the Patients. A singular bustle always took place among Orderlies and Patients when it was known that the Inspector-General was going round. "Extras," although ordered upon diet rolls by Medical Officers, were hidden under the Patients' mattresses, books were thrust away, &c., &c. If these extras were seen, they might be perhaps thrown away by order of the Inspecting Officers. Had this been done after consulting the tongue or pulse of the Patient, or otherwise looking at him professionally, and finding the diet unsuitable—however rough the manner, the intention would have been above criticism. To discuss professional treatment is certainly not my province; but the consideration of professional treatment seemed rarely to enter into the question. It was because the "extra" made "the ward untidy," and ought to have been eaten "at the proper time," that it was condemned.

It did not appear to be the question, what was desirable for the Patient, nor how, by means of shelf or receptacle in the ward, or store-closet, or extra kitchen at hand, to make contrasts, which is indispensable in a Hospital, compatible with the Patients' wants, which are equally important.

may practically be known what is and what is not essential for his preservation in, or restoration to, the utmost vigour.

A seven-days' Diet-Table should be laid down for Military Hospitals, making use of all the various methods of roasting, boiling, baking, mincing, hashing, &c., and of all the various materials of food considered essential; and the cumbrous and awkward, but now necessary, machinery of extras may be dispensed with, except for rare and special cases.

Injustice of Hospital Stoppages.

One word more about Hospital Stoppages. These were instituted on the principle that, when a man was sick, he was off work. But the soldier belongs to the Government; he is not a labourer in the employment of the master; he is not allowed to take his labour into the market when off duty; he cannot be compared in any way, when sick, to the labourer off work; and yet the man is to be fined for getting sick in the performance of his duty.

The ration and messing now is not to exceed 8½*d.* in the Infantry, and 10*d.* in the Cavalry; this includes 1 lb. bread, ¾ lb. meat, beef or mutton (that is, two-thirds of beef, one-third mutton) vegetables, 1 pint coffee, for breakfast, 1 pint for tea; salt, pepper, &c. The charge for Hospital Stoppages, which is 10*d.* at home, might fairly be reduced, even if an uniform stoppage be not adopted, as we trust it may. But, if an uniform stoppage be adopted, shall the Hospital stoppage be kept up, for the sake of "catching" the dissipated and the "malingerer?" "You are not to punish a man who has incurred his illness on duty," says Sir John McNeill, "in order to catch a man who has incurred his illness by his own fault."

Ordinary Diet out of Hospital.

For the ordinary diet of a soldier out of Hospital the dietaries of the Navy and of Emigrant ships, achieve-

lnlged to be so much better than the Military Ration, will afford valuable hints.

It should not be forgotten that different circumstances of exposure, exertion, climate, &c., render essential, in order to preserve health or even life, modifications of Diet. The food of the Esquimaux and of the Hindoo contains scarcely a grain in common. Necessity of a Change of Diet in a different Climate.

No allowance was, however, made for this in the Crimea; and, had the troops been restricted six months longer to the Diet with which they began the campaign, the Army must have been annihilated.

A Memorandum is annexed, proposing a Diet for the Soldier, suggested by Sir R. Tulloch. Diet Table for Soldiers out of Hospital.

Memorandum regarding Proposed Diet for the Soldier.

For Breakfast, Coffee, Cocoa, and Tea on successive days, with Bread and Butter.

The quantity of Coffee or Cocoa to be an ounce, or of Tea ¼ of an ounce, Bread 6 ounces.

In Scotch Corps, Oatmeal Porridge and Milk, or Oatmeal and Butter, if preferred, for breakfast.

Dinner to vary as follows, on each day of the week:—

1st, day.—Irish Stew of Mutton with Potatoes, and Rice Pudding.

2nd day.—Salt, or Corned Pork, with Pease Soup and Potatoes, mashed with Greens or Cabbage, and a little fat, termed Col-cannon.

3rd day.—Roast or baked Mutton, with Potatoes and Yorkshire Puddings.

4th day.—Boiled Beef, with Soup and Vegetables, thickened with Rice, Pearl Barley, or Sago, and Boiled Potatoes.

5th day.—Roast Beef or Baked Beef, with Potatoes under, and Plum Pudding.

6th day.—Boiled Mutton, with Soup and Vegetables, and Boiled Potatoes.

7th day.—Stewed Beef, with Vegetables, and Plum Pudding.

8th day.—Soup made from head, shanks, and feet of animals not otherwise issuable; Roast Heart, fried Liver, Tripe, and other parts not at present made available; Bread Pudding, with Raisins, &c., made from Bread not used during previous days, and at present generally wasted.

On each day, 4 ounces of bread to be used with the Dinner.

Half-pint of Beer on each day at Dinner.

For Supper, Half-pint of Beer, with 2 ounces of Cheese and 6 ounces of Bread, or Bread with Butter, and Tea, Coffee, or Cocoa, as at Breakfast, or Porridge and Oatcakes, in lieu of Bread, in Scotch Regiments.

The quantity of meat for each day is, according to the present regulation, ¼ of a pound, uncooked, which, including bone, averages about 7 or 8 ounces of cooked Meat. This, with 1 lb. of Bread, the soldier is entitled to have for 4½*d.* per day, whatever may be the cost, at home, or 3½*d.* if abroad.

The expense of the rest of the messing would not exceed about 4½*d.* per day more, leaving the soldier, of his 1*s.* 1*d.* per day, about 4*d.* over. Of this, 2*d.* a day would about cover his necessaries, barrack damages, and small stoppages, leaving about 2*d.* a day for pocket money after all his other wants are amply supplied, and he has had a pint of beer provided for him.

If this diet were found too expensive, the Beer and Cheese for the Supper could be struck off, and the Tea and Bread substituted, which would make a saving of about 1*d.* per day, or the former diet might be confined to the men who had more than 1*s.* 1*d.* a day, and who would be better able to afford the expense.

Married men, who could not afford these rates, might either be allowed to live out of mess, or the Beer and supper meal made optional.

The different companies of a Regiment would commence with different days' diet, so that all might not be roasting, boiling, and baking on the same days.

NOTE.—An exact estimate of the cost, nutritive value, &c., of the Diet here proposed, together with observations upon it, will be found in the Appendix.

XV.

Notes on the Functions of the Commissariat in connection with the Supply of Food for the Army.

The Commissariat are the Bankers, Storekeepers, and Carriers of the Army.

The Commissariat of the British Army is endowed with many of the functions of the French Intendance, and, at the same time, with some of those of the Treasury, with which many of its appointments originate. In other respects, as its name shows, it is a servant of the Commander of the Forces.

Upon the management of the Military Chest, i.e. the paying Department of the Army, connected with a species of banking, it is not the intention of this paper to touch.

The Commissariat are also the storekeepers and carriers of the Army: all Purveyor's stores pass through their hands. It is not proposed to treat of either of these topics, except in so far as carrying provisions forms a component part of feeding the Army.

Their duties in supplying Food.

It is with the supply of food only and with neither provisions, that this paper has to do.

The feeding of the Army involves a supply of

Bread or biscuit,
Meat or salt Meat,
Its carriage,
Its distribution,
Its cooking.

It ought, also, as has been shown, to involve the sup

of several other articles of food, necessary to make a perfect Ration.

It is the business of the Commissariat to procure, transport to the field, and distribute, bread or biscuit and meat.

The duty of the Commissariat, in the late War, after landing the cattle destined for provisioning the troops, was to preserve them in the country, and to take the requisite number to its own divisional slaughter places. From these, the meat was delivered to the regiments, who sent their own parties for it. It may be observed, by the way, that, as the delivery took place on exactly the same principles as in England, the "fifth quarter" of the animal was retained by the Commissariat. Finding no sale for this "fifth quarter" in the Crimea, which is the perquisite of the butcher and Commissariat all over the world, it being practically so valuable that the butcher's price for meat is about the same as that at which he buys it, weight for weight; this "fifth quarter," consisting of head, tongue, feet and entrails, hide and horns, was ordered to be buried as a nuisance by the Quartermaster-General's Department. The French and the sailors frequently procured and made use of the fresh heads, nay, have even been known to dig them up.

The Commissariat not responsible for the Formation of Roads.

The duties of the Commissariat, as regards feeding the Army, it must be observed, were arrested by the non-existence of roads to the front, the decision as to which, as well as their actual formation, rested with the Quartermaster-General's Department. The reason given for not making the road, before that operation became impracticable, was the necessity of employing every man in the siege operations, or in guarding the position; but the statistics of sick show, on examination, that more men were withdrawn from these primary objects by the neglect of

the road than would have been withdrawn by the making of it. This difference is also to be added, that, in the one case, they would have been restored to the ranks as efficient soldiers, and, in the other, they were either invalided, dead, or debilitated.

Origin of Scurvy in the excessive use of Salt Provisions, as furnished by the Commissariat.

It has been shown that the Scorbutic type of disease predominated in a very large majority of cases in the Army, up to March, 1855.

In tracing the origin of this, by far the most prominent object which meets the inquirer is the large proportion of salt provisions which formed the food of the soldier, the next largest component of which is hard biscuit, which by no means mitigated the influence of the former. This, again, was increased by the absence of those processes of cooking used for salt meat in the Navy.

The long period for which the soldiery was limited chiefly to this diet was precisely that of his severest labor and greatest exposure.

Meanwhile, though the Naval Service was receiving its usual issues of lime juice, none was issued to the Army for seven weeks after it was actually in store.

It should be borne in mind that the salt meat was obtained under the same specifications of contract as for the Navy—to wit, that it should be guaranteed sound for three years, &c.

The Commander of the Forces increased the ration of biscuit, October 15th, 1854, from 1lb. to 1½lb., which, however, was suspended November 7th, 1854, at the representation of the Commissary-General, who represented that the men sold their biscuit to the French, and that, therefore, it was superfluous. Whereas the real fact of the case was, that the scorbutic state of the soldiers' gums rendered them unable to eat the biscuit, and therefore they exchanged it with the French for soft bread.

Thus, at the moment that the greatest amount of nourishment was necessary, the men did not even eat their allowance of farinaceous food, and the animal food was of a kind not giving, it is supposed, the nourishment which fresh meat would have done. The camp-kettles, being in the proportion of one for every five men, hold a quantity of water, besides the 5 lbs. meat rations, adequate to cook that amount of fresh meat, but not of salt meat. Neither did the arrangements afford the men time to cook the meat in the way necessary for salt provisions.

However, nine-tenths even of the camp-kettles were, as is well known, thrown away, and the men reduced to cooking in their mess-tins. The inverted tops of these were used for roasting coffee. Now, as the mess-tin afforded even less space for water than the camp-kettle, the meat was imperfectly cooked, even when fuel was applied, so that it was as frequently not eaten from this cause as it was thrown away uncooked.

Fresh Meat could have been got from the coast of the Black Sea.

Assuming that salt meat demands for its carriage even ten-tenth of the tonnage of fresh provisions, it must be considered that, in this instance, it was brought 3,000 miles, whereas the fresh was imported a distance of 300.

Admitting that Wallachia and Moldavia were left for the supply of the French forces, which was not entirely the case, the whole sea-board of the Black Sea, from 150 to 300 miles distant, together with that of Asia Minor, for 300 miles more, was open to the Commissariat of the British Army. Two peculiarities of supply should also be noted: 1. The great feeding grounds both for sheep and cattle, of the whole range of the Bithynian Olympus: and 2. That there has been for centuries an established trade in sheep, driven from the confines of Persia to the neighbourhood of Scutari.

The problem is, however, more simple, inasmuch as in Moldavia and Wallachia, scarcely touched for the British supplies, 100,000 head of cattle were melted down for tallow during the first six months of our occupation of the Crimea, in addition to the supplies which the Austrians drew thence.

The Consuls of the ports of the Black Sea soon made known that they could obtain tenders to almost any amount, which, however, were sought after to only a very small extent, until towards April, 1855.

In the meantime there was ample opportunity for carriage, inasmuch as the steamers which were employed could have towed sailing-vessels, and sailing-vessels were attainable, British and foreign, which could have sailed for themselves without any very injurious delay, considering the small distances.

During the great pressure in December, January, and February, the Army was supplied with only about 4lb. of fresh meat per man per month, whereas the Duke of Wellington became uneasy, if his troops were fed on salt meat more than two days in the week, although they had a ration of Rice to counteract the ill effects.

It at once suggests itself, that fresh meat would have carried itself up to camp, and thus saved the men the terrible journeys to Balaklava to fetch their rations.

Soft Bread could have been got.

With regard to the bread, any amount of soft bread in the winter-time, could have been baked at Constantinople. The French established ovens and appurtenances for the Hospitals and Reserves there, and at Kamiesch for the Army in the field. The British made contracts for a supply of soft bread from Constantinople (to arrive six days in the week) for the troops before Sebastopol, but not till April 1855.

Towards the end of May, the steam baking-ship, called the "Abundance," came out, upon which baking was continued night and day.

No ovens were established by the British, except the Russian ovens, found in Balaklava, yet the country presented lime-stone, lime, and sand, for building them.

A Supply of Rice

Rice, issued to the troops till November 15, 1854, was discontinued during nearly two months of distress, on the plea of want of transport; whereas an equivalent of rice to a reduction of salt meat, of an equal weight, would have been of use to the men's health, and could scarcely have produced discontent, as much meat was actually thrown away.

and of Vegetables could have been got.

The important point of supplying vegetables as an antiscorbutic was partly, if not wholly, neglected, up to the end of January, 1855. For not only was a great weight of cabbages, sent from Varna on the deck of a ship, thrown into the Harbour,* no Commissary being willing to receive them, on the ground that they were not consigned to any one; but potatoes were not bought for the use of the Army, though they could have been supplied to a considerable extent from Trieste.

Prepared potatoes were offered on sale to the men, which they, however, not knowing the importance of vegetables to their health, did not make use of, on account of their high price, and from not knowing how to cook them.

After May, 1855, it may be said generally that the Army had an ample supply of fresh meat, fresh bread, vegetables, and lime-juice.

Dates of the variations in the issue of Fresh Meat, Vegetables, &c.

Some of the most remarkable dates are here annexed, for the purpose both of illustrating our sanitary and dietetic history, and of confirming the principles to be laid down.

* This is an event that appears to have happened more than once.

I.—*Fresh Meat.*

1. Fresh meat issued to men for duty.

	Per Month per Man. lbs.
In December,* 1854	3
In January, 1855	5
In February, „	4

2. Average quantity of fresh meat issued to each man of the Five Divisions composing the Army, *including the sick in camp.*

	Per Month. lbs.	oz.
In December, 1854	6	4
In January, 1855	9	0
In February, „	8	2

II.—*Vegetable Food.*

1. Rice.

Issue of 2 oz. Rice to each man daily—discontinued November 15, 1854. General order to resume 6 December 27, 1854. Issue became general in the course of January. Quantity of Rice in store, November 15, 1854:—

At Balaklava, 74,000 lbs.
At Scutari, 296,000 „

N.B.—The men always declared that they would rather have lost their rum than their rice.

2. Lime Juice.

20,000 lbs. arrived for the troops, December 10, 1854

* 8,000 head of cattle were then in our possession.

sent issued to the troops till the first week in February, 1855. The fact of its existence in store was first discovered by Lord Raglan himself (from a return called for by him) on January 24, 1855, and on January 29 appeared his General Order, making it a part of the ration, only five days afterwards.

3. Preserved and Dried Potatoes.

None issued to the troops except at a high price, which they declined, till about the latter part of January, when they were issued gratis, although at first chiefly to the Hospitals, and eagerly received. Quantity in store:—

At Balaclava, November 1, 1854, ..	32,400 lbs.
At Scutari, October 1, 1854 ..	6,000 „

4. Peas.*

Whole Peas were issued, but the men would not take them, from not knowing how to cook them; they were never told to use soda. Quantity in store at Balaclava, 51,000 lbs., December 16, 1854.

5. Barley.

Quantity in store at Balaclava and Scutari, 65,000 lbs. viz., part from October 1, 1854, part from December 1, 1854, part from January 1, 1855.

Issue of Vegetables.

Only five or six regiments received any at all in November, 1854.

* "Peas," says Dr. Christison, "should be supplied, if possible, in the state of flour, when intended for part of the Rations of troops on active service in the field. They are then much more easily cooked, as well as less compactly packed and more easily served out."

Still fewer acknowledge any in December, 1854. The issues this month amounted to—

$$\text{¾ lb.} \left\{ \begin{matrix} \text{or 2 potatoes} \\ \text{1 onion} \end{matrix} \right\} \text{per man in 31 days,}$$

including sick.

¾ lb. per man per week, including sick, in January, 1855. Vegetables began to be issued regularly about the 20th or 24th of this month.

In some regiments, supply irregular up to the middle of the month, in February, 1855.

In five regiments only insufficient in March, 1855.

6. Fresh Bread.

Nothing but biscuit issued to the troops till April, 1855; nor to the sick in camp till April 9, 1855.

N.B.—The sick bought the 2 lb. loaf at 2*s.*, 3*s.*

7. Green Coffee.

November and December, 1854, January, 1855, 173,000 rations of Tea at this time at Balaclava; and more could have been procured from Constantinople or the Navy.*

III.—*Porter.*

147,000 gallons were in store at Scutari from December, 1854, till April or May, 1855. The exhaustion produced by the men being sometimes all day on fatigue duty to and from Balaclava without food was such that, had this porter been brought to Balaclava and served out to them there

* There does not appear to have been any Report made, recommending the issue of Tea, by the Principal Medical Officer, till March 22, 1855, although, on January 24, it was advised by the Director General at home

it is unquestionable that much suffering would have been saved.*

IV.—*Fuel.*†

The issue of Wood to the troops *near* Balaclava began December 29, 1854, but not to the front, excepting a small quantity to the Hospitals, and that not till the middle of January.

The issue of charcoal began on December 8, but only to the troops in front.

V.—*Camp Kettles.*

Not replaced till January, 1855.

VI.—*Blankets.*

At the end of December, 1854, there were blankets enough in store to have given a third blanket to every man. In December, when the weather was severe, the men, and even the sick, lay on the muddy ground of their tents, with nothing under or over them but the great coat and blanket, these too often wet from the trenches. The sufferings of the men from cold were at their height during January.

The dates of distribution of blankets are—

* "When practicable, half-a-pint of porter (ten ounces) would form a most desirable substitute for the ration of spirits. The nutriment is much the same, viz., one ounce, but the alcohol is only one-half; and nevertheless, its restorative power is greater. All Officers engaged in active service in India, especially during the occasional privations in the late Burmese War, have borne strong testimony to the superior advantages of malt liquor over spirit."—Dr. Cantlie.

† The whole of the Southern Coast of the Black Sea is wooded for hundreds of miles.

First week, December, 1854, 1 to every 2 men.

Ditto, January, 1855, 1 to every man made complete.

Faultiness of the whole Dietetic System.

These entries show, as far as they regard Food, that the whole dietetic system pursued in the Army was bad. In fact, it was nothing but the merest haphazard. The result was inevitable after these conditions had been permitted to exist.

It is not to be assumed that the whole of our disaster in the Crimea was due to salt provisions. On the contrary, it is most dangerous to the attainment of practical truth, to ascribe the disease of 1854–55 to any one defect alone. It is unquestionable that no amount of fresh provisions would have saved that Army from scurvy and death under such circumstances as those from which it suffered. Scurvy has been seen in armies which never had a day's salt rations. It is unquestionable also that no army ever died of salt rations alone. But, under such circumstances as those which existed in the Crimea, it was imperative to make an entire and immediate change from salt to fresh provisions, as soon as scurvy appeared; this would have saved many lives. The scorbutic diathesis depends, however, on many other personal and local conditions, and it is a superstition to suppose it only arises from salt meat. Had fresh rations been issued every day, and cooked (or rather left uncooked) after the manner of the salt rations, the men would still have suffered from disease; hence the stress that has been laid in these Notes on the subject of Cooking. Did we but know its extreme importance, and how any food imperfectly cooked is at least as great a provocative of disease as salt provisions are, we should have paid a little more attention to Cooking in the case of Armies.

The fact is, that when men are exposed to unaccustomed conditions of climate, dress, shelter, fatigue, damp, foul air, &c., it is of imperative importance to give them a nutritive, well-cooked, and varied diet, in order to enable the constitution to select and appropriate the elements required for making up the waste. It is safer not to expose men to such conditions, than to trust to being able to neutralize them when they have arisen; hence *winter quarters* have always been the safeguard of ancient armies. But, as there were none in the Crimea, the army perished through neglect of these preservative conditions. No army either, be it ever so well fed, or cared for, will escape zymotic diseases under defective sanitary conditions. These diseases pay little respect to good living. This is also shown by the Crimean experience. Hence the supreme importance of sanitary measures. But they do not render the other measures unnecessary.

Mr. Alexander's Letter on the causes of Disease.

What were the causes, besides Salt Meat, of the disease in the Army Mr. Alexander has admirably summed up in a letter to the Principal Medical Officer, dated December 10, 1854.

Want of rest, exposure to cold and wet, harassing duties, insufficiently nutritious food, no fuel for cooking, want of clothing (the men being almost bootless, and in rags, with only one miserable worn-out blanket), tents not affording protection, for several days full of mud. Rations have, generally speaking, been 1 lb. fresh or salt meat, 1 lb. biscuit, 1 oz. (raw) coffee, 1¼ oz. sugar, with rice, or barley, 1 gill rum. Rice only issued 4 days, barley 1 day during the month. Vegetables were in use for the former portion of the month, as well as meat, alternately fresh and salt, for the later portion salt, not always full ration.

Mr Alexander recommends "huts for men with cooking places, fuel, cooking utensils, clothing, blankets."

The letter is remarkably interesting from showing that uncooked fresh meat appears to have had as prejudicial an effect as uncooked salt meat on the men's health.

Remedies and Preventives of Scurvy.

When scurvy has appeared, an instant change of diet, an issue of lime-juice and vegetables are the remedies which, in our case in the Crimea, were not supplied, as has been shown. But, in order to prevent scurvy, we must trust exclusively neither to fresh meat* nor to vegetables. A nutritive and varied diet, as has been said, varied to meet the conditions of climate, season, fatigue, and the other circumstances to which troops may be exposed, is the essential. For variety is a main though indirect preservative against disease.

But in the Crimea, during a winter siege, warm clothing, blankets, good shelter, supply of fuel, cooking places and vessels sufficiently large to hold water enough to cook the rations well, good arrangements in the trenches, a hot meal before going in, and after returning, as well as means to dry the men after their return; these things were all necessary, besides a generous diet, to save the Army from Disease and from Death.

Conclusion.

From the above, the following considerations naturally arise, which have already been touched upon, viz.:—

That it should not be left to the discretion of the private soldier to provide himself, or not, with articles of diet essential to his health, but of which, in his ignorance, he cannot be supposed to estimate the importance; but that the dietary of the soldier should be fixed after every necessary scientific inquiry, such variations being allowed and designated as the period of the year, climate of the district in which he is serving, and the nature of his service

* Salt is not a direct cause of Scurvy. Perhaps the only direct one known is Ammonia. On board Guano Ships it has been produced, when every other condition was good.

make desirable; the selection to be made by the Commander of the Forces, advised by the Sanitary Officer, after hearing the practical observations of the Principal Commissariat Officer.

French Intendance and East Indian Commissariat.

The known anomalies and difficulties of the Commissariat and Purveying Service, no doubt, led Government to the inquiry into the French Intendance which has been carried out by three well-qualified officers.*

* Sir John McNeill and Colonel Tulloch do not appear to have been sent out to inquire into the mode of supply of the Army—but into the Commissariat—nor into the way in which the duties of feeding the Army with food and clothing ought to be performed—but into the way in which the Quartermaster-General performs his duties.

It is impossible not to come to some very strong conclusions, upon comparing the Report on the French Intendance and that by the Crimean Commissioners, together with Colonel Tulloch's Pamphlet. They are these. But as it is a Military question, and these conclusions could only come with any value from a Military opinion, nothing but the intense interest of the subject of our Crimean sufferings, to one who has witnessed them, could excuse the placing these remarks here at all, even in a note.

Let there be a Department whose duty it is to bring Food and Clothing actually to the Soldier.

Colonel Tulloch says: "The Quartermaster-General admits that this was his duty," the Commissary-General that "that was his," and somebody else that the *other* was his. But is there no Department whose duty it is to bring the clothing, and not to leave it till it is on the men's backs, nor the food till it is down the men's throats?

If the question is not whose fault it is or is not, that the men were not clothed, but how the men are to be clothed and fed, then surely it is meaningless to say the Government had discharged its duty, when it had brought the clothes to Balaclava, the Quartermaster-General when he had issued the Requisitions, that the responsibility of some other Department then began.

Let the same Department which brings the clothes to Balaclava be responsible for carrying them on to the Army, whether it be seven miles or seventy miles from the Port.

Sir John McNeill carried the country with him by these few words, which give the whole case:

"The most zealous wish of the country, from the Queen to the humblest of her subjects, was to provide the Army of the East with all that was necessary to its welfare, and even to its comfort; there was no time, from the commencement to the termination of the war, at which the people of this country were not ready to furnish any amount of funds that might be

A modification, however, of the Commissariat duties exists in the Indian service, which, though much nearer

considered necessary for that purpose. The resources of the country were greater than at any former time; its power to produce every manufactured article that the Army could require was such as the world had never before seen; its mercantile marine provided fleets of transports, including its magnificent ocean steam-ships, such as no other army ever commanded; the resources of the Turkish Provinces were found sufficient to supply nearly three times the number of men with abundance of wholesome food for another year, without being exhausted; the Army occupied the same ground throughout the whole time, and was as stationary as the population of a town; no part of it was ever more than seven miles distant from a secure harbour, and a considerable part was encamped within a mile or two of the port; the Allied Navies had undisputed command of the sea, so the vessels of all classes navigated it with the same security as in a time of profound peace. Yet the country is expected to believe that, with all these almost boundless resources and these means and facilities, it was impossible, by any exercise of talent, energy, and foresight, to provide either sufficient food or sufficient clothing for twenty or thirty thousand men during their first winter in the Crimea."

But there is a still further question. If the Army had been seventy miles from the harbour, there ought to have been a Department whose duty it was to bring food and clothing to the Army wherever it was—upon whom the Commander of the Forces could have laid his hand and said, "It was your business and no one's else to clothe and feed these men, and they are not clothed and fed."

Let us never need again to handy the question about (like a parcel of unruly servants) as to whose "place" it was. We know now that, in January, 1855, we were losing men at the annual rate of 1,174 per 1,000; we know that, in that month, there were 12,000 Infantry in Hospital, and only 11,000 in the trenches. Either this is true or it is not. There is no excuse; for the thing has happened. If a Regiment has starved, it is no excuse to say that its food was on the Black Sea.

To organize a system by which an Army should always have its rifle roasted and ground, and its clothes carried seven miles, might be an answer sufficient to the questions asked by the Committees, the Commissions and Boards which have hitherto considered the subject. It would be no answer to the Queen and the people, requiring to know how another Army is to be governed, so as to save it from a fate similar to that of the last.

It has, further, been said that the Quartermaster-General's Department, the Adjutant-General's Department, and the Commissariat Department are the organization to preserve the Army in health and efficiency, and are amply sufficient for the purpose.

It is difficult to define the respective duties of the two first Departments as they themselves admit. But the following is an approach

to the principles of the British Army than the French Intendance, supplies those wants and removes those

The Quartermaster-General is to provide the Soldier with shelter, water and roads, to take up the ground, and to "*authorize the issue*" of blankets, great coats, and all that is comprehended under "warm clothing."

The Adjutant-General provides the uniform, or regimental clothing; sits off the men to their duties, and has authority over all appertaining to discipline.

Lastly, the Commissariat supplies food, transport, and storage for stores; being, in this last office, the Store-keepers and Carriers of the Army.

These are the Definitions of their duties. Here follows the Problem, upon the solution of which the lives of 20,000 men did depend, and those of many more will depend again.

Given, upon Sir R. Airey's evidence, that the Army was not clothed—given, upon the evidence of almost every Commanding Officer and Regimental Surgeon in the Service, that the food was bad and insufficient for men on active service—that the shelter was equally bad—that the transport *did not exist*,—

Is there a Department, or, if not, can one be organized, whose business it shall be to see that the clothes are on the men's backs, and the food in the men's mouths?

By comparing all the various evidence of Regimental Surgeons and Commanding Officers, now in our possession, we can see that there was no uniformity of system, that some Regiments suffered more and some less, according to the measures adopted (of their own accord) by their Commanding Officers.

But, let there be a Department, whose duty it is to go to the Commanding Officer of a Regiment, and say, "Sir, it is my business to see that your men are clothed and fed, and they are not; to see that their food is properly cooked, and it is not." Let this Department, in its turn, be amenable to the Commander of the Forces, who can, if it breaks down in that duty, know upon whom to visit it.

Now, the food and transport are in the Commissariat's hands; the water, warm clothing, tents, and road-making in the Quartermaster-General's, &c., &c.

Let there be a Department to provide Food, Transport, Tents, and Clothing.

Let us have a Department which has the *responsibility* of providing food and transport, tents, and clothing; in short, all the organization to support life in an army, and about which there is no question—if the clothing is not on the men's backs, whether it is seven miles off or 3,000 miles off; it is not there, and they are responsible.

Colonel Tulloch dwells much upon the fact, that Lords Lucan and Cardigan did not know how to cover in the horses, to give them shelter, to get canvas or pits, or this, that, or the other. Colonel Tulloch is a man of inventive mind, who would have known how to devise all those things;

anomalies by which so much suffering has been occasioned in the late Campaign.

The second Burmese War, in some degree analogous to the Crimean Campaign, was a severe test of this species of Commissariat. The many stupendous expeditions of the British Army since that period, besides the ordinary marches of British troops in India, which are in themselves the most searching trials of Commissariat provision, prove that the modification of the Commissariat in the East India Company's Service deserves respect and imitation.

The primary difference between this and the French Intendance is, that the Indian Commissariat is, in all respects, under the orders of the Commander of the

but it is in vain to expect every Cavalry Officer, good or bad, to be a builder, or every trooper to get off his horse, and set to work to shelter

and a Military Train, to furnish Men for Building.

Secondly, let there be a Military Train, from which a number of men can be brought, who know, as their trade, how to run up buildings to shelter both horses and men. It is but an extension of our own Sappers and Miners. Let these men, as well as many other trades, be at the disposal of the Department whose business it is to find shelter, food, and clothing for the troops.

The French have already this organization.

It has been constantly reiterated, "We were not prepared for a campaign in the Crimea;—we did not expect to winter there." But neither were the French prepared; neither did they expect to winter there. They had more mouths to feed, less transport to feed them with, than we had. Yet the first winter, it is now beyond a doubt, their clothing, food, and transport were far better than ours, and their Hospitals better appointed.

They have but two Departments—that which regulates the discipline and duties of the Army, and that which provides it with the means necessary for its existence.

The War Minister is the one head over both.

The entire separation of the Civil administration from the Military, in making the soldier an instrument to fight, while all his wants are to be provided for by civilians, is the bane of our Service.

In the French Army, the first "pick" of the Conscription is for the Military Train. The whole of the Officers for the Intendance go through a Course of Administration, those who pass their examinations are appointed to the Intendance, the rest carry their improved education into the Army

Forces, whereas the French Intendance is dependent upon its centre in Paris; that the Indian Commissariat keeps its own accounts, with an independent audit office, a system precisely similar to that of the national accounts in England, whereas the French Intendance is charged with the separate administration and control of the Army, exclusive of all that belongs to military discipline and operations.

The Commissariat in India, instead of embracing the management of the military chest, *i. e.*, the banking of the Army, is, as before stated, a distinct department under the Commander of the Forces, having, nevertheless, its centre of supply and regulation at the Presidency, with its central officer for the whole Presidency. Its functions are confined to the providing subsistence and means of transport for all troops either in the field or in cantonments, thereby appearing to involve the Purveyor's duties.

In cantonments, which are equivalent to Barracks, the "Public Works' Department" has duties equivalent to those of the Barrack Master.

The Officers for the Commissariat carrying on the class of duties, technically called "subsistence" and "transport," are drawn from the Army and have at their head a Lieutenant-Colonel or Major-General. Their importance is so great that their appointments are confirmed to them by the Governor-General. The Officer is subjected to a primary examination and to two half-years' probation, one in the Central Commissariat Office of the Presidency, and one in the Military Auditor-General's Office; finally, he passes through an examination before a Board, and then only becomes permanently attached to the Commissariat Department. If, however, he should

fail in this final examination, he returns to his former regimental service.

The result is, as may be supposed, that no Officers of higher attainments are found in the Indian Army than those of the Commissariat.

Cases of Special Orders given by Lord Raglan for supplying special wants.

Orders were given by Lord Raglan to collect mules at Alicant, and also (together with oranges), in Sicily, Crete, &c. Major Fellowes was sent, in this latter case, as first special service, with a Commissariat Officer, who represented the Paying Department, inasmuch as he drew and negotiated Government Bills. The above are two distinct instances of the interference of the Commander of the Forces, as such, with the duties of the Commissary-General, in cases which combined distant action, large expenditure, and a pressing want.

Here it would appear that the Commander of the Forces' promptitude arose from knowing that a common order to the Commissary, such as would have been given in Spain, to collect the mules from the surrounding districts, paying a fair value to the owners, would have proved of no effect, because there were no mules. In this particular the Commander of the Forces seems to have been well informed,—and, had he had a Sanitary Officer or Board attached to the Army, with power to make reports, marked "Urgent," we may fairly infer that he would have taken measures, equally prompt and efficient, for procuring and bringing to the troops such provisions as would have prevented them from starving upon salt meat and biscuit as soon as he was made aware that these articles of diet

actually do not give sufficient nutriment to enable a man to resist exposure and severe labour, but engender disease in the strongest constitutions. We are the more convinced that such would have been Lord Raglan's measures, when we see him actually taking the initiative in the matter of the lime-juice; when we see him, within two days of his detecting its existence in store, from a return furnished him, at his own desire, by the Commissary, January 24, 1855, putting his Adjutant-General into communication with his Principal Medical Officer upon the subject, and within three days more, publishing his General Order, making it a part of the Ration, thus acting Principal Medical Officer himself; and, when we see him, too, urging and almost forcing upon his unwilling Commissary the supply of fuel.

There exists evidence that the Medical Department, notwithstanding the energetic and untiring reports of some individual members of it, did not supply the place of the Sanitary Officer, in exercising a judgment upon diets. Had it done so, or, indeed, had it not avoided to do so, the fact would have appeared in the reports of the various Commissions and Committees, long since printed.*

* In order that due credit may be given to the Medical Department for the representations, recommendations, and remonstrances which it did make, as well in this matter of dieting, as in that of clothing, alluded to (p. 5,) an analysis of these has been given in the Preface to Section I.

A full Analysis has also there been given of the present undefined position and duties of the Army Medical Department, for which, of course, it is not to blame.

Whether or not it were fit to advise on such subjects should have been decided before the Army went out. If the Department were incompetent, why let it exist at all? If it were competent, why reject its advice? The system of administration is unquestionably wrong which could produce such a dilemma. If the Army Medical Department is to be of public service for sanitary purposes, its powers and functions will have to be defined far more distinctly than they hitherto have been; and an adequate station given, in order to enable it to execute those functions.

Purveying of Regimental Hospitals, in connection with the Commissariat as organised on a new principle.

Assuming that the change to a Commissariat, analogous to that of India, were admitted to be advisable, and assuming that the purveying of General Hospitals by Purveyors had ceased, and the supply of all necessaries by Stewards had commenced, whether of General Hospitals at the base of operations, or otherwise, the purveying of Regimental Hospitals would alone be left in action. This is now effected by a Purveyor to the division, who supplies whatever Regimental Hospitals may be in the division. One of two courses might be here adopted, either that of creating a Steward for the division, who should have the attributes of Steward, and not of Purveyor, and consequently should draw from the Commissariat and distribute to the Hospitals all that was wanted, excepting medical stores; or, that the Regimental Hospitals should fall at once under the care of the newly-organised Military Commissariat, who would be quite capable of dealing with them, being, as they would be, under the charge of their Surgeon, and of the Commanding Officer of the regiment—the latter having the same post, as regards his Regimental Hospital, that the Governor has, as regards the General Hospital. The Purveyor, at present, only gives such amount of articles as are justifiable under his "Warrants," by which he is governed, and is not responsible for those wants of the soldier in Hospital, which are in excess of the warrants, whatever may be the evidence before him, either in the requisition of the Medical Officer, or from the personal observation which it would appear he was bound to make of what was close under his eyes. At present, the Purveyor, whether of Regimental Hospitals in a division, or of a General Hospital, in providing himself with supplies, is bound, as to price, to act under the contracts which the Commissariat have thought fit to make, it is presumed after co-

sultation with him—viz., for the larger supplies, bread, meat, fuel, transport. All other articles he purchases himself with cash or bills. The contracted articles are paid for by the Purveyor's receipt, addressed to the Commissariat, which justifies the payment by the Banking Department of that office.

The obvious faults are:

1. That the Purveyor is not responsible for the economical result, inasmuch as he may have no voice in the price or quality and kind of the requirements he issues.

2. That the amount of purveying, by the theory, is not co-extensive with the wants of the soldier, as the Purveyor purveys according to his "warrants," and the soldier wants according to his circumstances, which may be foreseen, or may not be foreseen, war being an irregular state of society; for the attempt to contrive for an abnormal state by normal rules, non-expansive, is simply absurd. And scarcely less absurd is it to suppose that persons of small mental or pecuniary resources can be suddenly launched into such a career, their personal responsibility not being removed—the whole lives of these persons having been passed in a state of subjugation to the niceties of routine, where their attention was riveted upon particulars, and where the obvious approach to safety and to freedom, in every case, was the escape from responsibility by turning over the question to another department.

XVI.

On Washing, and Canteens.

Washing.

At whatever period the three shirts were allowed to, or rather imposed upon, the soldier, not as a luxury but as a chief means of preserving health, the obligation was imposed upon him of washing them, that being a component part of keeping them in order.

The first three shirts which the soldier obtains, on his joining, are charged to him as necessaries, and deducted from his bounty. On every inspection of his kit, he is obliged to replenish the shirts, if decided to be necessary, and the cost is written off against his credit. Washing is also at his expense.

If the soldier is to be prepared for campaign, he must learn to wash his own shirt, as the sailor has always done, as one of the points of duty. It would follow, necessarily, that this should be one of the many points of instruction at home. Either in barracks, camp, or campaign, this would be done by a fatigue party and Serjeant, told off by Superintendent.

It would be better that there should be three (or four) successive Serjeants, and not more during the year, in order that each should be perfectly acquainted with the best processes in washing, wringing, and drying, and that this knowledge should not, on the other hand, be confined to a single one, who, from sickness or regimental duty, might not be available.

The primary instruction should be given by a civilian washerman.

Washing in Streams.

It need not be supposed that no attention is necessary; there are many distinct processes, which will effect economy in time, fuel, and material.

Even the improved American washing-board, or the common French board, used in every river of France, is unknown to the British soldier, and even to his wife.

If, in camp, a fatigue party were driven to a river for want of other water, these would form the simplest mechanical assistance for washing at streams.

The same may be said as to wringing contrivances, the simplest of which is a stick.

Warm Water Washing.

But, if there be any fuel at all, the folly and extravagance of washing in streams is immediately apparent. The warm-water washing, in every regiment, could be carried on with a very few utensils added to the reserved camp equipage, as was actually done both at Balaclava and Scutari. The reserved camp equipage is not of course to be brought up, while the Army is actually moving; it is not, however, the less to be at command at the base of operations.

The experience of the last Campaign proves that these things were necessary, for they were used.

But want of foresight alone caused them not to be ready till six months after they were required.

Washing Appliances.

With regard to hot-water washing, the appliances for boiling, wringing, rinsing, and drying in washing establishments are now well known. As they are used for the sake of economy, they surely are applicable in a greater or less degree to Barracks and Hospitals.

An approximation to them, however, is by a simple kettle, with closed lid and safety-valve, for generating steam (a tube being added to pour the water in as well as to pour it out). This is applicable to any room, shed, or booth, because the steam can be conveyed by a simple tube

to any number of vessels about the room, for the purpose of being projected into water to boil it.

In many factories—those for soap-boiling and hat-making, for instance—the simple mode of boiling water by injecting steam at a high temperature has long proved successful. This is not to be confounded with heating water by steam-heated tubes.

The chemical detergents are far from being restricted to soap, and their power is found to depend upon their application at a high temperature.

The soldier has no information, at present, of the effects of even the most common means—potash, wood-ashes, &c.

Personal Linen.

A very great distinction is practically found between the soldiers' personal linen and the Barrack and Hospital linen—sheets, blankets, paillasse covers, &c.

There is ample employment for the women in washing the former; they want only instruction in economical means provided for them.

Washing in Hospitals.

The subject of the soldier's kit, and of the necessity of placing it in store, on his arrival in Hospital, having been already treated, it is assumed that the patient's personal linen as well as bed-linen is to be provided for him while in Hospital. It may be called his Hospital kit. There are many sound reasons which can be given why the washing of this should not be entrusted to a contractor. It will be far more satisfactory, as well as more economical, to give it to a washing department, as seems to be intimated in the Warrant of the Medical Staff Corps. Washing, like other things, is a handicraft, and one, which a portion of this corps should be taught; added to this, all the appliances for economy and saving of material can be enforced, which is not the case with the contractor.

The giving out, sorting, mending, &c., of the linen would be the duty of the female superintendent and her

assistants. This is done by the "*Sœurs de Charité*," in French Hospitals.

Canteens.

Many officers, no doubt, during the last Campaign, have turned their attention to the subject of canteens, and may have struck out new views of their management, grounded on their personal experience.*

In the meantime, it may be enough to say, that each regiment should have its own canteen, to which soldiers of other regiments may be invited; that certain games and amusements should be connected with it, and newspapers authorised; that certain primary regulations should be drawn up by the Commanding Officers and Adjutants, or by a Committee of Officers who should also make the contracts for the commodities wanted, and audit the accounts; that all other details of management should be committed to the care of a Committee of Non-Commissioned Officers, elected by the men; and that these last should also elect a Non-Commissioned Officer, who should act as Canteen-Keeper, subject to the approval of the Commanding Officer.

The Canteen may be divided into two or more divisions, if thought desirable. It may be under the management of a woman, being the wife of a Non-Commissioned Officer, who should be told off, or exempted from certain duties, for the purpose of assisting his wife.

If, as we trust will be the case, the whole of the soldier's food is to be, in future, "found" him by the Commissariat (instead of a portion only, as now), there will be much less use for the Canteen than at present, and it will become, as it ought to be, much more of a reading-room and place of recreation, and less of a shop.

* See, e.g., Colonel Edwards's Memoranda, Appendix to McNeill-Tulloch Report, p. 104.

Canteens at Scutari.

So far from any regulation having been thought necessary during the first year of the occupation at Scutari, the village was not even taken into consideration as to any matter of external police. Men of the Depôt went out of Barracks at certain hours, frequented the wine-shops of the Greeks in the village, and exchanged necessaries for spirits, which also have been seen ascending into Hospital at the windows by a string. No other measure seems to have been taken than that of sending parties upon men being reported drunk, or of receiving men carried home by their comrades in this state, when they were consigned by the Serjeant of the gate to the Provost-Marshal. The houses were, however, occasionally searched for stolen goods, and now and then the Greek shops were closed by order of the Commandant, *i. e.*, all military prevented from buying. The stolen property seized in them was taken away by force. Patrols, after the British were lodged in many houses of the village, went round regularly.

The spirits, which were sold to the men at the Greek wine-houses, being supposed to be deleterious, it was proposed to the Commandant that the various liquors should be tested. This, however, was never done, though men who were far from being hard drinkers, frequently fell down after taking a very small quantity of these alcoholic liquors, sold by the Greeks.*

The preventives to drunkenness were guard-room punishment, viz., cellular imprisonment and extra fatigue-duty.

Coffee-house at Scutari.

A large hut, called the Inkerman Coffee-house, was opened at Scutari in August 1855, with private funds under the management of a committee of civilians, medical officers, and chaplains, the Purveyor being the Treasurer, and continued in full vigour till the British

* The small village round the barracks, properly called Selimieh, to be distinguished from the large town of Scutari.

left. It was furnished with games, newspapers, and prints. It was considered exceedingly beneficial, and on the whole worked well; *vide* Report of Committee.

The stores were bought by the Committee and sold at a fixed tariff, under the management of three (or four) Non-Commissioned Officers, who received, the Serjeant 1*s.*, the Corporals 6*d.* per day.

About two months after the opening of this Coffee-house, an order was issued, by the last Commandant, that no spirits should be allowed to be sold in it, and the same order was extended to the whole of the Greek shops, after which the Provost-Marshal searched for and confiscated all spirituous liquors. This order had the effect of completely putting down drunkenness at Scutari—three precautions being moreover taken, viz.:

1. Certainty of detection and subsequent punishment for the first offence of intoxication: every man who was carried through the streets, or who made a noise and resisted the Police, was tried by Court Martial upon the following charge: "disgracing himself and the Regiment to which he belonged, by," &c.

2. Strict patrolling of the streets, and challenging of every man, even an Officer, out after dusk;

3. and chief; the providing evening amusements, Schools, Lectures, Magic Lanterns, Coffee and Reading Rooms for the men.

Facilities for suppressing Drunkenness in the Army. Experience of Scutari.

In the strong belief that drunkenness in the Army may be very nearly eradicated, if not cured entirely, with ease —and that, with the advantages afforded us by discipline, it is cruel not to try at least the experiment; having been, too, a witness of the scene of Scutari in the year of its drunkenness, and Scutari in the year of its sobriety, I am tempted to add a few more words.

A more orderly population than that of the whole

Command of Scutari, in 1855–56, though increased by the whole of the Cavalry being sent down there for winter quarters, it is impossible to conceive.

Schools, Lectures, Singing Classes, &c.

There were four Schools: one in the Victoria Hats, one for the Cavalry; one, the Garrison School, for which a magnificent hut was purposely built, and two School-masters sent out from England; and a fourth, at Kulali, for the Mounted Sappers and Miners.

The Lectures were crowded to excess, so that the men would take the door off the hut to hear.

Singing Classes were formed, and the members allowed to sing in the Garrison Chapel.

The men got up a little Theatre for themselves, for which dresses and materials were lent by a private hand, and this Theatre was, I believe, always perfectly orderly.

Foot-ball and other games for the healthy, Chess and Dominoes for the sick, were in great request.

Her Majesty, as is well known, with her ever-thoughtful care for her troops, and Her Royal Highness the Duchess of Kent, sent out Games, Books, and Newspapers.

The most remarkable instance of discipline among the men remains to be told.

Reading Room, managed by the Soldiers themselves.

At the end of the winter 1854–55, huts for the Convalescents having been put up in the Barrack Hospital Yard, the first of these was ceded as a Reading Room for all (not women) in the Barrack Hospital. No other exception and no regulations were made. It was furnished with books, maps, prints, and supplied with newspapers and writing materials by a private hand.

It was put in charge of a Non-Commissioned Officer of the 1st Royals. It was open at all hours. The men sat there reading and writing their letters, and the Library of the British Museum could not have presented a more

silent or orderly scene. This I can attest by hourly observation.

The only damage which was ever done, the only abstraction of newspapers which ever took place, was neither by Private nor Non-Commissioned Officer. The latter circumstance having happened was the cause of the only regulation made, viz., that no newspapers should be taken away, which was pasted up.

The consumption of paper was by no means excessive; and, according to a rough calculation, it tallied with the number of letters which the men were allowed to send to the Superintendent of Nurses to be stamped.

This trivial circumstance is mentioned, because it was said, that the men would sell the paper for drink. This never happened.

It was unfortunately done with regard to the paper given out to the sick men in the wards, but neither by Patient nor Orderly; and the Non-Commissioned Officer in charge of the Reading Room was then empowered to issue writing materials to those who could not leave their beds; after which no irregularity occurred.

I speak from experience of two years of the Army, and I believe that a higher or more hopeful career does not exist than that of rising the moral character of the Soldier, with the help afforded us by discipline.

Canteens in the Crimea.

In the Crimea, the Canteens were chiefly kept by the Greeks, and, whatever regulations existed, being rules for the soldiers and not for the Canteens, they had very little effect. No uniform system appears to have been adopted. Soldiers on leave in great numbers, and officers' servants, as well as soldiers going down to the port for their regiments, frequented the market at Kadikoï, which was a species of German fair, in which every kind of thing was

sold, the articles of largest consumption being spirits, porter, and wine. Kadikoi was apparently under no regulation, after some kind of permission had been granted to build the respective huts, except that the Provost-Marshal from time to time appeared by his policemen for the prevention of riot and taking up of thieves. The regulations thus regarded the after effects, not the prevention of drunkenness.

Spirits were procurable with great facility in Balaclava also; some of the Medical Staff Orderlies in the General Hospital were constantly intoxicated, and some died of delirium tremens. One of them, who was employed to carry milk daily from the General to the Castle Hospital, having been found repeatedly drunk, was excused from punishment on the ground that to pass through a small portion of the town was a greater temptation than a man could be expected to resist.

With the deepest regret I record, upon my personal authority, the fact that our own soldier-patients have been seen, stealing past the sentry, in blue Hospital gown and slippers, on their way to the nearest canteen, in a General Hospital in the Crimea; and that British soldiers have been seen exchanging clothing for drink at a Sardinian canteen.

XVII.

Soldiers' Wives.

Women allowed in Barracks.

For many years, women have been "allowed" to be regarded as belonging to regiments, and consequently, Commanding Officers have been allowed to give leave to certain soldiers to marry.

In the few garrisons of England, such as Dover, Portsmouth, Plymouth, barracks were added to the ports; and in other places, barracks have gradually arisen, so that troops are almost always in Barracks, except on a march.

Nature of the Accommodation in Barracks.

Women, then, being "allowed," and barrack-room existing, either in the original fortresses or more modern barracks, these women are lodged with their husbands, as chance may assign them, at the rate of six per 100 men, as will hereafter be shown.

The only refinement beyond this, up to this time, is, that the whole of the married men and the whole of their wives, with their families, have been placed together in one or more barrack-rooms; *i. e.*, the available space of quarters has been allotted in a different manner, but not increased, on account of the women.

This is called living in "married rooms," and no partitions are allowed, except at night, when temporary ones are usually put up with blankets, &c.

In other regiments, the Commanding Officers direct that every room shall have one married couple, with their children, if they have any. The woman is allowed a bed and bedding, but not the children.

Where, however, in such quarters as the Tower of London and Dover Castle, spare room necessarily existed, one having been used for political prisoners, the other

having extensive casemates, Serjeants' wives have been allowed separate quarters, each with her husband, and this practice obtaining, was them in some cases, extended to barracks. Indeed, they are now ordered to have separate rooms.

In common Barracks, it may be presumed, therefore, that Commanding Officers managed to assign old corners wherever they could, by forcing the troops to close up in their quarters; for, by the fortress system, Serjeants had gradually obtained a *quasi* prescriptive right to the indulgence.

Women out of Barracks.

The Government allow the Commanding Officer to give three women, besides the six per 100 who are allowed indulgences in Barracks,* 2*d.* per day to live out of Barracks if they wish it; but they lose their fuel, &c., and in no town that I am acquainted with in England, Ireland, or Scotland, could an unfurnished room be had in the neighbourhood of the Barracks for less than 2*s.* a week.—How is the furniture then to be had?

The Soldier's pay is 13*d.* a day. The wife, if allowed to be married, is employed in washing either for the Officers or men, which at the outside will enable her to earn 6*d.* a day.

The women married without leave have no such means of living, and depend entirely upon their husbands being allowed by the Captain of the Troop, or Commanding Officer, to be out of mess; by this means the family has the 13*d.* a day to spend; but, if the men are not allowed out of mess, they have their ¾ lb. of meat and 1 lb. of bread for 4½*d.*; the contract price for which may be

* It appears, from a Return of the Barracks and Encampments occupied on January 1, 1857, lately presented to Parliament, that, out of 221 stations, at 20 only is there any separate accommodation provided for married soldiers.

lighter, but the Government charges the Soldier the same at home and everywhere.

If a woman is to be confined, or is ill, she has frequently to be treated in a Barrack Room. A fatal case under such circumstances has recently occured.

This is the nineteenth century, and England is supposed to be a Christian country!

What ought to be allowed to Women in Barracks.

If married women are allowed by the Regulations, as a component part of a Regiment, they ought to have provision made for them.

Every couple should have a room to themselves, with fuel and Barrack furniture also.*

The allowance granted for the carriage of Baggage (viz., so much a mile), since the opening of railways, is sufficient to convey also the regulated number of women, and perhaps more.

A ward should be told off in all Hospitals (or wards), for the accommodation of women and children, and a married orderly of steady habits in charge of it.

The wives of the Staff Serjeants should not be carried on a march, unless the Baggage Fund was more than enough to carry the privates' wives.

State of things at this day at Aldershot.

The state of things above described remains to this day, and is illustrated now at Aldershot—where huts exist, in which married men and their wives are congregated—without any classification or separation. Canvas screens separate the families in those regiments where Commanding Officers are most considerate of the morality of their men.

Since the disbanding of the Militia, the Camp at Aldershot may be considered henceforth as standing quarters

* Might not, also, more discretion be allowed to the Surgeon in taking a married man into Hospital, if he had a separate room, as it entails starvation on his family?

of Regiments of the Guards, Line, &c. The normal state, then, being arrived at, is nearly the same, without much improvement, as that of the ordinary Barracks and Garrisons of Great Britain.

It is said that, in the new Infantry Barracks, there are to be separate quarters for married women, at the rate of six per cent.

Leave to Marry.

As to these "allowed" women, the present Regulations, which are annexed, practically authorize Commanding Officers to grant "leave to marry" to a certain number of soldiers.*

* QUEEN'S REGULATIONS.—Page 223.

Paragraph 1. "When a Regiment embarks for Garrison Duty on Foreign Service, the lawful wives of soldiers are permitted to embark in the proportion of 6 to 100 men, including Non-Commissioned Officers."

2. "When Regiments embark for India or New South Wales, the wives of soldiers are permitted to embark with their husbands in the proportion of 12 to 100 men."

3. "When a Regiment is embarked for Active Field Service, the embarkation of soldiers' wives is altogether forbidden."

5. "In making the selection of women to proceed, care is always to be taken that those of the best character and most likely to be useful are first chosen. And no greater proportion of Sergeants' wives is to be selected than the Sergeants' wives bear to the Corporals, Drummers and Privates of the Battalion."

6. "Officers commanding Regiments on Foreign Stations are to specify in the Returns which they transmit to the Depôt Companies at home, the vacancies which may from time to time occur in the regulated number of soldiers' wives, and the names of those proposed by them to be sent out with detachments, to fill such vacancies."

7. "It is to be considered a rule, in no case to be departed from, that women who have joined the Regiment without authority, who may find their way out to the Regiment, who have been taken out, or, who may, by the permission of the Commander-in-Chief (obtained through the Quartermaster General), accompany Officers as servants in their families, and afterwards quit such service, should they refuse to be sent home at the expense of the officer, in conformity to his engagement when such permission was granted, are not to benefit by being allowed at any future time to fill the vacancies which may arise in the regulated number for whom rations are allowed, and which must be reserved for those who have waited at home for their turn to go out."

The Commanding Officer is restricted to no other rules and to no qualifications of the women. These depend, therefore, on the temper of that officer, or his amount of knowledge of the future fortunes of the regiment.

The soldier's selection may be restricted, at the time he obtains leave to marry, to Canada or to the county of Galway. In the one case, the woman practically has no

8. "To such wives of Soldiers as are not permitted to embark with their husbands, the rates of allowance authorized by Act of Parliament are granted, under the Orders of the Secretary-at-War, to enable them to proceed to their homes, or other places at which they intend to reside during the absence of their husbands on Foreign Service."

War Office Regulations.—Page 50, (1st Part of the Book).

Paragraph 5. "Such lawful wives of Non-Commissioned Officers and Privates, embarking for Foreign Stations, as may be permitted to accompany their husbands, not exceeding in number 6 for every 100 men,—(excepting regiments going to India or New South Wales,—on which occasions 12 for every 100 men are allowed), shall, if the Officer commanding the Station index 8t, be allowed for themselves and legitimate children, rations according to the following rules; namely,—

"Every wife one-half the soldier's ration (liquor excepted), and every child one-fourth of such ration, if under seven years of age, and one-third, if beyond that."

Addenda to War Office Regulations, 1855.—Page 56.

(Relating to Camps.)

Paragraph 8. "In these accounts the rations authorized to be supplied to Officers' Servants, not being soldiers, and to women, are not to be included, although these parties receive the benefit of the Public Contracts."

Queen's Regulations.—Page 237.

"Commanding Officers of Regiments are to take care that the number of soldiers' wives permitted to reside with their husbands in Barracks do not exceed the proportion allowed by the Royal Warrant, viz.—four women per Troop, or Company of 60, Rank and File, and six per Troop, or company of 100, Rank and File,—exclusive of Serjeants.

"Soldiers who have married without the consent of their Commanding Officers are, under no circumstances, to be allowed to have their wives in Barracks, or to participate in any of the advantages allowed by the Regulations of the Service to married soldiers."

home or friends to return to; in the other, she is so wild and illiterate as scarcely to know even the langug spoken at her new quarters. Again, native Indian wome returning with their husbands from India, suffer much o England.

On an order for foreign service, the Commanding Officer takes the number allowed, viz., six per cent., the individuals generally being fixed by lot.

In the last Campaign, regiments have been known to bring out from eight to twenty; and, of the regiments which arrived later, some brought none.

In peace, women are allowed to take their children with them—of course, not in war. Nevertheless, there were more than 100 children born with the Army, besides those which stationary Serjeants had sent out to them; and, although the mortality among infants was very great, about fifty went home with the Army.

Soldiers' Wives in Bulgaria.

It is difficult, and perhaps not necessary, to describe the great suffering of the women in Bulgaria, not one of whom had any information as to what her wants would be, or how to provide for them; nor could she, on her arrival, obtain any advice as to the present or future. She could receive little from her natural protector, who was employed on other duty. Her only theory of protection was, that her regiment would never desert her, unless by general order.

By the "privileges of the regiment," a half ration is allowed the soldier's wife. She also obtains tentage, equivalent to the quarters before described, and among her private gains the washing for the Officers is what she looks upon as a certainty. She is not allowed any baggage (except the bundle which she carries), sea-chest, bed, or bedding. She is allowed the use of ordnance bedding.

With these exceptions, she has nothing which amounts to status in the Army, or approaches that of the Feeds

Cantinière, the only woman allowed in the French Army. The *Cantinière* is the wife of a soldier who is told off to attend upon her in the discharge of her defined duties, which are to supply the French soldier with wine, spirits, and whatever else he may require under regulations.

Soldiers' Wives during the War in the Crimea.

From Varna, the women of the British Army were embarked, after more or less delay; some even went with their regiments to the Crimea; they were not, however, allowed to land, but sooner or later all were collected at Scutari, except a few who had gone up with their regiments to the Crimea after the first occupation, and some individuals who had found their way there from the mass with the baggage and stores at Varna.

During the distress, a few in the Crimea returned to Scutari; a few even remained on board the transports for months. In the spring and summer of 1855 and subsequently, a great many women were collected in the Crimea; many having gone up, surreptitiously, passengers in the French *paquebots*, and made their way through the French camp; some having gone concealed on board our own vessels, and some with late-arriving regiments. They were allowed, by the Commanding Officers of regiments, to remain till the end of the Campaign, when the regiments which sailed in transports took their women with them. But no such privilege could be granted to those who sailed in a man-of-war, as Naval Officers only received on board the exact number of men ordered.

The unacknowledged position of the women in the Crimea gave rise to irregularities and to hardships too painful to describe, because to do so is needless. Their state was not the result of any order or recognized custom.

Suffice it to say that there was actual danger of about sixty women being left behind, and all protection having ceased for these women on the embarkation of the

Commanding Officers of their regiments, they either individually reported themselves to Miss Nightingale, or were reported *en masse* by the Commanding Officers who left them. The case, being unprecedented, fell under no regulation, and could only be finally disposed of, after applications in several quarters, by the Commander of the Forces, or rather by his "*alter ego*," the newly-created Chief of the Staff, who exercises supreme authority in his stead. His disposal of the matter was an order for the transport "Thames," to take the whole of the women to England, calling at Scutari for the other regimental wives, whom the Commandant at Scutari was ordered to send home in the same ship.

And at Scutari.

The state of the women at the base of operations or General Depôt, including Scutari, Koulali, and other places on the Bosphorus, has now to be particularized. It was perfectly analogous to that of any common British Barrack, with two differences.

Firstly, they were in a Mahometan country, with very few means of communicating with the population around them, and none of deriving any assistance from them. In the second place, their quarters at Scutari, with the exception of those of two or three Serjeants' wives, who had possessed themselves of odd corners in the Towers of the large Barracks, were of the worst description the place afforded,—dirty, out of repair, with dangerous holes in the floors, some of them dark and damp, and one or two with broken drains, admitting effluvia which produced fever.

To add to this, the quarters were filled up with new comers, till the space left for walking between the rows which they attempted to hang up between the paillasses was filled with bundles, broken boxes, and their few plates and cups, and daily provisions. Most lay on the

floor, which was sometimes brick and sometimes earth; some had boards and trestles. The sick and the lying-in women were mingled with the rest; and, among this mass, the husbands took up their regular quarters. A very small portion of lamp-light was allowed, and what with the rags hung round the beds, the place was nearly dark. The meals, such as they were, were eaten in winter-time by the light of a rush-light which each had contrived to borrow or to buy.

This state of things is by no means better than the abodes of the lowest Irish in Dublin. But it had one inconvenience which these have not. The lodger remains while he pays; but the soldier's wife was often moved four or five times, as the quarters were gradually repaired, till no room remained which had not fallen under the hands of the Sappers and Miners for repair. As soon as the quarters were repaired, they were allotted either to sick—as being reported good enough—or to troops.

The women who came down from the Crimea were in a state of filth, and nearly destitute of clothing.

A Medical Officer was told off to attend the women; but whether they could find him or not, in case of need, was, at first, another matter—depending upon the Serjeant in charge of the room, who was every day necessarily absent, or upon any other person being found to go for him.

The Serjeant in charge was merely the senior Non-Commissioned Officer who happened to be in the room, and who might be, of course, changed from day to day.

Their Occupations.

Between the time that the army left the camp at Scutari and the Battle of Inkerman, the women were comparatively few. The only employment they could obtain was the little washing of the officers of the General Hospital, which was performed in any vessels they could manage to

get together, and with any fuel they might be able to buy. Soon after Inkerman, it was found that the Washing Contract for the Hospitals had broken down, and a Washing Establishment was set up by Miss Nightingale, which employed a considerable number. The Purveyor also made an attempt to employ women, on seeing what had been established, which occupied eighteen more. The only apparatus these had were a few crocks and a little charcoal which they bought, hot water being obtained by boiling the orderlies with porter. About this time, many began to be employed in making the clothes which were given to them, and in other work for which they were paid to a considerable extent. This was continued for a long period.

They were also employed by private interposition in nursing sick officers, sick medical officers, civilians, and women, and paid by private funds, as the Government nurses could not be allowed to go out of Hospital.

They were also recommended to private service among the officers' wives and British residents at Pera, by the same means, after having been tested by the employment heretofore mentioned, to the number of 20–25.

After Christmas 1854, when numbers had arrived from Varna and the Crimea, every effort was made to persuade women who were able, to go home; and an order was procured from the Commandant that all widows should be sent home. Those of very disorderly character, upon being reported by the Provost-Marshal and the Adjutant, were also ordered home. Each woman who went home had an outfit, provided by private funds.

Children. During January 1855, there were twenty-two infants in the depôt, and many were subsequently born.

Sickness. The sick and lying-in women, and infants, were relieved by private funds with food and clothing, and a small

Lying-in Hospital was properly fitted up by the same means over the wash-house, in December 1854, with paid nurses.

The fever which had broken out among the women in the depôt, produced an alarm which, after much solicitation, induced the Commandant to grant a house in the town, obtained by requisition from the Pacha, on payment of a rent. This was partially repaired by the Engineers, and cleaned, fitted up, and furnished by private funds. It was of considerable size, and at one time held about forty women, the sick and their attendants, and some few who lodged there, and did the work provided for them.

They were very well superintended and the plan was perfectly successful. In 1855, a small school was added, a number of children of civilians and stationary Serjeants having collected at Scutari.

Improvements in the course of 1855.

In June 1855, the depôt having been moved into huts in May, three huts were appropriated to the married women and their husbands. These were divided with curtains and fitted up by private interposition. They were decent, more healthy, and far more comfortable than the women's quarters had previously been. A washing hut was also provided, which was a great boon to the women. Lady Alicia Blackwood's efficient and systematic efforts produced great reforms. Finally, the women went home at the breaking up of the depôt in the vessel obtained for those of the Crimea, which was ordered to take them up. They are passed home on landing in England, according to the general order, by the Quartermaster-General's Office at the port of arrival.

Obvious Improvements to be made.

Number.

The first amelioration of the condition of Soldiers' wives would naturally begin by an uniform order, fixing the number of women which should be allowed to each Regiment, in proportion to its strength, both with regard to

the companies of the Regiment on service and those in the depôt. The statement given before sufficiently shows the accident which rules the present allowance of women. A register is kept in every regiment, in which the names of the women married, with and without leave, are recorded. In some regiments, when a vacancy occurs among the six women per cent. allowed indulgences in Barracks, the Commanding Officer fills it up from the women who have married without leave. In other regiments, the Commanding Officer will, on no account, do this.

Selection. Secondly, the choosing by lot should be abolished, and a mode of selecting the women most proper, according to their seniority and other qualifications, should be adopted. The female volunteers might be selected by a Board, formed of the Colonel, Adjutant, and Chaplain, and passed by the Surgeon. But the security would, however, chiefly consist in the report of that Board, sent to the War Department, so that the women of a Regiment should be personally known, as well as its men, to the Department.

Quarters. Thirdly, it is obvious that the brutalizing state of the quarters, not only as described at Scutari, but in ordinary barracks in England, must be abolished. The provision for married soldiers in barracks, need not on that account be very large, as quarters might be hired for them in the town where the barracks are, where a few of the husbands might be allowed to reside, the others being allowed at stated times out of barracks. By this means a great economy might be effected, while the different degrees of indulgence would tend to discipline and regularity.

Employments. Fourthly, to this improvement in quarters must be added privileged employments in Regiments, such as Canteen

keeping, a portion of the tailoring, washing, mending, &c. It is not at all beyond fair expectation that a certain number of women should be accepted to fulfil certain useful offices in each regiment, and be so highly rewarded that not only respectable women may be tempted to marry soldiers with a view to them, but that they will have the highest incentive to good conduct in avoiding the risk of losing them. If these offices and duties are found of use, and it is important to give encouragement, premiums in the way of pensions might be offered for a certain number of years' service.

If the whole number of women who may be permitted to marry into the regiment cannot be so employed, still high remuneration might be secured for a few, which would encourage the rest; and these few might even have some honorary distinction, approaching the uniform, like the French *Cantinière*.

Statistics as to Soldiers' Wives.

It appears from the records of the Royal Commission of the Patriotic Fund, that about one in seven and-a-half of the soldiers of the Line is the proportion of married men to single.

In 1851, by the Census Report, one in $6\frac{4}{9}$ of the men, including Non-Commissioned Officers, was married.

Out of	6,593	Officers of the Army	1,675 had wives.
„	136,277	Men „ „	20,755 „
		Total	22,430 wives.
			29,782 children.

It should be remarked upon this last return, that the excessive mortality among soldiers' children reduces the number.

Discouragements to

It does not seem, therefore, that the discouragements

Marriage do not appear to be successful, except in demoralizing the condition of Marriage.

to marry in the British Service have been successful. The men are not prevented from marrying, but only from marrying respectable women.

A report by Dr. Letheby, on the state of unhealthiness and indecency which he found in an Alley in London, has recently excited universal attention. Those who have been the most shocked by its frightful details appear to be little aware that the state of the wives and children of soldiers "allowed" to marry is at this moment, and at home, worse than that of the London alley recorded by Dr. Letheby.

I have seen lately in a casemate at Brompton, nine men, nine women and twenty-three children, living and sleeping together, where there was only one door and a small window on either side, the ceiling being coved and bomb-proof; and where the atmosphere was such that it would be impossible for each family to be properly screened off from another without risk of suffocation.

How is it possible for the morality of the soldier to be raised while the immorality of his domestic relations is thus made inevitable?

Marriage with the soldier is, more or less, a licensed concubinage. The number of Pensioners who have more than one wife living is two per cent.; and it has been known to exist as a supposition among the soldiers, that if they marry three women, they cannot be tried for bigamy.

Condition of the Sick Wives.

The condition of the sick wives is another consideration.

The Medical Officer is almost uniformly kind to these poor creatures. He attends them whether married with leave or not; but his position, under these circumstances, is one demoralizing to himself and productive of small good to those he is thus assisting.

He finds the sick woman or child in such a dwelling, and in such an atmosphere, that he can really do hardly anything for them. The husband or father frequently prefers applying for assistance to a common Dispensary. The Medical Officer has no means of ordering anything but medicine (which he may order from the Medical Stores), unless he puts his hand in his own pocket, which many have not, of course, the means to do. Extras or wine he may not order from the Hospital Kitchen.

What really happens when the Medical Officer is zealous or humane is, that he does order wine or extras, and accounts for them to some other name in his Extra Diet Roll.

It is true that there is a regulation enabling Medical Officers, with the sanction of their Commanding Officer, to take sick women into Hospital, but it is rarely, if ever, made use of, for the sanction of Commanding Officers would be with difficulty obtained; in very rare cases, could indeed the accommodation admit of it; and the Hospital Serjeant does not like the trouble.

Number of Sick Women at Chatham.

It might be as well to add the number of women and children treated at Chatham during the year ending March 31, 1857, in order to give some idea of the number of cases. Two cascmates at Fort Pitt are all the accommodation appropriated for them.

Lying-in women	30
Sick women	26
Infectious	7
Sick children	12
Infectious	31
Total	106

What can be done to

As, therefore, it appears that the regulations do not

promote a better Morality.

deter the soldier from marrying, and that the woman is obliged to submit to what utterly demoralizes her, what can be done to promote morality in marriage?

As to leave to Marry.

1. Commanding Officers might be limited as has been said, as to the number of those to whom leave is granted to marry. Leave might not be granted before the soldier has had ten years' service, or at least one good conduct badge, which involves a service of five years; it might be made a reward to the best men; and the character of the woman might be carefully and personally inquired into by the Commanding Officer, who might refuse leave unless it proved to be perfectly good.

Sleeping Rooms.

2. A portion of the Barracks in which the regiment or battalion is quartered, might be fitted up, after the fashion of Greenwich Hospital, with wooden partitions, not extending the whole width of the room, for the married men; two iron bedsteads, where there are children, might stand in one of these partitions. With regular inspection, such Barrack rooms, it has been proved, may be kept in the most perfect state of cleanliness, under pain of turning out the disorderly or uncleanly women; a female Non-Commissioned Officer, who would probably be the wife of a Non-Commissioned Officer, should be put in charge, whose duty it should be to report any noisy, quarrelsome, or improper conduct, or any want of decency or cleanliness. Separate rooms would, of course, be better still.

Sick Wards.

3. A lying-in ward, a sick ward, and a ward for infectious diseases, should be set apart for the sick women and children of the regiment; and the Medical Officer should be able to place these upon the Diet Roll of the Hospital, in the same way as the women would, when well, receive rations. A nurse should be provided for the lying-in ward at the expense of the Government, and

another for the ward for infectious diseases; Government does already provide for the latter class, but for this only; and, in consequence of this, the same nurse sometimes attends, as at Chatham, the lying-in women and the fever cases; a lying-in woman took fever in consequence and died.

No mis-appropriation of the sick diets to healthy wives and children need take place with proper care.

Some of these arrangements have actually been effected in Canada.

A practical exemplification of the good of some of the above arrangements for the soldiers' wives was given, as carried out by General Lawrence, when in command of a battalion of the Rifle Brigade at St. Louis' Barracks, in Canada. He also, it may be mentioned by the way, provided hot coffee and a bun for the men, at a halfpenny or three-farthings per cup, which they could have before going on duty or on returning from duty; the consequence of which was, that all but two inveterate drinkers ceased to take their morning dram.

The Regulations as to the Non-Recognition of Women Married without Leave are not strictly enforced. Mischievous results of this.

There will be an apparent inconsistency in the above observations, arising from the inconsistency of the Regulations themselves and the actual usages,—and also from the confusion of ideas between soldiers' wives "allowed to marry" and "allowed indulgences in Barracks," a confusion which exists in the minds of officers themselves.

The Regulations are not enforced, which prevent those who have married without leave from receiving indulgences. Virtually it is left, in a great measure, to the discretion of the Commanding Officer. Great evil results from this, because, in consequence of a man who has married without leave being taken upon the list of those who are allowed accommodation and advantages for their wives in Barracks, the Commanding Officer has not the power of limiting the indulgence of marrying to men of good character. This is the result of carelessness and

want of attention to the importance of the subject. The practical effect is, that the worst of women come eventually upon the strength of the Regiment, and misery among the married people is the consequence.

Lodging-Houses for Married Men of the Line.

Lodging-houses for Married Men.

The experiment has been tried for the Guards, the funds for the erection of the building having been chiefly subscribed by the Officers.

A statement of the particulars of Receipt and Expenditure is annexed, which was kindly furnished by the Architect and Treasurer, who would give valuable information, as to the possibility of similar buildings paying their own expenses.

Particulars relating to the Victoria Lodging-House, Vauxhall-Bridge Road, London.

"The building contains fifty tenements of two rooms, and four tenements of three rooms. It is six stories in height, and each story contains nine tenements.

The total cost of the building was £6,400; therefore the cost of each tenement was *circ.* £118 10*s.* 0*d.* The excessive outlay was occasioned by the expensive nature of the foundations, the high price of building materials, the scarcity and high price of labour, and the stringent regulations of the M. Building Act.

The cost of the site was £1,800; therefore the cost of superficial area, occupied by each tenement, was *circ.* £33 6*s.* 8*d.*

The total expense connected with the building, previous to its occupation, was £8,200.

The following statements indicate the quarterly revenue

ual expenditure during the year, which terminated on the 27th of July, 1857.

	Quarter No. 1.			Quarter No. 2.			Quarter No. 3.			Quarter No. 4.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Superintendence	14	14	6	13	13	0	14	7	6	14	11	0
Salaries	1	12	0	2	5	1	1	17	6	5	16	2
Credit Accounts	6	4	3	14	17	3	4	1	3	15	17	3
Rates	24	3	4	5	16	8	0	16	8	12	6	8
Total Expenditure	46	14	1	37	12	0	21	2	11	47	11	1
Net Revenue	46	6	0	37	16	6	63	16	3	41	12	9
Gross Revenue	93	0	1	65	8	6	84	19	2	89	4	10

From the above statements the following conclusions are drawn, viz :—

1. That the approximate annual revenue amounts to the sum of £332 12*s.* 7*d.*

2. That the approximate annual expenditure amounts to the sum of £153 0*s.* 1*d.*

3. That the approximate annual return upon the capital of £8,200 amounts to £2 2*s.* per cent."

H. A. Darbishire,
4, *Professors Square.*

It is to be observed that the low rate of dividend is mainly caused by the large sum expended originally in the purchase of the land, and the very low rents asked for the tenements.

The maximum paid for a tenement with three rooms is 3*s.* 6*d.* per week, with two rooms 3*s.* But most of the two-roomed tenements are let for only 2*s.* 6*d.* per week.

In suggesting, however, the foundation of similar establishments by Government in all the large garrison towns of England and Ireland, it is to be considered that

Government already pays lodging money for the married men; that under no circumstances could the outlay required be so great as in the case of the Guards' Lodging House; and that, although it is not asserted that this could ever be made a good building speculation for Government, yet, in the 19th century, an age of civilization and humanity, it is not possible to suppose that it can be intended to leave Soldiers' wives in the condition they now are, worse than perhaps that of any part of the Civil population.

It is to be observed that the Model Lodging Houses in London, which are built on very expensive ground, and cost far more in superintendence than a Military Lodging House could do, pay a dividend of 4 per cent. to the shareholders.

XVIII.

Construction of Hospitals, especially for the Army.

Best plan of Hospital construction; requisites, good sanitary conditions, and facility of administration

The true principle of Hospital construction is that of separate pavilions, placed side by side, or in line. The former is the best. It diminishes the distance to traverse from block to block.

The distance between the blocks should not be less than double the height.

There should not be more than two or, at most, three flats to the block, nor more than one ward to each flat.

For the purposes of administration, the building ought to be in a square; the basement story connected all round by an arched corridor, with an open terrace above.

The whole Hospital should be erected upon an arched basement.

A Hospital formed of separate pavilions might be built in line, provided large, roomy, well-ventilated, and well-lighted staircases intervened between each two pavilions.

This is the plan of the new Military Hospital at Vincennes, which, however, forms three sides of a square.

This principle would have been illustrated in Netley, had it been made so thin as only to have admitted two rows of beds between the windows, in the breadth of the wards, had there been no corridors, and had the pavilions been separated by staircases. It would then have been perfectly healthy; but administration would have been very difficult in so long a line.

As it is, there are to be two complete and different administrations, with two kitchens, two sets of offices complete; it is the most expensive and least *administrable* form.

There is only one kitchen to Vincennes.

That not more than 100 patients can with safety and facility of administration be massed under one roof, has come to be an acknowledged principle of Hospital construction.

Buildings of two flats are most compatible with perfect sanitary conditions and facility of administration. Even in emigrant ships the occupation is limited now to one deck.

Reasons for preferring the above Plan.

In all town statistics, it has been found that, *ceteris paribus*, the third floor is the most unhealthy, the ground floor the next, the first and second floor the most healthy. This does not refer to houses where a prince lives on the first story, and a cobbler at the top, but where the ventilation, size of rooms, character of inhabitants, &c., is the same on all the floors; indeed, where the first floor is usually the most crowded.

The same statistics hold good in Hospitals. There is invariably the highest mortality in the third tier of beds (except where the ventilation of the third floor is decidedly superior), because, when all other circumstances are alike, the third tier has the disadvantages of the first and second, in addition to its own.

All these considerations point to the conclusion that, for the successful treatment of the sick, there should not be more than two flats in a Hospital. Probably the best construction, for sanitary purposes, is a ground floor for stores, and two tiers of wards above. At the same time, if the number of patients never exceed 100 in any block, three flats might be admitted for the sake of economy.

Objection to Hospital with long Corridor and small Wards.

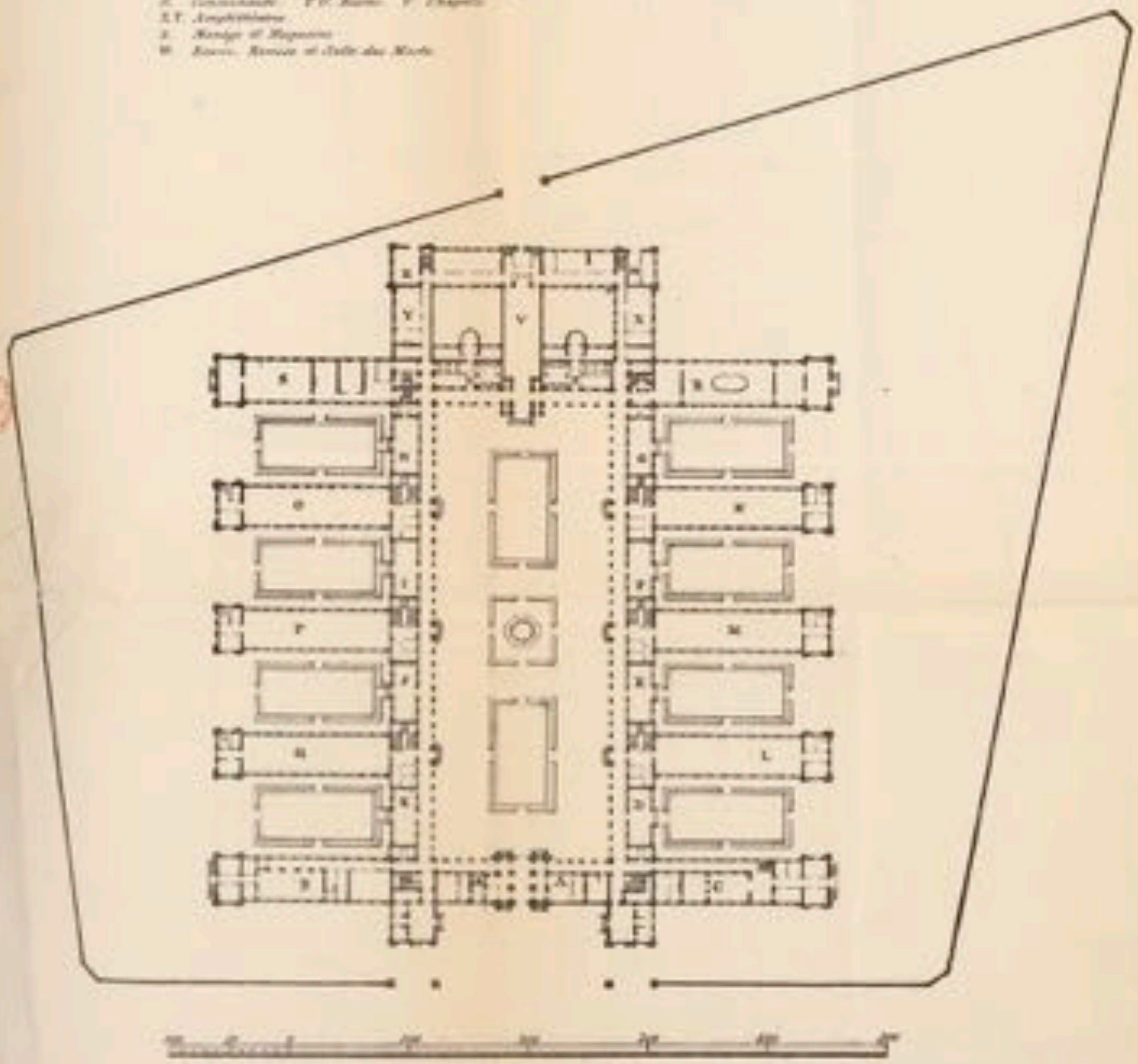
The least administrable form of Hospital is the long corridor with wards of from eight to ten patients, opening off one side. Attendance, meaning of course due attention to the patients, becomes almost impossible. The above plan contemplates wards of 20 patients, where one orderly sitting up, each for a watch of four hours during the night, is amply sufficient. But how to provide attendance suf-

PARIS

Hopital de Lariboisière

612 Lits

A Entrée
B A rez de chaussée Cuisine au 1er Etage Lingerie et vestiaire au 2me Etage Dortoirs des Garcons de Service
C idem Pharmacie idem idem idem Chambres des Elèves internes
D D'ISOLE Chauffoirs
E MORTE Dalmoscope de Malades
F A rez de chaussée Bureaux au 1er Etage Lingerie au 2me Etage Dortoirs des Filles de Service
G Consultations P.C. Bains V Chapelle
H.T. Amphithéatre
I Manège et Magasins
M Bains Remise et Salle des Morts



ably superintended, especially at night, for wards of eight to ten patients, is difficult to divine.

Evident danger of collecting a great number of Sick Men, labouring under Diseases of every kind, into one large Building, where they breathe a common Atmosphere.

The French break up their General Hospitals into separate blocks, while we sometimes agglomerate our Regimental Hospitals into one building, thus *reversing* the sanitary law.

The Lariboisière Hospital at Paris has accommodation for 600 patients under six roofs; and we had in the Crimea 500—600 patients at the Castle Hospital in from 20—30 large and small huts.

One administration, in both cases, for all.

This is the true principle. All that has to be manufactured, as the cooking, washing, &c., should be, as much as possible, concentrated into one; while human beings, sick or well, should be distributed as much as possible.

In London, one wash-house will do for a number of families, and is as good as giving an additional room to each; but this does not break up our house system and convert London into a gigantic public institution.

Number of Sick which a Ward should contain, for Health, Discipline, and Administration.

The best size of wards for ensuring the two conditions of health and facility of discipline, is from 20 to 25 sick.

Wards smaller than these are more difficult to ventilate by natural means alone. A certain amount of space is requisite for diffusion, in order to secure perfect natural ventilation.

The mode of construction in Hospitals is, it is presumed, to be determined by that which is best for the recovery of the sick. If any other consideration is taken, such or such a percentage of mortality is to be sacrificed to that other consideration.

But it so happens that the safest for the sick is the most economical mode of construction.

Take the example of Portsmouth Hospital, or Netley, where the windows are at each end of the ward. There should not properly be more than four beds in each of

those wards. For it is undesirable ever to allow more than two beds between each two windows; otherwise, when the windows are opened, the effluvia blow over all the intervening row of beds before escaping.

Discipline. Wards of a smaller size than those indicated above, viz, of 20—25, are decidedly objectionable, because unfavourable to discipline, inasmuch as a small number of men, when placed together in the same ward, more readily associate together for any breach of discipline than a larger number.

It has been proved by experience that the presence of female nurses in large wards renders discipline extremely easy, and that a sufficient number of female nurses cannot be allotted in smaller wards.

In the event of a death taking place in the ward, the survivors, when they are few in number, are far more likely to be affected by it than a larger number.

It is very desirable, for the purposes of discipline, that men of the same regiment should not be placed together in the same small wards of General Hospitals.

There needs only a comparison between the discipline of Civil and Military Hospitals to substantiate the above assertions. If discipline mean the enforcing obedience to orders by teaching how they are to be obeyed, there is little or none in a Military Hospital.

In the administration of food, of medicine, in the cleanliness of the patient's person, bedding, and utensils, in the patient's personal obedience to medical orders, as to rising or remaining in bed—all of these being matters about which there is no question or demur in a Civil Hospital, the discipline in a Military Hospital is far inferior.

How can it be otherwise? Unless the Medical Officer is converted into nurse, cook, and house-maid, he cannot attend to all these things. The ward-master or hospital-serjeant is necessarily absent from his ward a great deal, on account

of returns and accounts. The orderly cannot enforce obedience. There is no one *in charge* to enforce the medical orders, *i. e.*, without whose knowledge no disobedience can take place, as there is in a Civil Hospital, where one "ward sister" is daily seen in absolute control of 30—50 men, as far as obtaining absolute obedience to medical orders; there is no rebellion, tacit or open. This is the answer, if it be asked, how then was there not discipline, although the wards did contain 20—40 patients during the war?

Two other considerations are involved in that of the size of wards, economy and clinical instruction.

Two considerations in determining size of Wards.

It may be asked, why should not all the sick be placed in one ward, provided there be cubic space enough? The answer is, with from 20—25 sick the height of 15–16 feet is enough, but it would not be enough for more, and height always involves expense.

The greatest economy and the greatest safety to patients is in the above number.

Also without the most perfect ventilation, there is always more danger of effluvia being driven by a draught till they accumulate in one part of a very large ward, as was the case in the long corridors of Scutari.

Wards of a moderate size, like those indicated, are better for the purposes of ventilation than wards half the size; and are less subject to a hospital atmosphere than wards of double the size. But a ward of this latter size may be rendered perfectly healthy by having a height in proportion to its width.

Where clinical instruction is intended, to admit even a class of six students into a ward of 12 sick, is increasing the population in the cubic space by one half. There is more than twice the room proportionally for students, in a ward of double the size. On the other hand, if the number of

students be very large, a ward of from 20 to 25 patients, it must be at once admitted, is too small. The ward must be increased, and with it its height and its cubic space; for, be it remembered, the whole of the proportions of the ward, not only its length, must increase with its number of beds; for, if the ward be very long, in proportion to its height and breadth, it becomes not a ward but a corridor, and all corridors are objectionable for sick, because it is impossible to ventilate them safely; because, in admitting air, the effluvia may be driven from one end and be accumulated at the opposite end faster than it can be taken out. The right proportion is a fixed one. But in a ward for 40 patients, 20 bad cases will be disturbed while 20 slight cases are being examined. If 20 sick only be put in each ward, the slight cases may be put together.

Amount of cubic space.

The cubic space for each patient has been fixed by European sanitary science at not less than 1,500 feet.

A good proportion for a ward of 20 patients would be 80 feet long, 25 feet wide, and 16 feet high. This would give 1,660 cubic feet to each bed. It would give 13 feet between foot and foot, which is not too much where there is a clinical school. It would give an average of 16 feet to each two beds in width.

Half the sick are supposed to be on each side the ward.

Best proportion of Windows to Beds, and best relative position of Windows and Beds.

One window should be allotted for every two beds; the window to be not less than 4 feet 8 inches wide, within 2 or 3 feet of the floor, so that the patient can see out, and up to the ceiling.

The pair of beds between the windows should be not less than 3 feet apart. With a very bad fever case, one bed should be left empty, for the sake of isolating the patient. Miasma may be said, roughly speaking, to diminish as the square of the distance. With good ventilation, it is not found to extend much beyond 3 feet from the patient;

although miasma from the excretions may extend to a considerably greater distance.

The windows are to be placed opposite each other, and to be either double or filled with plate glass; the former is preferable, as it affords the opportunity of indirect ventilation in all weather. Wire-gauze across the open part of the window would afford an extent of surface for ventilation not otherwise to be obtained, and preclude all possibility of draught upon the patient.

Windows opening as at Middlesex and Guy's Hospitals, in three or more parts, with an iron casting outside, to prevent a delirious patient from throwing himself out, are the best form of plate-glass window.

No part of the ward ought to be dark. This is of the utmost importance in many cases. The light can always be modified for individual patients. But even for such patients, to have light in the ward is not the less important.

Importance of ample Window-space.

There are three reasons for this multiplicity of windows:—

1. Light.
2. Ventilation.
3. To enable patients to read in bed.

The necessity of light is established by all scientific inquiry and experience. The proportion of windows to cubic space is of the first importance to health. It has been lost sight of in English architecture, owing to the unfortunate window-tax, which has left its legacy in giving us a far smaller proportion of light than in French houses. In huts, the proportion of window space to cubic space is far greater than in buildings. One main cause of the unhealthiness of large numbers of men congregated in one large building, even with sufficient cubic space, is the disproportionately small window space. In the huts in

the Crimea, during the last twenty-two weeks of its occupation, the mortality of the whole army was little more than half what it is in England, among the Guards.

It must not be forgotten either that not only daylight but *direct sunlight* is essential to health, and a southern aspect is of the greatest importance in Hospitals.

For the same purpose of ensuring a sufficiency of light the walls should always be white, excepting perhaps for ophthalmia wards.

Best material for the internal walls and ceilings of Wards.

Impervious walls are of the first importance for Hospitals. These walls should be of Parian* or other similar cement, or glazed tiles. Brick, used at Portsmouth Hospital, is highly objectionable from its porous character. Plaster is objectionable from the same circumstance, it absorbs organic matter. Both require very frequent lime washing to keep them healthy.

Best material for flooring of Wards.

The materials used for floors may be oak wood, pine wood, scagliola or composition,† and tiles.

Oak wood well seasoned, is the best. No sawdust or other organic matter capable of rotting should be placed underneath the floor. Concrete, or some similar indestructible substance would be the best for the purpose.

The reason for using oak wood is, that it is capable of absorbing but a very small quantity of water. And it is very desirable to diminish even that capability, by saturating it with beeswax and turpentine. Beeswax is an inalterable substance. It is also desirable to avoid the necessity of washing the floor as much as possible.

The joints of the flooring must be fitted well together

* Parian Cement is more costly than Reeve's or Martin's, not patented, which the others are not. Chemically they are the same, equally hard, and all non-absorbent. Reeve's is best understood.

† Scagliola in England is made with glue and perishes in damp. The Scagliola here meant is used for floors at Venice.

and cemented with marine glue, or any other impervious substance. The object is, of course, to prevent any water from entering the floor.

Impervious non-absorbent cement or composition would make a capital floor, used as it is in Italian houses. But, on account of its great conducting power, it would be necessary to furnish each patient with a pair of list shoes, and a small bedside carpet.

The stairs and landings should be of stone. The corridors should be floored with diamond-shaped flags or tiles, which stand better than those laid in the usual manner. The terrace might be either covered with asphalte or glazed tile.

Accommodation for Nurses, Extra Diets, Clothing, and clean Linen.

There should be a nurses' room, clothes room, a small diet kitchen, and also a store closet attached to each ward.

It is perhaps hardly necessary to add that there should be a few small wards for operation cases, and for noisy fever cases.

Baths.*

The baths should be separated from the pavilions, but connected by the corridor.

The walls and ceilings should be of Parian cement, the

* The Turkish bath in the General Hospital, Scutari, with its boilers, sudatory chambers, and exterior cooling-room, with about a dozen hot-water taps, was in perfect order, on the occupation of the British, and its Turkish attendant known. Yet, although this was shown to the Principal Medical Officers, and the Chief Commissioner, it was not till about February 1855 that Dr. Forrest, just before leaving his command, caused this bath to be cleansed from its most filthy condition, produced by the British. Till that period, the interior chamber was a receptacle of filth, and the exterior was given up to the individual raiment of the servants of Officers, chiefly of Medical Officers. It was afterwards used by the excellent Principal Medical Officer, of the latter period, as a remedial measure for cholera, and also formed into a regular bathing establishment for the sick, under regulation. An analogous, though inferior bathing establishment, was constructed in the Barrack Hospital, by the late Dr. McGrigor, then in medical charge there, about February, 1855.

floors of tile. They should be suitably ventilated and warmed. They should contain hot and cold water baths, sulphureous water, hot air, medicated and vapour baths, shower baths, and douche. There should be a portable bath to each ward.

Best form of Hospital Kitchen.

The kitchen should be placed away from the wards. Its walls and ceilings should be of Parian cement or some similar material; for plaster has a tendency to fall off, from the vapour and effluvia of the kitchen.

The cooking apparatus, boilers, &c., if placed in the centre of the kitchen, instead of against the walls, will afford twice the amount of fire space.

In the Paris kitchens, there is a brick erection in the middle of the floor, with iron doors and brass mountings, coppers with covers, places for baking and for roasting, &c. The dressers are against the walls. The floors are flagged with square flags. This appears to be the most convenient mode of erection.

Best form of Laundry for a Hospital.

The excellent new washing, drying, and wringing machines lately invented are so numerous that it would take too long to enumerate them. On the whole, the laundry at the Wellington Barracks, which also washes for all the Guards' Hospitals and barracks, and the new laundry at Haslar Naval Hospital, are the best I have seen. But every day brings in fresh inventions, and a reformer is always adopting the good ones.

It is a further question in army matters, whether a body of men should be trained to do as much as possible by hand, so as to be serviceable in the field, when machines cannot be had, or whether all the inventions for saving labour which are now so good, and daily improving should be made use of. Probably both must be done.

How should Nurses and Orderlies be

If orderlies are to sleep among their patients, the percentage of mortality will be of course raised among the

accommodated?

This was the case at Scutari, where it was frightfully high, though it was never ascertained how high. Statistics are, however, not necessary to establish such an obvious fact. The orderlies should sleep at a distance from the wards, and not take their meals in them.

With regard to the female nurses, there is the further question as to what class of nurses should be employed in military hospitals. My own opinion is humbly but entirely against employing any but women of the efficiency, responsibility, and character of head nurses in Civil Hospitals. For such a Nurse, a small airy room off her ward, but so that she can always have it under command, is the best for her efficiency, and need not be injurious to her health.

Unless, however, there are facile means of access to another nurse's room, in case of illness, there must be only a day room for each head nurse adjacent to her ward. She must sleep at a distance from her ward, but contiguous to the other nurses. If assistant female nurses are employed, it must be considered that association in large dormitories tends to corrupt the good and make the bad worse. And separate accommodation, or accommodation for two or three together, should be provided contiguous to the ward, if possible—if not, to one another.

Bedstead and Bedding.

No bedding but the hair mattress has yet been discovered that is fit for hospitals. Hair is indestructible. It does not readily retain miasma. And, if it does, heat easily disinfects it. It may be washed. It is not hard to the patient. It saves the objectionable use of a blanket under the patient.

Straw palliasses are absolutely objectionable. They are cold; and, in some cases, the abstraction of heat from the spine lowers the patient's vital energy to a degree

which does not leave him a chance. The loss of life must have been great during the war from laying our patients on palliasses, which were either placed on wooden divans, or on flagged corridors, with only a mat underneath.

The bedsteads should be iron; and there are great differences in the way the sacking is put in. There should always be a shelf at the head. The French have one at the feet too.

The Naval and Civil Hospitals have all kinds of dropy and surgical bedsteads for raising a patient when he cannot be moved, for inclining him at a certain angle, &c. There is no reason, but a general objection to comfort, to prevent us using these bedsteads in Military Hospitals.

Ward Furniture.

The furniture should be of oak. White window curtains are used in some French Hospitals, not to exclude the light, but to look cheerful. They are desirable, but not necessary.

The less ward furniture, speaking generally, the better. But hitherto, as is well known, a military patient has been expected almost to furnish his own ward.

Water-supply and Drainage.

The water must either be drawn from a tank at a distance from the Hospital, or from a main under pressure; but never from a cistern within the Hospital.

The fault of the water supply in Parisian hospitals is that the water is either carried up by "porteurs d'eau," or pumped up and remains standing.

There is no question that this is wrong.

There should be convenient means in or close to the wards for obtaining pure drinking water for the sick.

No drain should ever pass under a Hospital; all sinks, water-closets, lavatories, and baths, should be so placed that the drainage should be conveyed directly away, without passing under any part of the Hospital, in imper-

ious glazed earthen pipes, the larger of them egg-shaped, well cemented.

All drains or pipes for the purpose of conveying away water from any part of the Hospital should be carefully trapped between the outer wall of the building and the sewer, and should be provided with the means of flushing: all drains should be ventilated.

Best position for the Water-closets and Lavatories, with regard to the Wards.

The water-closets should be placed at the end of the yard, opposite the entrance, and separated by a lighted and ventilated lobby. There should be a bath-room and lavatory adjoining, but, of course, separate. The water-closets should be of the best construction, self-acting.

Best system of ventilation for a Hospital.

The doors, windows, and fire-places should be the means of ventilation for such wards as those described; nothing else is wanted. If a Hospital must be ventilated artificially, it betrays a defect of original construction which no artificial ventilation can compensate; it is an expensive and inefficient means of doing that which can be done cheaply and efficiently by constructing the building so as to admit the open air around.

But there are buildings of original defective construction which it is undoubtedly necessary to ventilate artificially; and in countries where fuel is dear and cold severe, the problem complicates itself, because it is a less consumption of fuel to warm the fresh air as it is admitted.

In the case supposed, warming is a necessary part of ventilation, and heating the air required heats the wards, without extra cost of fire-places, which always burn many times the quantity of fuel expended for warming.

In England, where fuel is cheap, there can be no such excuse.

If attendants cannot be trained to keep the rooms ventilated without draughts, there is a defect of intelligence in the particular individuals, and attendance on the sick is not their calling.

Occasionally, ventilating shafts carried up from the ceiling of the ward to the roof will be found an advantageous means of renewing the air.

There should be one or more open fire-places in the ward, but lofty, so that the throat of the chimney shall be above the patient's head and bed.

The chimney is the best ventilating shaft; and one disadvantage of artificial ventilation is, that the fire must then be supplied with its own consumption of air by a shaft to itself. Otherwise, it will take the air from the artificial ventilation and cause it to cease to act. Whereas, with natural ventilation, the fire sets it acting, takes the air from the room, and is the most valuable means of changing the atmosphere.

Our grandfathers' lofty fire-places are the greatest loss in modern house architecture. The little low fire-place of this date bring the best current of air below the stratum in which we are breathing. With our system, to breathe the best air, we must not be more than six years old, or we must lie down.

Warming. The best system of warming for a Hospital is radiation from open fire-places. Heated air from metal surfaces should never be used for warming. It has a tendency to produce disease of the lungs. The hot-house system of warming with a brick floor and brick flues is perfectly safe; but an earthenware floor in Hospitals, unless glazed, is inadmissible, because of the great absorption of water.

In a ward of the size mentioned, 80 feet by 25, two fire-places would probably be necessary.

Laboratory. A convenient position for the Laboratory will, of course, not escape notice.

Gas Apparatus. Also for Gas Apparatus, if it be determined to light the building in that way.

Clinical School. Should a School of Clinical Medicine and Surgery be connected with the Hospital, provision would have to be

nale for a Museum, Library, and suitable rooms for conducting *Post mortem* inquiries, examinations, and operations, in proximity to each other, but at a sufficient distance from the Sick.

A small Cemetery would also be required, at as great a distance as practicable from the walls of the building.

If a "Lift" be designed, which, for purposes of discipline as well as economy of labour, is essentially necessary, wherever practicable, the great advantage of working it by a Hydraulic Press, where the position admits of it, rather than by an Engine or any other means, is obvious. Lift.

Dining Rooms or Day Rooms for the Convalescents are very desirable. Dining Rooms.

I have tried, in obedience to command, to give what idea I could of the Sanitary state of the Army. It was necessary, in order to illustrate its Medical or Sanitary organization, to show the results which exist as tests of its efficiency, both in peace and in war.

The tests which exist under the former condition are, the Barrack and the Military Hospital at home and in the colonies, together with the rate of mortality, and that of inefficiency from sickness of the troops. In the state of war, the histories of the Duke of Wellington's campaigns, of Walcheren, and of the late expedition to the East, exist as tests of our sanitary condition.

But, with regard to the last War, it has been here dealt upon with greater detail, not only because we have much more information on the sanitary history of the Crimean campaign than we have upon any other, but because it is a complete example (history does not afford its equal) of an army, after falling to the lowest ebb of disease and disastr from neglects committed, rising again to the highest state of health and efficiency from remedies applied. It is the whole experiment on a colossal scale. In all other examples the last step has been wanting to complete the solution of the problem.

We had, in the first seven months of the Crimean campaign, a mortality among the troops at the rate of sixty per cent. per annum from disease alone—a rate of mortality which exceeds that of the Great Plague of 1665 in the population of the metropolis, and a higher ratio than the mortality in Cholera bears to the attacks; that is to say,

that there died out of the army in the Crimea an annual rate greater than ordinarily dies in time of pestilence out of sick.

We had, during the last six months of the war, a mortality among our sick little more than that among our healthy Guards at home, and a mortality among the troops two-thirds only of what it is among the troops at home.

The mortality among troops of the Line at home has been, on an average of ten years,* 18·7 per 1,000 per annum, and among the Guards, 20·4 per 1,000 per annum. Comparing this with the Crimean mortality for the last six months of the war, we find that the deaths to sick were so more than 24 per 1,000 per annum, and the mortality among the troops in the Crimea did not exceed 11·5 per 1,00 per annum.†

Is not this the most complete experiment in army kygiene?

But we cannot try this experiment over again for the benefit of inquirers at home, like a chemical example; it must be brought forward as a historical instance.

An experiment, however, equally (perhaps more) important is annually tried at home.

The Recruiting Returns, showing the number of rejections and their causes, are the first step in this important problem. They show the excessive care taken to obtain the best possible men for the Service. The Mortality and Invaliding Returns show the excessive ingenuity displayed in getting rid of them afterwards.

From an examination of these Recruiting Returns may

* 1837—1846.

† In taking this average, the last month, June 1856, which would have reduced it much lower, has been purposely excluded, because troops were embarking. This would have made it unfair. The Deaths to Strength in June were under 2½ per 1,000 per annum. But troops left their sick behind them, which has made us comprise the mortality of sick.

be gathered how perfect is the system for excluding all who are not only likely to yield a high rate of mortality, but who are, in any way, physically weak or inefficient; hence the British army consists of only the finest specimens of the finest physical race in the world, with the exception, perhaps, of some part of our aristocracy. The ingenuity which, among this selection of first-rate physical frames, made for health and for long life, produces scrofula, consumption, and premature mortality, far surpasses any ingenuity with which we are acquainted. Majendie and others have produced scrofula among rabbits and other animals by the same causes; but they did their work far less extensively and quickly.

The comparative health of men of the army-ages in England, and of soldiers in barracks on home stations, is the proof.

It is, when carefully examined, a more striking experiment in army hygiene than that of the Crimea. But the difference is this—in the Crimea, the remedies applied and the results obtained in health and efficiency formed the last step of the problem which is wanting here.

P. 254. I have tried to show, therefore (p. 254), the relative mortality of the army at home and of the English male population, at corresponding ages.

I have tried to show (p. iv. Preface to Sanitary Section), the same comparison for the whole army at home and abroad.

A complete picture is thus given of the chances of life of the soldier compared with those of the civilian at the same ages in time of peace.

Pp. 315, 327. I have shown (pp. 315, 327) the chief classes of disease by which these awful results are brought about, in order to see how far it is within the powers of preventive science to diminish the risks to which the soldier is exposed, whether at home or in the field.

The comparison between the chances of life of the soldier in the field and those of the civilian at home is thus given (p. 314); and it will there be found how insignificant, comparatively, to the former are, in his estimated dangers, the results from wounds. P. 314.

It is, however, now, with the results of our sanitary experiment at home that we have to do.

The relative mortality of the Foot Guards and of the English male population in large towns, at the corresponding ages, given at p. 247, is the strongest illustration. P. 247.

The Guards are, physically, the select lives out of the select. They are chosen by practised Medical Officers out of the strongest and best looking recruits, how well let our Recruiting Returns show. Any weakness or disease is enough to prevent a man being chosen for Service. The young Guardsman is, in every sense, a "picked" life, and would be selected as a first-class life in any Insurance Office.

As soon as the recruit enters the Service, he is placed under the entire control of educated Officers. His diet, cleanliness, personal habits are strictly attended to. He is lodged in Barracks which have cost the country many times the price of the house in which he was born. He never leaves the country in time of peace, but passes from his Town Quarters in London to his Country Quarters at Windsor or at Winchester; and, whenever he suffers from the slightest ailment, his Medical Adviser is instantly beside him; he has Hospital accommodation, medicine, and attendance immediately.

Of all men, a soldier in Her Majesty's Household Troops is the most likely, it would seem, to enjoy perfect health and long life.

The men rejected, when the Guardsman was chosen, have passed back into Civil life. The Civil population has lost a certain proportion of its good life, which has gone

into the Army. It has received back those lives which were not good enough for the Army. The Civil population has had all the loss, the Army all the gain.

P. 247. We have seen, p. 247, how the Guards die off under circumstances, so very favourable to life, apparently, as those we have mentioned.

Pp. 257, 258. We have seen, pp. 257, 258, that the mortality in the Guards, great as it appears, appears less than it really is.

The rate of mortality exhibits all the deaths in the Civil population which take place between the ages of 20 and 40, but does not exhibit all the deaths which take place among the men *selected* for the *Guards*. Every year, between the ages of 20 and 40, men are rendered unfit for service by organic disease, and are discharged to die among the Civil population and to raise its rate of mortality; and these are included in that of the Civil population, and are consequently not shown in that of the Army. These deaths are, in fact, deducted from those of the Guards, and added to those of the Civil population, so that in the comparison the Guards have a double advantage from their not receiving bad lives and from their invaliding bad lives.

The Guards, though the most unhealthy corps in the Service, are not the only corps which suffers a great excess of mortality. All the Line, even on home service, suffer, although at a somewhat lower rate.

P. 253. It has been shown, p. 253, what is the excess of mortality among the Line on home Stations over the mortality among the general English population, and p. 247, over the mortality in large towns, subject to the same correction as to invaliding, which has been already mentioned as necessary to be made for the Guards.

The whole Army, *vide* p. 254, like the Guards, consists of carefully "picked" lives, and the lives rejected are thrown back into the general population. But, notwith-

standing this process of selection, and the apparently favorable circumstances under which the troops are placed, we have, from some cause or other, the extraordinary results summed up, p. 254.

P. 254.

To show the full bearing, too, of this process of selection in any comparison between the health of the Army and that of Civilians, it is necessary to state that, of the Civil population at the recruiting age, a certain part is unable, from illness, to present itself to the recruiting officer; that deaths among that part go to raise the Civilian mortality; that of those who do present themselves for recruits, a third part at least, though probably a much larger proportion, is rejected as unfit for service; that of those rejected, at least a fourth part is suffering from diseases which shorten life.

Mortality of the whole Army, at Home and Abroad.

The wide extent of the British Empire, and the great variety of climates which it presents, as well as the topographical peculiarities of our Sovereign's various colonies and possessions scattered over the whole earth, would lead us to expect a higher rate of mortality among soldiers born in the British Islands, when these soldiers are sent on service abroad, than would exist among the home population at the same ages.

Accordingly, in some years, it will be found that the mortality in the Troops is from five to six times greater than it is in Civil life.

The mortality of the whole Army at home and abroad, compared with that among Englishmen of the Army ages, in healthy districts, is given, p. iv, Preface to Sanitary Section, p. 235.

Sum of Life among 10,000 Men in Army on Home-service, in general

If we can imagine the total sum of life among 10,000 men, between 20 and 40 years of age, entering the Army, and remaining on home-service, and among the same number of Englishmen, taken (1) all over the town and

Population and in country Population, at home.

country districts, and (2) in the healthy districts, at home; at the same ages—all starting alike, we shall see a very different rate in the progress of death among the various classes. The proportion of death increases and that of life diminishes in a very different ratio and to a very different extent in each.

The mortality is greater and progresses more rapidly among the English male population generally than among that in healthy districts. The general population has lost a third more by the time it arrives at the age of 40 than the healthy population, while the soldiers have lost above a third more of their numbers than the general population, and more than twice as many as the healthy population.

Loss of Life, of Service, and of Money-value entailed on country in case of Army, taken on Home-service only.

If we can also imagine the total money value of 10,000 men between the ages of 20 and 40, as well as the loss of value from loss of life at each succeeding year between the two ages; and, further, the relative value of the amount of life in the Army, as contrasted with that of two classes of civil population, passing on from 40 years to the succeeding periods of life, we shall see that the Nation loses the money value of the excess of mortality existing in its general population over that of the population in healthy districts—we shall also see that while, among healthy civil populations, about 8,500 lives, out of 10,000, survive the wear and tear of the ages between 20 and 40, and thereafter add their quota to the wealth of the community, only 6,000 of the Army lives are available for the same purpose.

In the case of the Army, the country incurs great expense in educating the soldier for his duties, and it is difficult to over-estimate the value of a good soldier, for he can hardly be replaced. In the present state of sanitary knowledge, it may be fairly stated that the whole excess of money-loss between that in healthy districts and that in

the Army, might be saved to the tax-payers of the country. The general community incurs a still farther loss of productive labor, because it will be at once seen that the number of lives at 40 years of age, passed back into the general population (supposing that the average age of discharge from service is 40 years), is much smaller in the Army than the proportion which survives in the healthy Civil population; and the productive power of the country is further taxed for the support, by Poor Rates and otherwise, of a large proportion of men, temporarily or permanently disabled by diseases contracted in the Service.

The loss from invaliding has been already referred to as a serious cause of inefficiency in the Army in its present state. The tables at pp. xxvi—viii, Preface to Section X, have been constructed to bring under one view the whole great loss sustained. In Table IV is shown the number of effectives, young soldiers and veterans, (1) who remain in the Army as it is, (2) who would remain, if the Army were as healthy as the Civil population. The Army serving at home, in time of peace only, between the ages of 20 and 40, has been taken as the example. Under the present system, 10,000 annual recruits would be required to sustain a force of 141,764 men; while, under the improved conditions as to health, 10,000 annual Recruits would sustain an Army of 166,910 men.

The great experiment, then, which is annually going on under our very eyes, proves what is the loss of life, service, and money-value entailed on the country by the neglect of sanitary measures in the Army, taken in time of peace, on home-service only.

Classes of Disease from which this Mortality arises, on Home-service.

It is, in the highest degree, important to know the classes of disease from which the great losses in the Army in time of peace arise; for it is in this way alone that we can ascertain whether, and to what extent, we can mitigate

or prevent these diseases by known sanitary precautions.

The classes of mortality from disease most prevalent in the Infantry on home stations, as compared with the extent of the same types of disease in Civil life at the same ages, has been shewn, p. x, Appendix I to Section XI.

P. x, Appendix I to Section XI.

Two Classes of Disease, viz., 1, Zymotics, 2, Consumption, the Scourges of the Army at Home.

We are at once struck by the remarkable fact, that more than seven-ninths of the mortality in the Infantry are due to two classes of disease alone—viz., to Zymotic Diseases, such as Fevers, Cholera, Diarrhœa, and to Chest and Tubercular Diseases, such as Consumption, &c. In fact, the mortality from Chest and Tubercular Diseases alone, in the Infantry on home service, exceeds the total mortality from all causes among the Civil population at the same ages; while the deaths from Zymotic Disease are above double what they are in Civil life. Again, Chest and Tubercular affections are the scourge of the Civil population, and yet the Civil population suffers less than one-half the mortality from these diseases which occurs in the Infantry, while the deaths from Zymotic Disease in the Infantry nearly equal the total deaths from Chest affections in the Civil population. It is necessary here also to repeat that, while the mortality of the English male population exhibits all the deaths occurring from each class of diseases, that of the Infantry does not. It takes no account of men discharged on account of Chronic Tubercular and Chest Diseases, whose deaths, taking place after discharge, go to swell the mortality, from these diseases among the Civil population.

I have now exhibited the frightful mortality, continually and year by year going on, in the British Army at home, and the classes of disease to which this mortality is to be attributed.

Causes of this

The first question which arises, is—What can be the

excessive Mortality in the Army at Home.

ease of all this? By what possible procedure can it be that the first-rate lives selected out of the British working population can be so deteriorated as that such a terrible result should follow? Is there anything in the food, clothing, duties, habits of the men, to which such a loss can be attributed? Are the Army medical men less skilful than those in Civil life? To these two last queries we must reply generally in the negative. There is, on the contrary, everything in the soldier's favor in these particulars, except that perhaps he is not sufficiently worked. His barrack accommodation too has cost the country enough of money. There has been no expense spared in this either. Can there be anything here to occasion such a fearful annual loss of life?

Let us see what sanitary experience teaches as to the causation of the diseases from which soldiers suffer:—

1. Causes of Consumption.

1. Consumption, and diseases of this class, are the result of breathing foul air, contaminated by the breath of other persons. It is air polluted in this way which appears to be the special agent which predisposes people to consumptive diseases. How is such a state of the air chiefly produced? Simply by crowding too many people into unventilated rooms, especially to sleep. If barrack-rooms are crowded and unventilated, and if the atmosphere is close or foul during the hours of sleep, when the system is more peculiarly predisposed to its effects, the elements and seeds of Consumption and Tubercular Disease are there. To develop these seeds into activity, all that has to be done is to take the men out of such an atmosphere which they have been breathing night after night, and to expose them on guard to wet and cold. The disease will soon show itself. But exposure to wet and cold alone will not do it. This the Crimean experience has proved, as it is

proved daily and nightly in night trades and occupations, always excepting the case of the soldier at home.

To know whether the conditions requisite to produce Consumption and Tubercular Disease exist in Barracks, it is only necessary to read the disgusting evidence given before the Barrack Committee, and to consult the tables given at pp. 263, 6, shewing the amount of cubic space allowed to the men in Barracks and to the sick in Military Hospitals. It would be difficult to frame conditions more likely to generate such diseases than those to which soldiers are exposed in barrack-rooms. They are, in fact, the self-same conditions as those which have been determined by direct experiment to be necessary for the production of Tubercular Disease in animals. When a sufficient cause is found, it is not necessary to look for another.

Pp. 263, 6.

2. Causes of Zymotic Diseases.

2. *Zymotic Diseases*, Fevers, Diarrhœa, Cholera, Dysentery, &c., are known in Civil life to be most intense in their activity where certain local conditions are present.

First in prominence amongst these conditions are again overcrowding and defective ventilation—the repeated breathing, in fact, of air already breathed, such air being further contaminated by moisture and exhalations from the skin.

Next in importance are emanations proceeding from animal excretions or from decaying vegetable matter, together with moisture. The want of drainage and the foul state of the latrines and urinals in Barracks as described in various reports, are sufficient illustrations of this class of causes.

There are others of minor importance which need not be mentioned. Those enumerated are quite sufficient to account for the excess of zymotic mortality from which the

army on home stations suffers. If men, returning from foreign service, happen occasionally to be more susceptible to the operation of such causes, they will, of course, suffer more severely. But allowance is made in the "Statistical Reports on the Sickness and Mortality of the Troops serving at home," for even this contingency, as they do not exhibit any deaths occurring for the first six months after men have returned from foreign service.

Can this excessive Mortality be prevented?

The next query is one which it is almost superfluous to put. It is, whether there be any known means of preventing this excessive mortality, and whether there be any hope of reducing the disease and mortality among the Troops to the same amount as appears among the Civil population?

The reply, if one were wanted, is, that the soldier's mortality on home service should, to say the least of it, never have been greater than that of the Civil population, and that it might be less.

The mortality and disease among the Civil population are the very evils, towards the reduction of which to smaller dimensions, the whole sanitary procedure under every sanitary Act of Parliament is directed. It was the largeness of those very evils which led to the sanitary agitation which ended in the Legislature giving a sanitary code to England; and, to say the least of it, it is hardly credible that it should be necessary, at the present day, to advocate similar measures for the Army.

There is no reason why, with proper sanitary measures, the general health of the population should not be raised to the standard of the most healthy districts of the country, as indeed it has been in certain marked instances; and why should the health of the Army on home service be any exception, seeing that the personal conditions of

the soldier are so much more favourable? If this were done, and if our Home Army consisted of 100,000 Guards, we should save nearly 1,500 good soldiers yearly, who, from all experience in other cases, are as certainly killed by the neglects specified as if they were drawn up on Salisbury Plain and shot.

Loss of Life excessive in the whole Army, at Home and Abroad, although less than it was. Pp. vi, vii, Preface to Sanitary Section, p. 235.

By referring to pp. vi, vii, Preface to Sanitary Section, p. 235, where is found the Army mortality at home and abroad, as compared with that of an English population at the same ages, we cannot fail to be struck with the immense loss of life entailed on the Army, and the corresponding cost to the country from foreign service. This loss is much less than it was in former times, as will be seen by referring to pp. ii, viii, ix, Preface to Sanitary Section, p. 235. It has been diminished by various sanitary means, and there is no reason whatever why, if intelligent enquiry were instituted, and proper sanitary precautions taken, all the Army mortality on that melancholy table might not be very materially lowered.

It is to be regretted that, with the materials existing in the Army Medical recesses, from which the valuable returns of Sir A. Tulloch have actually been drawn, a report should not have been published at least twice a year. This, it is hoped, will now be done, by the new Statistical Branch, the formation of which is at present under consideration at the War Department.

From these returns has been gathered what is set forth at pp. viii, ix, of the Preface to the Sanitary Section, X. viz., which Stations have stood still in sanitary progress, which have advanced, which will still want a "Barrack Commission."

There is here to be found—1, satisfactory evidence how much has already been done, by the good sense of Com-

manding Officers, to reduce, with sanitary means, the mortality of the troops; and—2, convincing proof how much may still be done.

Now, if ever, is the time.

Reasons for seizing on this opportunity to introduce Remedies

First. We have a Sovereign whose personal regard for Her troops has been exemplified in so many touching instances, who has been to them indeed so truly a royal mother, that the loyalty which, with the English soldier, has always been a duty, is now become an enthusiasm.

Secondly. We have an Army in whose memory is still fresh the greatest example of heroic endurance in modern, or indeed in any times—fresh, not as that which it may have read in history, but that which it has seen, shewn in itself, and accomplished. They have a pride in the power they have proved in themselves to "endure hardness" without complaint—our soldiers—and well they have earned their right to it.

Thirdly. We have Officers, of whom, in the late War, many instances could be cited, known only to God and to their men, of willingness to "endure hardness" with them, and to do whatever could be done, at their own private cost, to alleviate those hardships to their men.

Fourthly. We have, at this moment, a Royal Commission sitting, composed of some of the best men of the country for information in Army matters, and with a President at their head who is, perhaps, the man who has shown most knowledge and feeling as to the wants and constitution, physical and moral, of an Army, in this day. They have already elicited a mass of evidence regarding the Sanitary state of the Army, such as we have never had before—they have brought together a treasure of information and suggestions, which will be a manual for Army sanitary matters in all future times—they will have the privilege of working out practically their own suggestions.

Fifthly. We have a War in India, which will require a large addition to our forces, and which will, without military foresight, prove a most unhealthy and destructive war, destructive solely from disease.

And, lastly, with regard to the men who are gone, who need our words no more, what shall we say? The fittest tribute to them is to be silent—as they were. For their courage and their griefs were too big for our words, although they seemed to them too little for theirs—but, for the sake of the survivors, not for theirs, let the remarkable lines be here quoted of one who best knew the deeds he was writing about:

"The sufferings of the army in the course of the winter, and especially during the months of December and January, must have been intense. It has been only by slow degrees, and after the frequent repetition of similar details, as one witness after another revealed the facts that had come under his own observation, that we have been able to form any adequate conception of the distress and misery undergone by the troops, or fully to appreciate the unparalleled courage and constancy with which they have endured their sufferings. Great Britain has often had reason to be proud of her army, but it is doubtful whether the whole range of military history furnishes an example of an army exhibiting, throughout a long campaign, qualities as high as have distinguished the forces under Lord Raglan's command. The strength of the men gave way under excessive labour, watching, exposure, and privation; but they never murmured, their spirit never failed, and the enemy, though far outnumbering them, never detected in those whom he encountered any signs of weakness. Their numbers were reduced by disease and by casualties to a handful of men, compared with the great extent of the lines which they constructed and defended, yet the army never abated its confidence in itself, and never descended from its acknowledged military pre-eminence.

"Both men and officers, when so reduced that they were hardly fit for the lighter duties of the camp, seemed to be excused the severe and perilous work of the trenches, lest the

should throw an undue amount of duty upon their comrades; yet they maintained every foot of ground against all the efforts of the enemy, and with numbers so small that, perhaps, no other troops would even have made the attempt.

"Suffering and privation have frequently led to crime, in armies as in other communities, but offences of a serious character have been unknown in the British Army in the Crimea. Not one capital offence has been committed, or even alleged to have been committed, by a soldier, and intemperance has been rare.

"Every one who knows anything of the constitution of the Army must feel that, when troops so conduct themselves throughout a long campaign, the officers must have done their duty and set the example. The conduct of the men, therefore, implies the highest encomium that can be passed upon their officers. They have not only shared all the danger and exposure, and most of the privations which the men had to undergo, but we everywhere found indications of their solicitude for the welfare of those who were under their command, and of their constant readiness to employ their private means in promoting the comfort of their men. Doubtless there has been, as there always must be, better management in some regiments than in others, but amongst much that was painful in the evidence that we have heard, it was always gratifying to observe the community of feelings and of interests that appeared everywhere to subsist between the men and their officers, and which the regimental system of the British Army seems almost always to produce."

Among these men there never was heard a murmur—there never was seen one moment's unwillingness to go back to their hardships, until their country's cause was won.

Upon those who watched, week after week and month after month, this enduring courage, this unalterable patience, simplicity, and good sense, this voiceless strength to suffer and "be still," it has made an impression never to be forgotten.

The Anglo-Saxon on the Crimean heights has won for himself a greater name than the Spartan at Thermopylæ, as the six months' struggle to endure was a greater proof of what man can do, than the six hours' struggle to fight. The traces of the name and sacrifice of Iphigenia may still be seen in Tauris; but a greater sacrifice has been there accomplished by a "handful" of brave men who defended that fatal position, even to the death. And, if Inkermann now bears a name like that of Thermopylæ, so is the story of those terrible trenches, through which these men patiently and deliberately, and week after week, went, till they returned no more, greater than that of Inkermann. Truly were the Sevastopol trenches, to our men, like the gate of the Infernal Regions. "Lasciate ogni speranza, voi ch'entrate." And yet these men would refuse to report themselves sick, lest they should throw more labour on their comrades. They would draw their blankets over their heads and die without a word.

Well may it be said that there is hardly an example in history to compare with this long and silent fortitude.

But surely the blood of such men is calling to us from the ground, not to avenge them, but to have mercy on their survivors!

We can do no more for those who have thus suffered and died in their country's service. They need our help no longer. Their spirits are with God, who gave them. It remains for us to strive that their sufferings may not have been endured in vain for us—to endeavour so to learn from experience as to lessen such sufferings in future by forethought and wise management.

For the mere purpose of Recruiting it is imperative to put forth inducements

If we really desire to draw into the ranks of our Army the best and strongest men of the working classes, we must hold out positive inducements to them quite other than those negative ones which have been so much in use

viz., drink, want of work, disappointment in love. It must not be forgotten that the intelligence of these working classes has undergone a great advance of late years, and that the details of the Crimean catastrophe as well as the neglects from which it arose are perfectly well known among them. All over the three kingdoms there are those who mourn the loss of friends and kindred, not because they died in battle against their country's enemies, but because they perished from neglect of the conditions absolutely necessary for their health and lives. The events of that war have made an impression, never to be wiped away, on the soldier-classes of the country. And, if we would make them more ready than they at present are to flock to the ranks, it must be by looking to their health and comfort, by reforming their Barracks, by introducing a better system for securing their physical and moral well-being, whether in peace or in war—not forgetting their domestic relations. It must be, in short, by sweeping away those abuses which have hitherto led to such serious losses from sickness and premature mortality in all times, seasons, and countries. It must be by making the Service as attractive to the soldier-spirits of the country as it ought to be made, when dealing with a brave and intelligent people. And no moral and intellectual progress can be, by any means of ours, effected, without Sanitary progress.

to Enlist, suited to the present state of intelligence of this country.

This is a short summary of our Sanitary condition in time of peace. Unfavourable as it is to the Sanitary System, or rather want of System, in the British Army, it exhibits results which might be considered as, in the highest degree, favourable, when contrasted with the mortality from disease among the British Troops in time of war.

Mortality from Disease of Armies in time of War.

It is at such times that the excessively defective state

of Sanitary Science and practice in the Army becomes pre-eminently remarkable, and leads to the most disastrous results. It is right, however, to remind ourselves that such defects are not confined to the British Army; all Armies, during war, have suffered from the neglect of very ordinary hygienic precautions, and some Armies have been all but destroyed in consequence. Nearly six-sevenths of the vast Army, with which Napoleon I. invaded Russia, had perished before the setting in of the fierce cold which destroyed the remainder, and to which it was convenient to that gigantic vanity to ascribe the destruction of the whole. Of this we have statistical proof; and of this our own great Duke was well aware.

French Invasion of Russia

The actual losses in battle form a very small part of the calamities of a war—so small indeed that, if the excess of mortality caused by disease could be cut off, the loss from wounds would be hardly deemed worthy of the familiar phrase, the "Horrors of War." How just that expression is now, those only who have seen the Crimean Expedition can well appreciate!

Walcheren.

The facts connected with the disastrous Walcheren Expedition, as well as the ignorance and neglect of the most ordinary precautions which led to so great a loss of life, are matters of history. But, up to the present time, the experience of that expedition seems to have led to no beneficial result, so far at least as can be gathered from the still more disastrous Crimean War.

P. 314. Comparison of Mortality from Disease in the Crimean Army and in the Civil Population.

At p. 314 are given the comparative results of the mortality among the English male population of the Army ages and among the British Army in the East. For every Englishman of the Army ages who died at home, nearly 23 died in the East. The proportion of deaths from wounds, exclusive of those killed on the field, during the War, was 30 times greater among the soldiers

than among the Civil population. But, even at that rate, the mortality in Hospital from wounds did not exceed 1 per cent. of the strength, while the deaths from all causes were nearly 23 per cent. of the force in the field.

When we examine the cause of this great mortality, we learn that, for every man of the ages and numbers who died at home from Zymotic Disease, 93 died in the Army in the East! The remaining diseases shown are not worth notice. If they were all expunged, and the deaths from wounds, taking place in Hospital, with them, the list would remain that the Army in the Crimea almost perished from Zymotic Disease.

As Manchester.

The awful Mortality in that noble Army is shown still more strikingly when compared with that of the town of Manchester, one of the most unhealthy in England, and most very subject to Zymotic Diseases.

Had the Crimean Army been as healthy as Manchester, it would have lost 1¼ per cent. per annum. It did lose, during eight months, 60 per cent. per annum; or 58¾ per cent. more than one of the most unhealthy towns in England.

P. 320. Vital Statistics of Crimean War.

We have seen (p. 320) how healthy the Army was when it landed in the East; how, immediately on its reaching Varna, sickness and death began to increase, shewing the sudden exposure of the Troops to some very unusual causes of mortality. We have seen that, the whole time the Army was in Bulgaria, it suffered severely—that the mortality declined when it left that pestiferous region for the Crimea—that, from the moment it broke ground before Sevastopol, in a comparatively healthy district of country, the mortality began to rise during October—that it increased with frightful rapidity during November and December, attaining during January 1855, a higher

fatality than the maximum mortality of the Great Plague of London in September 1665.

P. 320. Page 320 gives a representation of that great calamity during the first year of the War. Excepting, perhaps, in one or two of the mediæval epidemics, no pestilence, of which we have any record, would form such a picture for eight consecutive months.

P. 321. Page 321 gives the mortality of the second year of the War. It was great in the beginning, as compared with the most unhealthy cities in England; but when compared with the first year's mortality it is insignificant. It will be seen that, for the last six months, January to June 1856, inclusive, the mortality retires within the Manchester rate and all but disappears. We have here at a glance the vital statistics of the Crimean War.

Zymotic Disease the cause of the whole Catastrophe in Crimea. P. 315.

The immense preponderance of Zymotic Diseases has been already referred to, and a glance at p. 315 will show that these diseases were the cause of the whole catastrophe. The total mortality from wounds at Alma, Inkermann, and during five months in the trenches, exclusive of the killed in action, is insignificant; so is the total mortality from diseases not Zymotic. While the Zymotic Diseases are shewn to be the pests and scourges of camps and armies now, as they were of cities and towns in the middle ages before the dawn of Sanitary knowledge.

The analysis of the second year's mortality exhibits an immense reduction in the deaths from all causes except from wounds, the legitimate result of war, but even to nearly the end the Zymotic mortality retains its preponderance, and disappears only when the Army has arrived at its most healthy condition.

P. 328. P. 315. On comparing the total mortality, as shown at p. 328, with the Zymotic mortality, as shewn at p. 315, it will

be seen that the very first diseases from which the Army suffered (as shewn by the dates) in Bulgaria, were Zymotic Diseases. They were chiefly Fever and Cholera, brought on by neglect of sanitary precautions, principally in the first bad selection of Camp sites. The first outbreak began to subside in September only and continued to decline until the Army sat down before Sevastopol. Another and far more terrible invasion of Zymotic Disease followed that event.

The men were hard worked. But hard work of itself never induced Zymotic Disease. Other causes must be looked for: and these causes once existing, fatigue would co-operate powerfully with them. The men had no sufficient shelter. They were in want of clothing suitable to the weather. They suffered from wet and damp. They were exposed to the elements at all times and seasons. Their food was not sufficiently nutritive nor varied. They had no proper means of cooking, little or no fuel, and they could not eat their rations. What wonder, then, if scurvy and scorbutic disease appeared at a very early period, if Fever, Cholera, Diarrhœa, Dysentery followed, so as to threaten the total destruction of the Force! Every possible neglect of hygiene had been committed, and these figures show the natural results. During the winter of 1855, Zymotic Diseases still prevailed, though to a comparatively insignificant degree. Sanitary defects in draining, cleansing, ventilation and overcrowding were then the prevailing causes. During the winter of 1855–56, all the previous causes of disease had been removed. The men were well clothed, fed, and sheltered. Their huts were properly drained and ventilated, and nuisances had been removed. The hard work had also ceased. Compare the two periods of September to May 1854–55 and 1855–6, and no more instructive lesson on army hygiene could be

given. The men were the same, the conditions only had been altered.

Could an Æschylus or a Sophocles appear again, what a subject would he here find for his delineation of Fatality! How much grander is the Christian fate than that of the Greeks! How much greater a conception for a Tragedy! Do this, says the Greek fate, and a family shall be extinguished or an individual hunted down by the Furies. Do this, says the Christian fate, and 18,000 men shall die; and Providence would not be good, if it were otherwise. Do the other, and 18,000 men shall live. The requirements of Health had been disobeyed in every particular during the first winter in the Crimea; and she has left on those figures an everlasting vindication of her broken commands. During the second winter she had been more perfectly obeyed, and the sign of her displeasure has almost ceased to appear.

Sanitary Treatment of Sick in Hospital in Crimean War.

In discussing the causes of the terrible mortality of that fearful winter, another important point must not be overlooked, viz.—what chances a sick man had of proper care and treatment.

It is well known that the Medical Staff exerted itself to the very utmost, and incurred a large proportionate mortality among its members in consequence; but the accommodation for the sick in camp was for several months most defective. There were no proper Hospitals and no suitable beds or other appliances. The suffering from exposure among the sick was perhaps greater, considering their diseased state, than even among the Army generally.

On board Sick Transports.

The transport ships were, for many months, defective in the highest degree, overcrowded, badly ventilated; and moreover, many cases were shipped in a state wholly unfit for removal, particularly those of Choleraic Disease. There was a great mortality on board the ships in consequence

during the period of four months and a half from the landing in the Crimea to the end of January 1855, out of 13,03[illegible] sick shipped for Scutari, nearly 75 per 1,000 died on a passage of only 300 miles. Had the embarkation of sick gone on for 12 months and the same high rate of mortality prevailed among them, no less than 3,182 per 1,000 would have died. In other words, the population of the Sick Transports would have perished on the Black Sea upwards of three times. In the month of January, we lost 10 on the passage to every 100 we received alive. The terrible episode of these Transport Ships is given, pp. ii, iv, Preface to Section II., p. 67, and pp. 73–5.

In Hospitals of the Bosphorus.

Of these sick who thus arrived in the Bosphorus, there died, in the month of February 1855, 415 per cent. per annum, and in one Hospital, that of Koulali, actually 608 per cent. For when the sick were landed, they were crowded into buildings which had undergone no sufficient sanitary preparation for their reception. The drainage, ventilation, lime-washing, &c., were so defective that the buildings were little better than pest-houses; and the result was an enormous and needless mortality among the sick, which went to swell the losses of the Army, and to raise its proportionate rate of mortality.

The Scutari mortality was, in fact, a separate problem, and must be considered by itself. It was the case of thousands of sick removed 300 miles from the causes which had occasioned their disease, and exposed to another class of risks in the buildings into which they were received. The buildings were spacious and magnificent in external appearance; far more so, indeed, than any military buildings in Great Britain, and several of them were apparently better suited for Hospitals than any Military Hospitals at home.

The mere external appearance was, however, fatally

deceptive. Underneath these great structures were sewers of the worst possible construction, loaded with filth, more cesspools, in fact, through which the wind blew sewer air up the pipes of numerous open privies into the corridors and wards where the sick were lying.

The wards had no means of ventilation, the walls required constant lime-washing, and the number of sick placed in the Hospitals during the first winter was disproportionately large, especially when the bad sanitary state of the buildings is taken into consideration. The Hospital population was increased, not only without any sanitary precautions having been taken, but while the sanitary conditions were becoming daily worse, for the sewers were getting more and more dangerous, and the walls more and more saturated with organic matter. Some slight improvements were made in the beginning of March 1855, but it was not till the 17th that effectual means were put into operation for removing the causes of disease in the buildings, viz., by the Sanitary Commissioners. By the month of June the improvements were nearly completed, and the proportion of sick had fallen off.

P. 141, pp. xxii to xxviii, Preface to Section III, P. 81

Page 141 shews the whole history of that frightful Scutari calamity. It exhibits the annual rate of mortality per cent. on the sick population of the Hospitals. It will be seen that, even from the very beginning of the occupation of these buildings in October 1854, and before the sufferings of the winter had begun, the mortality was very high, although the number of sick was small, indicating the unhealthy state of the buildings at the very beginning. Nothing was done to improve them even then—only fresh ship-loads of sick were passed into them. The mortality, of course, continued to rise—still nothing was done. Then came the great Crimean catastrophe, and ship after ship arrived with sick in a

susceptible a condition, that the foul air of these Hospitals was almost certain death to them; and, accordingly, they died, in the month of February, at the rate of 413 per cent. per annum. So that in twelve months, at such a rate, the whole sick population of the Hospitals would have perished four times. In the month of February, 1855, we actually lost two out of every five men treated in the Hospitals of the Bosphorus, and one out of every two at Koulali, the worst of all the Hospitals. Well might we learn from our incredible mortality a terrible Sanitary lesson! The reduction in the mortality, after the sanitary works had been begun, is most striking, and it falls eventually, in June, 1855, to less than a sixth part of what it was when the Barrack and General Hospitals were occupied together in October 1854, and to a nineteenth part of what it was in February 1855. Our General Hospitals have been so deplorably mismanaged in all our wars that men have come to ask the question, whether it would not be better to do without them altogether? The experience of Scutari has proved that General Hospitals may become pest-houses from neglect, or may be made as healthy as any other buildings.

Zymotic Disease the real destroyer of Armies in War.

The question of these Zymotic Diseases is of infinitely greater importance during war than during peace; for no weapons are so destructive of Armies in the field as they are. The slaughter of battles and of sieges is cast into the shade by that of pestilence, which, during long wars, is the real arbiter of the destinies of Nations, for it exhausts their resources more completely than all other losses in the field.

Value of the Soldier.

In a country like ours, with a limited population, an entirely voluntary system of recruitment, and colonies and possessions in all climates and latitudes, the question of military hygiene is rapidly becoming a question of vital

importance to the interests of the Empire. The time appears to have arrived, when by the British race alone must the integrity of that Empire be upheld. The conquering race must retain possession. And experience has shown that, without special information and skilful application of the resources of science in preserving health, the drain upon our home population must exhaust our means.

A competent authority states, that "It is calculated that we shall require something like 25,000 to 40,000 men annually in a year to keep up the strength of our army everywhere. These must *all* be for a considerable time in barracks at home, if we can find the requisite number. Yet, while it is doubtful whether we can find men enough to meet the necessary expenditure of soldiers abroad, we are squandering our means at home, and needlessly expending men in barracks here, who might be preserved to maintain our strength and our dominion elsewhere. What would be thought of a brewer who treated his dray-horses in like manner—or a huntsman who so dealt with his horses or his hounds? A dairyman would be ruined in a twelvemonth who suffered his cows to be so fatally crowded. Independently of all moral and political considerations, it is the most wretched mismanagement on the part of the nation. It is doubtful whether our Military Statesmen are yet alive to the truth of sanitary science—they admit it, but they do not feel it—their minds, in some instances, still run in the old rut. While the Board of Health is warning us all to put our houses in order, to attend to our sewerage, ventilation, &c., the dwellings of our soldiers, under the special care and superintendence of the Government, are the most neglected, in these respects, of the habitations of our fellow-subjects. Public attention is now concentrated upon India, and thinks little of what is being done or left undone at home; but men are not in a mood

to be trifled with. They are in that sort of savage frame of mind which would delight in tearing somebody to pieces —they would prefer a Brahmin, or a Mussulman, but as they cannot get that, they would take what they could get. If Cholera should break out badly in our Barracks, and should be traced to the neglect of timely and repeated warnings, it would fare ill with the responsible."

That we shall have another epidemic of Cholera soon is, speaking as men speak, certain. The signs are already here. We have put our house in order (in a certain measure, at least,) as far as regards the civil population. Upon them it will bear less hardly than it did in 1849 and 1854. Shall the Queen's troops, and troops which have deserved so well of us, be the only portion of Her subjects which shall not escape, whose chance of life shall not be looked to?

It has been shown that they have suffered more than twice as much in past years, even when the rest of the population was at its worst, from Cholera and other epidemics, as their civil fellow-subjects have done. This fatal preponderance will be seen, as still more glaring, now that the Sanitary state of Civilians has somewhat improved.

The Queen's Household Troops in London have suffered in their Barracks a yet higher proportion of mortality from Cholera, in comparison with the civil population. More than five times the proportion of Royal Horse Guards actually died, in 1849, from Cholera, in Knightsbridge, compared with Civilians, although including all ages, and both sexes, in the same parish*. Shall this pro-

* Deaths per 1,000, from Cholera, in 1849, of Troops and Civilians, in same Parishes.

	Per 1,000.
Civilians—St. Pancras	2·2
Troops—2nd Life Guards, Regent's Park	10·8

portion be raised yet higher by the mortality of the metropolis falling, while that of the Household Troops does not, and thus be made still more fearfully striking? Such, however, will, in all probability, be the case, unless the Barracks are improved, before the next epidemic comes.

To introduce, therefore, a proper sanitary system into the British Army is, especially at this juncture, of essential importance to the Queen and the Public Service.

The principal defects pointed out and the principal suggestions for their remedy offered, in the preceding notes, will now be subjoined.

Civilians—Kensington	24
Troops—Royal Horse Guards, Knightsbridge	174
Civilians—Marylebone and St. Martin's in the Fields ..	27
Troops—1st Batt. Gren. Guards, Barracks, Portman Street .. 1st Batt. Coldstream Guards, Barracks, Trafalgar Sq.	32
Civilians—St. John's and St. Margaret's, Westminster ..	69
Troops—2nd and 3rd Batt. Gren. Guards, Wellington Barracks*	29
Civilians—East London and Whitechapel	24
Troops—2nd Batt. Coldstreams, 2nd Batt. Scots Fus. Guards, Tower	109
Civilians—Marylebone	17
Troops—1st Batt. Scots Fus. Guards, St. John's Wood and Portman Barracks	70

The Deaths of the Civilians are taken on the whole population, without distinction of age or sex.

---

* The Wellington Barracks are in St. James's Park, the most healthy spot in the district.

SUMMARY OF DEFECTS AND SUGGESTIONS.

I. Field Service.

I. Defects in Sanitary Instructions.

1. There appear to have been no preliminary sanitary instructions sent to the Army in Bulgaria, even after the receipt of the Reports of an Army Medical Commission, prepared as these Reports were by the Director-General's desire.

2. No instruction sent, to examine and prepare the Hospitals on the Bosphorus, before they were occupied.

3. No sanitary instruction issued for the guidance of Medical Officers going to the Crimea, on any one subject, either regarding town or country.

Note.—After sanitary neglects had become matter of public notoriety, inquiry was made about individual cases, as, *e.g.*, the drainage and graveyard at Scutari, but all this was after the evil was done and the penalty incurred.

II. Defects as to Supplies.

II. The recommendations from the Director-General's Office affecting the personal hygiene of the soldiers evince more information and practical insight. They are often enforced with vigour, as, *e.g.*, in the case of Lime Juice, ventilated Tents, and, to a certain degree, Clothing.

But the Army could not live on Lime Juice. There is little mention made of Vegetables, or of ground Coffee, till

1. Field Service.

the mischief was done. There is no mention at all of Fresh Meat, Bread, Fuel, Roasted Coffee, or Cooking, until the winter of 1854–55 was over, and the Civil Commissions were come. The very essentials to life are neglected, and even the remedies are posthumous to the death of the Army in many cases, in others tardy and ill-timed.

With regard to Hospital supplies, which were undeniably within the jurisdiction of the Department, no correspondence about them, so far as hitherto has appeared, took place, although the Director-General must have known that they were exhausted, during a considerable period of 1854.

III. General Defects of Procedure.

III. The very obvious defects of the procedure of the Army Medical Department, in reference to the Hygiene of the Army in the East during the first year of the campaign, may be summed up as follows:—

1. The Department appears never to have been consulted about Rations, Clothing, or Sanitary measures.

2. With the exception of advice as to Clothing and ventilated Tents, which was not followed, and as to Pea Charcoal, which was, the Army Medical Department appears to have tendered no advice on Sanitary measures nor on Hygiene to the Horse Guards or War Department, before or during the first winter.

3. The Director-General appears to have sent no Sanitary instructions, nor any instructions as to the composition of Rations, to the Principal Medical Officer of the Army.

The narrative given shows that the whole Dietetic system pursued in the Army is wrong; that, in fact, the feeding of the Troops was nothing but the merest hap-hazard, and that the result which did follow was inevitable after these conditions had been permitted to exist.

I. Field Service.

The Director-General appears never to have made any sanitary suggestions with respect to the state of Scutari Hospitals, until after their condition had become matter of public complaint in England, and the Government had taken other means of remedying the evils.

4. The Principal Medical Officer appears never to have consulted the Director-General on any Sanitary subject, nor on the composition of Rations. He only recommended Vegetables and Lime Juice after Scurvy had appeared. He only stated that the Ration contained too much salt meat, at the time when the issue of fresh meat was 3 lbs. per man per month, and this six weeks or two months after scurvy had appeared.

5. The Principal Medical Officer does not appear to have been consulted by the Commander of the Forces on the composition of Rations, or on any Sanitary subject.

6. The Principal Medical Officer appears not to have been consulted as to Clothing or shelter.

7. The Principal Medical Officer appears to have given no advice to the Commander of the Forces on any of these subjects, until the Army was suffering and exhausted, and when it was too late to obtain what was necessary.*

8. The Principal Medical Officer issued no Sanitary memorandum for the guidance of his Medical Officers, on the army taking up ground before Sevastopol.

9. The Medical Officers were not consulted about

* The contrast between the Diet correspondence during the first winter of the Crimean War and that of the remainder of the campaign, is striking. After Sir John McNeill's Commission went out, the Principal Medical Officer appears to have received new light on the subject of Diet, and, during the remaining part of the occupation, he writes and applies continually on all subjects, meat, bread, vegetables, lime-juice, porter. A description of the Disease produced by want, and a prescription of Lime Juice and vegetables as the remedy, were the mode of action of the first winter, replaced by abundant writing about diet and a lively sense of its importance, during the after period.

I. Field Service.

Sanitary or Hygienic points by their Commanding Officers.

We are left to conclude, on the one hand, either that the Army was so well provided that no written representations on the subject were necessary: on the other, that it was no part of the duty of the Medical Department to make such representations.

Yet, when we consider that it is not by wounds or in action that Armies have been cut off in the field, but by Epidemic Disease—that it is not on battles, but on epidemics that the fate of nations at war has depended, should it not be considered that the Sanitary care of an Army is an essential part of strategy?

II. Field Hospitals.

II. Field Hospitals.

According to the present system, serious deficiencies in the stores and equipments of Field Hospitals, and their means of transport, may, at any time, take place.

To prevent this in future—

A fixed scale of Field Equipments, and of Medicines according to a specified List and Formulæ, should be laid down.

Let there be a Military Pharmacopœia, fixed upon by the most distinguished men of the Medical profession in Great Britain and Ireland, Civil and Military. Such names cannot fail to conciliate confidence in the Army Medical Profession. Let them decide what medicines and appliances are really essential to the health of an Army and compatible with reasonable means of transport. Their dictum will be accepted. Whereas now it is true that an unreasonable bulk is sometimes required in the supplies of medicines demanded.

III. General Hospitals.

III. General Hospitals. Defects.

A great amount of mismanagement, failure and suffering resulted in the late war, from the want of some supreme Officer, who should be held responsible for the health and efficiency of the Hospitals at the base of operations.

Suggestions.

The only way to prevent similar occurrences is to determine:—

1. That a Governor be selected and named by the Secretary of State for War, by whom the other Officers, Heads of Departments in the Hospital, should also be named. In the event of a vacancy occurring on service, the Commander of the Forces to make a provisional appointment, subject to the approval of the Secretary of State.

2. That all Officers of Engineers, Sanitary Officers, or others employed on the application of the Governor to carry on duties connected with the Hospital, be under the authority of the Governor while so employed.

3. That all the labour required to carry out plans approved by the Governor, under the directions of any Department, be obtained or hired by the Governor or by his written directions, and not otherwise.

4. That the government and control of the Hospital be vested in the Governor, except so far as relates to the medical and surgical treatment of the patients by the Medical Officers.

5. That the Governor of a General Hospital, whether he be a Military or Medical Officer or a Civilian, be considered, and assume the functions, and be vested with the powers of, a Civil Governor.

6. That there be attached to the Hospital one or more Military Officers of the Adjutant-General's Department,

III. General Hospitals.

subject to the authority of the Governor, to conduct the discipline of convalescents, when necessary, and to see that they are properly equipped when they proceed to join the Depôt.

7. That all orders or requisitions of the Principal Medical Officer, or of the Steward, for supplies for the Hospital, shall be ineffective unless countersigned by the Governor.

8. That the Hospital be not dependent upon the Commissariat for any supplies, but that the Commissariat honour the drafts of a Treasurer, countersigned by the Governor, for the expenses of the Hospital, including the pay of the officers, attendants, and others attached to it, and that the Governor be held responsible for the due and proper disbursement and application of the funds.

9. That the duties of the Purveyor be equivalent to those of the Steward in a Civil Hospital.

10. That no contracts for supplies to the Hospital which the Steward may propose to make, be concluded until approved and countersigned by the Governor, unless when made at a distance from the Hospital by written instructions from the Governor, by whom, in that case, they must subsequently be countersigned.

11. That all Contracts for supplies contain a clause authorizing the Steward to purchase in the market, at the cost of the Contractor, any supplies which the Contractor may fail to deliver in terms of his Contract—if they are immediately required.

12. That all transport by sea or land required by the Steward, for the purposes of the Hospital, be obtained or provided by the Governor, as also the transport required by the Principal Medical Officer for stores strictly medical.

NOTE AS TO PROPOSED OFFICE OF TREASURER IN GENERAL HOSPITALS, p. 226. III. GENERAL HOSPITALS.

The grounds upon which it is considered important to separate the office of Treasurer or Paymaster from that of Purveyor or Steward, are as follow:—

1. If the Purveyor of a General Hospital is to be a Treasurer also, he must do one or other duty by deputy; he cannot do both in person as they ought to be done. They must practically be done by different men. And the only question really to be considered is whether the duties shall be divided, and each man be held responsible for what he does; or whether the Purveyor shall be made to account to his own deputy, and his own deputy to him.

2. If the Purveyor is Treasurer and Paymaster, no one will venture to be very troublesome about defects in the Purveying, for he can retaliate most effectually by being troublesome about accounts and payments. This is really the most important consideration.

3. There can, in that case, be no preliminary audit on the spot, and no subsequent audit at home can be both just and effectual, especially where local difficulties are to be encountered.

4. No one in private life would dream of putting the whole of his funds into the hands of the man whose business it was to supply his establishment with food, and leave him to make out an account of the manner in which they had been disposed of. A prudent man would place his funds with a banker, and give orders from time to time, as funds were required for the supply of provisions. The principle appears the same in both cases. Why should the line of action in the Army be contrary to that adopted by the most business-like country in the

III. General Hospitals.

world? If a Paymaster-General were to be appointed for an Army in the field, ought he to be made dependent on the Commissariat for funds? The Governor of a Hospital, if he had the means, would do better to pay a Treasurer out of his own pocket, than have the duties of banking and of supply jumbled up together in the hands of the same man, however good a man he might be.

5. But independently of these considerations, the object of every system is to have the work well and thoroughly done; and no arrangement can really be economical which is incapable of effecting this object. The plan, whatever it may be, which makes our Hospitals most efficient for the care of sick and wounded soldiers, and their restoration to efficiency, must ultimately be the best and the most economical. An efficient soldier is not a low-priced article. And if the Purveyor has, besides the duty of supplying every required article, the labour, anxiety, and responsibility of providing, disbursing, and accounting for all the funds required for all purposes in the Hospital, it is made virtually impossible for one man in a thousand to do both as they ought to be done; and, if they are not so done, the ultimate loss falls upon the public.

Even the difference in the first cost is not so great as it may at first sight appear. There must be hands enough to do the work, and they must all be paid for, in whatever form it is put. The person, whatever his designation, to whom the Purveyor entrusts the banking part of the work, must be a person competent to conduct it, and must be paid accordingly. The additional first cost of having a Treasurer or Paymaster could only be the difference between his salary when employed under the Purveyor and his salary when employed under the Governor. It is a fallacy to suppose that the work can

be had without paying for it; or that good work can be had without paying an adequate price for it. III. General Hospitals.

To sum up. There can be no question that to have a Steward to buy, and a Treasurer to supply him with the requisite funds on sufficient cheques or orders, is a safer, more efficient, and at the same time a more economical system in the end, than to combine the duties of Purveyor and Banker in the hands of one person. Till the functions of banking and of supply are separated, no adequate remedy can be brought to the evils experienced from the present system, whether of Commissariat or of Purveying. Remedies.

IV. Sick Transport.

The Sick Transports, during the late War, up to the middle of February, 1855, were in a condition utterly unfit for sick as regards their Sanitary state, and sick were shipped in a condition utterly unfit for the voyage. The Transports were, many of them, unfit for the purpose. They were overcrowded, badly ventilated, not clean, and not fitted up for the reception of sick. The attendance on board was also deficient. The superficial space, allowed in these Transports, was fixed by a Board of Inspection formed at Balaclava, December 12, 1854, at 6 ft. by 2½ ft. for sick and 6 ft. by 3 ft. for wounded men. The height between decks varied from 6 ft. to 8 ft., only in one instance was it 8½ ft., and in one other 9 ft. in some parts. Many cases of Choleraic Disease were put on board. As might have been expected, great was the mortality, in consequence of all these causes. IV. Sick Transport. Defects.

It is necessary in future:— Remedies.

That properly-fitted transport ships be provided, for the conveyance of the sick and wounded, who may be equal

IV. Sick Transport.

to the voyage, with a suitable staff of Medical Officers and of attendants.

And that other properly-fitted Transport Ships be provided, for the conveyance home of invalids, not sick.

V. Hospital Management.

V. Hospital Management. Defects.

1. Much delay, inefficiency, and uncertainty have arisen from the present mode of supplying Hospitals by requisition; the requisition being also made upon an Officer who is only partly responsible for the supplies "required" being in store.

2. The existing Diet-tables are defective, and necessitate the use of a large number of Extras which might be avoided.

3. A large proportion of the time of the Medical Officers is taken up in matters of household detail, and consequently lost to them for their proper professional duties.

The forms of Admission Books, Medical Registers, Diet Rolls, &c., now in use, absorb a considerable amount of time, without any corresponding advantage to the Sick.

4. The present Hospital administration, from the absence of any organized system of Hospital governance and attendance, is not such as to afford experience in the management of General Hospitals, in the event of their being called for in an emergency.

5. The present system of frequent inspection is objectionable, on account of its interference with the treatment of the sick, and with details of Hospital management which would be better left to the responsibility of the treating Surgeons, upon whom, rather than upon the Inspector, such responsibility should rest.

It is proposed, with a view of remedying those evils—

V. Hospital Management. Alterations Suggested.

1. That, in future, all the duties of supply shall be performed by one Officer, according to a list to be laid down in his Instructions; subject to the orders of the governing Head of the Hospital.

2. That revised Diet Tables be adopted, after consultation with the best Dietetic Authorities of the day.

3. That the Medical Officers be relieved from all duties, except those strictly concerned with the treatment of the Sick, in order to enable them to devote as much time as possible to these.

That simplified forms of Admission Books, Medical Registers, and Diet Rolls be adopted.

4. That, with a view to habituate the Medical and Administrative Officers to the conduct of large General Hospitals, as well as to secure the superior advantages enjoyed in such by the patients, General Hospitals, with a suitable scheme of government and attendance, be substituted for agglomerated Regimental Hospitals, in such numbers, and at such Stations, as the Secretary of State shall select.

That a Commissioned Officer for the management of Hospital attendants be appointed, with certain specified duties.

5. That the duties of Inspectors and Deputy Inspectors of Hospitals shall not extend to interference with the treatment of the sick, or to interference with such details of Hospital management as the treating Officer should be held directly responsible for.

That the duties of all Inspectors and Deputy Inspectors should be fixed by the Director-General, and the regulations for such duties should be published for the information of the Service.

That Female Nurses be introduced into all General and large Garrison Hospitals.

VI. Sanitary Officer for Hospitals, Encampments, &c.

VI. Sanitary Officer for Consultation as to Hospitals, Encampments, &c. Present Want of any Sanitary Responsibility.

1. There is no standing order or regulation to make it imperative on the Commanding Officer to consult the Medical Officer on any matter affecting the health of the troops in the field, or for entrusting to any competent Sanitary Officer the sanitary improvement of occupied towns, villages, districts, or buildings, or for obtaining competent sanitary advice, with respect to sites for camps, erection, draining, and ventilation of huts, water-supply, and other similar matters. The regulation that Medical Officers are to report their opinion on certain matters affecting the health of the troops is defective, and is not necessarily followed by any practical steps for removing causes of the disease reported on. In the case of armies in the field, no competent Sanitary Officer is attached to Head Quarters, whose special duty it is to attend constantly to all external conditions affecting the health of the Army.

2. There cannot be a moment's doubt as to the essential nullity of the whole sanitary procedure with regard to the General Hospitals at the base of operations, in the late War. No measure that was recommended was unnecessary, but, even if the measures had been all carried out, the Hospitals would still have been unfit for the sick.

After all was done, the murderous Sanitary defects of these Hospitals remained untouched; and Death did his work well.

The defects and their bearing on the health of the Hospitals required sanitary knowledge to discover and estimate, and practical knowledge to remove. The recommendations made by certain Medical Officers were superficial, elementary, obvious to any one with a rea-

VI. Sanitary Offices for Hospitals, Encampments, &c.

and such as any person would have made; but the defects so discovered were not those which had converted the Hospitals into post-houses.

Even if they had been all discovered, was it the time to have set about the remedies, as the Sanitary Commission was sent out to do, when the sick had perished?

The evil lay in not having such a sanitary organization in the Army as would have caused every source of danger to be *removed*, before a single sick man was placed in any one of the buildings.

There is 1, nothing in the education of the Medical Officer—2, nothing in the organization or powers of the Army Medical Department—3, nothing in the whole Hospital procedure—4, nothing in the Army regulations which would have met the case of these Hospitals. And were a similar necessity to arise again, especially after the lapse of a few years of peace, the whole thing would occur over again. This is the frightful consideration which ought to make us recall over and over again this experience; otherwise, let bygones be bygones.

Our General Hospitals have always been shambles for the sick. And men have come to recommend that none be ever formed again at the base of operations.

The Scutari buildings were spacious and magnificent in external appearance; far more so, indeed, than any military buildings in Great Britain; and several of them were, apparently, better suited for Hospitals than any Military Hospitals at home.

This merely external appearance was, however, fatally deceptive. Underneath these great structures were sewers of the worst possible construction, loaded with filth, mere cesspools, in fact, through which the wind blew sewer air up the pipes of numerous open privies into the corridors and wards where the sick were lying.

VI. Sanitary Officers for Hospitals, Encampments, &c.

The wards had no means of ventilation, the walls required constant lime-washing, and the number of sick crowded into the Hospitals, during the winter of 54-55, was disproportionately large, especially when the bad Sanitary state of the buildings is taken into consideration. The population of the Hospitals was increased not only without any Sanitary precautions having been taken, but while the Sanitary conditions were becoming daily worse, for the sewers were getting more and more dangerous and the walls more and more saturated with organic matter.

3. Almost every word of this, which applies to Field Service, may be repeated, *mutatis mutandis*, for home. There are Barracks and Military Hospitals in England, at this moment, in nearly as bad a sanitary state as the buildings at Scutari. The plans of Netley Hospital shew an amount of sanitary knowledge quite behind that of the age.

Remedy.

The necessity of appointing some competent Sanitary officer, for consultation, seems to be apparent, from what has been said.

VII. Barracks.

VII. Barracks. Present Evils.

The amount of disease and mortality among the troops, in time of peace, greatly exceeds that among the classes and ages in Civil Life, from which the Army is recruited. There is nothing in the occupation of a Soldier which can account for this. The mortality from Pulmonary and Zymotic Diseases, which together make up a large proportion of the excess, is double in the Army what it is at the same ages in Civil Life.

The state of the atmosphere in Barracks is most impure and offensive, arising from over-crowding, insufficient ventilation, and defective drainage. To this state of the

VII. Barracks.

atmosphere is to be attributed much of the liability of Soldiers to Zymotic Disease, and, together with imperfect exercise, the same conditions predispose the men to pulmonary disease.

In all Barracks, the provision for married soldiers is highly defective.

Suggestions.

A minimum space, sufficient for health, should always be allotted to each man in his Barrack-room and in the Guard-room, with suitable Sanitary arrangements.—Day-rooms should be constructed for the use of the men.—And all Barracks should be provided with kitchens, admitting of variety in cooking.

It is also necessary:—

That separate sleeping accommodation, either by corrugated iron partitions, as used at Col. Jebb's Asylum, at Fulham, or by other equally easy, simple, and economical means, be provided for Privates in their Barrack Rooms.

That suitable accommodation be provided for married soldiers, and that Model Lodging-houses, in certain cases, be erected for their use.

That all Barrack-rooms, Guard-rooms, and Day-rooms be properly lighted and warmed.—That every Barrack should contain ablution-rooms and baths, a laundry and drying-room, and workshops.

VIII. Statistics.

VIII. Statistics. Present Deficiencies.

There is no Statistical Department connected with the Army Medical Department, the existing Reports having been, at first, voluntarily prepared by gentlemen who take an interest in the matter. Owing to this defect, the Returns of Sickness and Mortality, in the late War, became involved in inextricable confusion.

VIII. STATISTICS.

The Mortality in the Field was returned week by week, instead of the proportion to strength per annum.

The mitigable forms of disease and mortality are not returned, as they ought to be, separately.

The classification of Diseases adopted differs from that of the Registrar-General.

The deaths in the Army are not registered in the Registrar-General's Office.

The rates of mortality are only published at long intervals. And there are no means of frequent comparison between the Mortality in the Army with that in Civil Life, or with its own previous rates.

Improvements Suggested.

It is necessary that an efficient Statistical Staff be appointed, in connection with the Army Medical Department ;—that, in future, the Mortality in the Field should be reduced to the received unit of time, viz., a year; and that it should be stated at so many per 1,000 per annum; —that the Weekly Medical States should exhibit, in a separate group, the Disease and Mortality from Zymotics, and that each State should have noted on it the causes of the predisposition to such diseases.

That the same nomenclature and forms should be used for Army diseases and mortality as have been adopted by the Registrar-General.

That the Statistics should be kept so as to enable the Government to judge of the comparative healthiness of every Station and Barrack; and so as to admit of the sickness and mortality being traced to their causes, and the remedies being applied.

That the Statistics of Mortality be communicated to the Registrar-General, for comparison and publication,—also those of births and marriages in the Army. The form of the Schedules appended to the Registration Acts to be

adopted, so as to admit of an accurate and ready comparison with the National returns. VIII. STATISTICS.

One great object of Army Statistical Returns is to show to men of science and to the public the peculiar diseases from which the Army suffers. And this will be accomplished most effectually by adopting the same form of classification as is employed in returning the causes of death in the civil population.

IX. PAY AND PROMOTION OF MEDICAL OFFICERS.

IX. PAY AND PROMOTION OF MEDICAL OFFICERS. Present system. Uncertainty.

1. The present system of promotion by seniority (reckoned, not from the date of first appointment but from seniority within the limits of the station or group of stations) necessitates, as the Director-General informs us, (Report of the Committee on the Army Medical Department, Q. 4,552), the introduction of very complicated rules, which have never even been reduced to writing, in any systematic form,—which are known only to the Director-General and are scattered over a correspondence of forty years.

In order to prevent the rules from operating harshly on individuals, a fresh enactment is made, he says, to meet each special case, as it arises.

Departure from Rules.

2. Further, he stated before the same Committee of the House of Commons, that the interest of the Service requires a departure from rules.

Want of Rule.

3. There are two purely administrative ranks, one of a mixed character, and two executive ranks, in the Army Medical Department.

The principle of appointment to the administrative ranks is not sufficiently well defined.

Confidential Reports.

4. Confidential Reports, affecting the character and promotion of a Medical Officer, may be used to his disadvan-

IX. Pay and Promotion of Medical Officers. Generally.

tage, without his having any opportunity of explanation or defence.

5. The grievances of which all Army Medical Officers complain, are the following, which they consider to be caused by the system of administration at the Army Medical Department:—

Uncertainty,

Apparent injustice,

An offensive system of inspection,

Promotion to the Inspecting Ranks of men who have not the confidence of the profession,

Insufficiency of pay,

The apparently unfair length of time before retirement,

Insufficiency of rank.

The Director-General's proposal of an improved scale of pay, the annual cost to the country of which would be £217,763, or £50,000 more than the present rates, is presumed to be the salve to all the wounds.

It unfortunately happens, however, among Army Medical Officers, that much of the discontent is occasioned by the administration of the Department itself. And the result is that the *esprit de corps*, which it is desirable to uphold, is to a large extent wanting.

Relative Rank.

6. It is complained that the Relative Rank conferred upon Medical Officers is not, in all grades, so high as the value and importance of the Department would seem to justify.

That the relative rank and the practical advantages which it is meant to confer are undefined, and vary according to the interpretation which Commanding Officers may put upon this rank.

That there are no regulations in the Queen's Service, either one way or other, upon the subject.

That Medical Officers are subjected to humiliation, in consequence. IX. Pay and Promotion of Medical Officers.

That they are not considered entitled to the same honours and distinctions as Combatant Officers, and that they do not receive them in the same proportion.

That the Military honours, at funerals, are not proportioned to the relative rank of the Medical Officer.

That, in the Army List, the Medical Officers are not inserted according to their relative rank.

And that, in the General Army List, the Department is placed after others before which it ought to have precedence, as a scientific profession.

The pay given, the honours bestowed, and the position awarded to the Army Medical Officers are not such as to attract to the ranks of the Army Medical Department a fair share of the best men who devote themselves to the Medical profession. Still more will this be the case, when the higher standard of attainments, now proposed by a Royal Commission, is exacted.

7. There is no Roster, at present, according to which every Officer of the Staff would go abroad, in his turn, and have an equal share of foreign service. Roster for term of Service.

In the lower ranks, a Roster might be established, and in time of peace be maintained with convenience to the Department.

In any future re-arrangement of the pay and promotion, it appears to be necessary, Alterations apparently required.

1. That the Medical Officer should have a reasonable certainty as to his rise in his profession. Certainty and fixity of Rule.

That the principle of seniority should be strictly adhered to, except in the Inspecting Ranks.

That the present anomalies, so much complained of, of juniors in rank receiving the same pay as their

IX. Pay and Promotion of Medical Officers.

superiors—of seniors being inspected as to their medical treatment by juniors, should be avoided, and that, as far as practicable, every step in the progress of the Medical Officer, from his entering the Service until the period of his being selected for the rank of Deputy Inspector-General, should be fixed by Regulation, known to the whole Service, and adhered to.

Adherence to Rules.

2. It must appear, to all who have well considered the subject, that the interest of the Service can only be guarded by laying down rules and by adhering to them.

Opinions.

3. 4. In every instance of selection for the administrative ranks, and in every instance of recommendation for honours, the reasons should be fully stated in writing, and made known to the Service; and, in any case where any charge is made against any Medical Officer, likely to interfere with his interests, such charge should be made in writing, and communicated immediately to the Officer against whom it has been made, and, in any record of the charge, the answer to it should be given verbatim.

True principle of Promotion, Seniority in the lower, Selection in the higher Appointments.

5. The true principle upon which promotion should rest appears to be the following:—

When young men enter the Service, they have their experience mostly to gain; and it is not until after many years' service that the true capabilities of a man can be ascertained. The highest capability of a Medical Officer is the capability of treating the Sick and Wounded. And no man should be selected into the inspectorial rank on that account. The inspectorial talent, which is the only talent that ought to form the basis of selection into that rank, is one which, in the vast majority of instances, requires age for its development.

IX. Pay and Promotion of Medical Officers.

It would be perfectly safe, therefore, to give the principle of seniority free course, until a man, by length of service alone, arrives at the highest executive rank.

Selection to inspectorial offices should rest upon this principle, that the Director-General, being himself personally responsible for the administration of his Department, should have the power of selecting his representatives. But, at the same time, the Army Medical Service should feel that its interests, in the executive ranks, are thoroughly protected against what it might consider an invidious interference with its rights of progress by seniority.

Confidential Reports must be utterly abolished. No increase of pay will compensate a man for a stab in the dark; and every statement to his prejudice should be sent verbatim to him directly for a reply.

It may be expected, under an improved system, that a better educated, more intelligent and honourable set of men will enter the Service. But we must not expect to obtain such a class solely by increase of pay. The class we are most desirous of obtaining consists of those men who, while they look for a fair remuneration for their services, look at least as much to fair, honourable, and gentlemanly treatment, and a proper recognition of their services, as amongst the most prominent reasons for desiring to enter the public service.

Relative Rank.

6. With respect to Relative Rank, the true principle appears to be this, that, while the Medical Officer is treated as becomes his education and position as a gentleman, his relative rank, and the advantages following from it, should be at least one grade lower than that of the Commanding Officer to whom he is attached.

It would not answer in practice for the Commanding Officer to be a Brigadier-General, and the Chief Medical Officer to be a Major-General.

IX. Pay and Promotion of Medical Officers.

If the Army Medical Department were, as it ought to be, totally separated from the combatant part of the Army, its true position, in the Army List, would be out of the Army hierarchy and apart by itself.

As to Substantive Rank, would it not be much better in every sense for the Service that the Medical Department should be quite separate and distinct from the Army? that it should devote its whole time to the prevention and cure of disease, and not be called upon to perform any duties which are now discharged by Officers in Regiments?

The principle of substantive rank infers a greater or less disregard of the specialities of the medical profession, and a greater or less participation in military duties, for which the Medical Officer is not competent.

Would it not be better to limit the Medical Officer's duties in regard to all courts and boards, simply to appearing before them and giving advice and information when required?

Pay. The pay of Army Surgeons and Assistant Surgeons should be increased.

X. Medical Education.

X. Medical Education. Defects.

1. Under the present system, the preliminary requirements of candidates, for entrance into the Army Medical Service, are defective.

2. The examination which candidates have to undergo on their entrance, is insufficient.

3. The professional training, after a candidate has been accepted and before he joins his Regiment, is inadequate, and, in all Sanitary matters, wholly wanting.

4. The means of subsequent professional information and improvement are inadequate.

Suggestions. 1. It appears to be desirable that Candidates should

X. Education of Medical Officers.

have legal qualifications in Medicine, as well as in Surgery; and should give evidence of having had a liberal general education.

2. Their examination should be entrusted to a special body of practised Examiners.

3. Provision should be made by the State for instructing candidates in the specialties of the Army Medical Profession, before appointment to the Office of Assistant-Surgeon, and promotion to that of Surgeon. And more especially for a complete course of instruction by thoroughly competent Professors, in Military Hygiene, Sanitary Science, and the Physical education of troops.

Let leave of absence be granted to Medical Officers to enable them to extend their knowledge and experience at Hospitals and Medical Schools.

XI. Rations.

XI. Rations.

The present Rations are not settled on any principle established with a view to producing the highest physical efficiency of the men. The manner of cooking is defective; the Stoppages are so various, and the accounts so complicated and cumbrous, that the whole system, in time of peace, involves an enormous waste of labour, while it is immediately abandoned in time of war. There is no provision, moreover, for varying the quality and amount of the Ration, according to the varying conditions of the Soldier's life, in peace and war.

Let one uniform rate of Stoppage be adopted, both at home and abroad, in Hospital, on board ship, in peace and in war, including Ration and Regimental Messing; and, in consideration of that consolidated stoppage, that there be issued to the soldier, by the Commissariat, a

XI. Rations.

sufficient Ration for three daily meals, including vegetables, tea, coffee, and sugar, also occasional flour and raisins for puddings, and extra bread, with such variations abroad as the climate, period of the year, nature of the service, or the markets may render necessary.

XII. Cooking.

XII. Cooking.

At present, in Barrack as in Hospital, but one mode of dressing food is recognised or provided for, viz., boiling. But, except in a few Barracks, no meat can be baked, roasted, or fried, with the existing means—a defect in the cooking likely to co-operate with other defects, in being injurious to the health of the men.

It is suggested that, in every Barrack and Hospital, means should be provided for cooking Rations and Diets, in the various methods indicated.

XIII. Hospital Construction.

XIII. Hospital Construction. Defects.

1. Neither the plans adopted nor the sanitary arrangements, generally, have been such as to ensure a healthy state of the Hospitals.

2. The amount of cubic space allowed for the sick has been too small, and the ventilation has been defective.

3. The kitchen arrangements have been defective.

Necessary Improvements

It is very necessary, as proved by existing Military Hospitals:—

1. That all plans for the original construction of Hospitals be submitted to competent Sanitary authorities before such plans are finally approved.

2. That the amount of cubic space per patient be not less than 1,400 feet in Hospitals at home, nor less than 2,000 feet in tropical climates.

That the beds be placed at a minimum distance of 4 feet from the nearest sides, and 12 feet from foot to foot. XIII. Hospital Construction

That water-closets of the best construction be attached to the wards, and the whole drainage of the Hospital conveyed away by impervious drains, without passing under the building; and that all water-closets and sinks be separated from the wards by a ventilated and lighted lobby.

That all Hospitals be provided with suitable Baths and Lavatories; be well lighted, by gas if possible, and thoroughly warmed on the requisition of the Medical Officer of each ward.

That, in all new Hospitals, the windows be placed near each other, on opposite sides of the ward, and that the beds be placed in pairs between the windows.

That all new Hospitals be constructed in separate Pavilions, in order to prevent a large number of sick from being agglomerated under one roof.

That the walls and ceilings of Hospitals be constructed of Parian cement, instead of bare brick or plaister, and the floors rendered impervious to moisture, by saturating the wood with bees'-wax.

That the ventilation be by natural means, viz., by doors, windows, and lofty fire-places, aided by ventilating shafts in the walls.

That wards be of a size to hold from 20—25 sick, as a minimum, with the addition of a few smaller wards for special cases.

3. That such improvements be introduced into the structure of kitchens as to enable the sick to have a suitable variety of diet.

The sanitary improvements in Barracks, Hospitals, and Garrisons need not be delayed, but might be at once proceeded with, and special provision should be made for this

work. So far as is known, certain improvements could be carried out, with little difficulty and small cost, but others would require the execution of more permanent works. Every Barrack, Hospital and Garrison should be examined, with reference to its sanitary condition; and all experience has shown that it is essentially necessary that the examinations should be made, the nature of the sanitary works and their extent determined, and the works themselves executed, under the direction of persons competent to deal with special sanitary defects; otherwise the recommendations and suggestions made will be so unwise, and the cost so extravagant, that the whole thing will be brought into discredit.

The Army Mortality can be and ought to be brought down to 8§ per 1,000. Of this there is no doubt; the Model Lodging-houses, where 300—700 persons are congregated in a close space under good sanitary conditions, afford a convincing proof of it, if any such were wanted.*

It will be found that the repair of men is more expensive than the repair of buildings, and that these buildings may be put to rights at a cost equal to that of the treatment of the sick who come out of them.

* The *Model* Lodging-houses were built for health and show a rate of mortality little more than one-half of that of London. The Common Lodging-houses were built for *disease*, but, under sanitary inspection showed, in 1854, one-sixth of the rate of Cholera Mortality in the whole metropolis. The Barracks are built for *disease* and show twice the rate of mortality from Consumption, more than twice that from Cholera and Fever, and nearly twice that from all Diseases, which is shown by the Civil Population.

WALCHEREN EXPEDITION.

While we are occupied with the subject of Army Hygiene, we should not forget the lessons of past experience, upon the evils of defective knowledge and of defective administrative arrangements. It may be of advantage, for the sake of comparison with the Crimean Campaign, to introduce some account of the disaster at Walcheren. The resemblance between the two cases throughout is very remarkable, showing a similar want of foresight in arranging the details of both expeditions, and the disastrous consequences which clearly followed from that want. The Army Medical Department of that day appears to have occupied a similar administrative position, with reference to the Government, which the present department did during the Crimean war, and it was equally helpless in meeting emergencies. The result in both cases was that the armies all but perished, while it was never clearly ascertained who was to blame.

The following account of the Walcheren expedition is taken from Clarke's History of the War, Vol. II, pp. 168 to 174:—

"The supplies of South Beveland and the other islands possessed by the troops were now exhausted, and the navy and army equally anticipated the approach of famine. A more tremendous evil, at the same time, afflicted the (August, 1809.)

troops. About the middle of August, the effects of the baneful atmosphere began to appear and 3,000 men were already on the sick list."

"Eight thousand men were on the sick list when Lord (September 14) Chatham embarked for England." (September 14th.)

"This calamity was not anticipated, by those who planned the expedition, though nothing could be more certain than its occurrence. It was notorious to every intelligent individual, unconnected with the British Government, that the marshes of Walcheren were not less injurious, or less fatal, than the stagnant waters of Batavia, and the reports of eminent physicians had many years before recorded and described the symptoms of the Walcheren fever. Sir John Pringle, Surgeon-General to the English Army, employed in Zealand, during the campaign of 1747, published a treatise on the diseases of the Army, from which the following is an extract:—

"'In Zealand the sickness was great among the four battalions which had continued there since the beginning of the campaign. These men, partly in camp and partly in cantonments, lay in South Beveland and in the Island of Walcheren, two districts of that province, and both in the field and quarters were so very sickly that, at the height of the epidemic, some of these corps had but 100 men fit for duty, which was less than the seventh part of a complete battalion. The Royals, in particular, at the end of the campaign, had but four men that had never been ill. At the end of the campaign we had in hospitals, exclusive of the wounded, 4,000 British, which was something more than a fifth part of our whole number. But it is to be remarked that the four Zealand battalions furnished nearly the half, so that, when those corps went into winter quarters, their sick, in proportion to their men fit for duty, were nearly as four to one.'

"Sir John then adverts to the known qualities of the air, which he describes as most unwholesome. He says also that the epidemics of the country generally appear at the end of July or the beginning of August, under the auricular heats, and end when the frost begins. The work of Dr. Pringle had been extensively circulated, and might have been purchased at any of the book stalls for a trivial price.

"The expedition sailed on the 28th July, and no medical person was consulted on the nature of the climate.

"Sir Lucas Pepys, President of the Medical Board, was not consulted till six weeks after the sailing of the expedition. No preparations were made for the cure or prevention of the fever. Sir Lucas knew that the disorders of Walcheren prevailed in the months of July, August, and September, and that the marsh fever is greater in Walcheren than in any part of the world, except Batavia.

"The disease of the troops is just what he should have expected, and, had the plan of their destination been confided to him, he should have recommended extraordinary precautions.

"Neither the Inspector-General, Mr. Knight, nor the Surgeon-General, Mr. Keate, nor the Deputy-Inspector, Mr. Webb, were asked for their advice.

"The expedition was sent out just as the season of fever began, and every provision of physicians and medicines was neglected.

"The return of the sick was as follows:—

"On the 13th September,	rank and file only,	7,626
" 19th	"	8,123
" 21st	"	8,684
" 22nd	"	8,730
" 23rd	"	9,046

"On the 12th July, when the expedition was about to sail, Mr. Keate wrote very earnestly to the War Department, imploring that two more hospital ships should be furnished with the necessary equipments, to receive the sick of the troops, about to sail from Portsmouth. Lord Castlereagh's Secretary answered that one hospital ship had already been provided and refused the request. On the 17th Mr. Keate renewed his application, stating the great inconvenience and distress the Service must inevitably suffer, from this arrangement. The request was again refused, and the fleet, already provided with one pilot, sailed with one hospital ship.

"All these arrangements fell under the official management of Lord Castlereagh, the Secretary for the War Department.

"All the Dutch provinces are subject to marsh distempers, but Zealand, in particular, is not only low and damp, like the rest, but surrounded by the mouths of the Scheldt, whose oozy beaches unite with the marshy land, so that, except the sea-breeze from the westward, every wind comes laden with pestilential vapours.

"The bottom of every canal that communicates with the sea is thickly covered with ooze, which, when the tide is ebbed, disperses a most offensive and noxious effluvia.

"The whole island is intersected with ditches; they are filled with water, in which masses of animal and vegetable matter are always putrefying; and, numerous as these ditches are, they do not suffice to drain the swampy soil. The effects of such a country are visible in the natives, though counteracted by the Dutch habit of high feeding, by the use of ardent spirits, and by the practice of smoking. It is computed that nearly a third of the inhabitants are attacked with fever every sickly season.

Children are very subject to glandular swellings, to obstructions in the viscera, and to dropsies. They are pale, their circulation languid, and their fibres lax.

"Scrofula is a very general complaint and deformed persons are numerous.

"As they grow up, the complexion is sallow, the body bloated, and premature old age inevitable.

"The sickly season begins with June and ends with October, continuing as long as the sun has power sufficient to draw up marsh miasmata. Our armament went at the worst time, but, as the first effects of this poisonous atmosphere are slow and as activity and excitement are more efficacious than all other counteracting causes, the troops, as long as they were in active service, resisted its influence. Not a single man had died of the disease when Flushing surrendered, and, when it first began to appear, it was attributed more to accidental and temporary causes than to the permanent and irremoveable nature of the country. The stench proceeding from the half-extinguished fires in the town, the inundation which had spread widely through the British lines, and the exhalations from the dead bodies of the enemy, which had been laid in heaps and just covered over with sand, more for the purpose of concealment than burial, were assigned as the immediate causes of sickness, and the reason why the men did not recover was easily found, in the want not only of needful accommodation but of common comforts for the sick. The men had been exposed to wet and to the night-air, they often slept upon the damp ground, and some thousands of them were up to the middle in water during one whole night. The water also which they drank was said to contain numerous insects; sickness and vomiting were in many cases attributed to this cause, and the prevalence of worms seemed to authorize the conjecture.

"The opinion had so much weight in England that water was sent over to the garrison, and the requisite quantity was estimated at 500 tons a week.

"Filtering, distillation, or simple boiling would have been easier than the expedient; but the men themselves never complained of the water, and, when the first importation arrived, it seemed to be so little wanted that Sir Eyre Coote asked the army physicians what he should do with it, and, by their advice, it was distributed to the fleet.

"The want of comforts was a more apparent cause. As the army, being intended for active service, was not encumbered with heavy baggage, there was a want of bedding for the sick. General Pigeon had 800 men invalided, among those who were under his detached command, and for these only 200 beds. He applied to the navy and received some, but insufficient assistance, and many of the sick had, therefore, to lie on the floor, with knapsacks for pillows and great coats for blankets. Several of the Flushing hospitals, having had their roofs destroyed, from the violent bombardment which the town had undergone, the patients were exposed to the inclemency of the weather. On this account workmen were sent from England, but repairs went slowly on, and the workmen themselves presently augmented the sick lists. In Middleburgh, where they were better accommodated, there was no circulation of air, and two shared a bed, so much were they crowded. Middleburgh is a spacious city, containing 16,000 inhabitants, and the best and most comfortable accommodations might surely have been procured, yet the soldiers were quartered in cold and damp churches, and the hospitals were established in warehouses, into which light and air had no other entrance than iron grates. It could hardly be deemed oppressive to call upon the Dutch for suitable quarters—a people

who sleep, at least, between two beds, might have spared bedding for the sick. The necessity of the case might have made them acknowledge the propriety of such a measure, and the fair compensation which would afterwards be given to them must have impressed as strong an idea of British justice on their minds as they could possibly receive at seeing the health of the army sacrificed to vain scruples and ill-timed formality.

"On no former occasion did disease rage so banefully among troops (except, perhaps, when the small-pox made its first appearance in Europe) and never was disease more dreadful, in all its forms and circumstances.

"The ministers, alarmed and astonished at the evil and now aware of their own culpable inadvertence, called upon the principal officers of the Army Medical Department to repair to Walcheren. To this summons the Surgeon-General to the Army replied that the duty in question was entirely medical. The Physician-General represented that the Inspector-General of Army Hospitals was the person to whom this duty properly belonged, and the Inspector-General replied that the duties required were purely medical and belonged to the Physician-General. This gentleman, however, learning that both the Surgeon and Physician-General declined going, declared that he was ready at the shortest notice. When this correspondence was laid before the Commander-in-Chief and the Secretary at War, they concurred in opinion that the Physician-General, Sir Lucas Pepys, was the most proper person to be employed on this service, and they therefore ordered him to proceed immediately to Walcheren, with two other physicians. This determination seems to have surprised Sir Lucas and he returned an incautious answer, expressing his concern that a man nearly seventy years of age, with his infirmities, should be thought capable of

undertaking such a duty, solemnly declaring himself unfit to perform it, and mentioning two physicians in his stead: they, he said, would see the business well performed; whereas, if he himself were able to go, it would merely be a *pro forma* and no possible good would arise from it, because he knew nothing of the investigation of camp and contagious diseases. In consequence of this conduct the Physician-General and the Surgeon-General were justly dismissed from their situations, and a new Army Medical Department was established.

"The sick, however, did not suffer so much as might have been expected in consequence of the petty squabbles of the Medical Board and the misconduct of its members. There were able men upon the spot, and both there and in English hospitals all means were employed, within the power of medical skill, to check or alleviate the calamity.

"The British Government endeavoured to ascertain by what means the effect of the Walcheren climate might be counteracted or avoided; and these were so easy that, had they been perceived in time, much of the evil might certainly have been prevented. So local were the causes of disease that vessels stationed only a few yards from the land continued perfectly healthy. The air about the sand hills is much purer than in the other parts of the island; and between Dombargh and West Capelle there were huts in good repair, which the French constantly occupied during the sickly months, and where 2,000 men might have been stationed.

"At this time (September 9th) the English army was receiving the infection at the rate of about 800 men in four days. On the 23rd of September Sir Eyre Coote stated the progress of the disease to be such that, if it should continue three weeks longer, our possession of the island would be most precarious.

"On the 6th October he again wrote that his force, from sickness, had become so trivial as to make the defence of the island extremely difficult and uncertain. 'Your lordship must excuse me,' he adds, 'for adverting so frequently to this subject, for I cannot be supposed insensible to the critical situation in which I am placed.'

"On the 22nd October he stated the effective, at Walcheren, to be diminished to 4,000 men. On the 23rd of October he called the serious attention of Government to the critical situation of the island, and, on the 27th, he announced that the sick must be abandoned, in the event of the enemy's landing. Having received no answer to these representations, he resigned in disgust and was succeeded by General Dounc, who informed the Ministry that a reinforcement of 19,150 men would be necessary to the defence of Walcheren. Between the period when it was ascertained that the possession of the island was useless and precarious and its evacuation absolutely necessary, and while the Ministry were expending their time in duels and intrigues, 2,000 men died and 12,000 were affected by the pestilence. October, 1809.

"On the 2nd September Lord Castlereagh received the report of the Deputy-Inspector of Walcheren Hospitals to Sir Eyre Coote,—'That there is an absolute necessity of sending express for medical aid and of applying that a fast sailing vessel should be appointed to bring out the assistance so urgently required.' By the 25th of the month there were sent one staff surgeon and five hospital mates but no wine or bark. The sick, on the 23rd, amounted to 9,000 men. On this day Sir Eyre Coote transmitted a letter, of which the following is an extract:—

"'The deaths are becoming daily more numerous. There is scarcely a sufficiency of healthy men to act as

orderlies in the hospitals; no medical assistance arrived; the number of medical officers is daily decreasing, by sickness; no comforts or wine can be obtained for the sick, and the prospect is before them of an immediate want of bark, an article of indispensable necessity in the prevailing disorder."

"The total of the sick and wounded sent from Walcheren to England, in *ninety-seven* days, amounted to 12,863 men." [The island was completely evacuated on December 23, 1809.] "And, between the 1st January and the 1st June, 1810, 36,500 patients from the corps at Walcheren were admitted into the hospitals [at home]. This statement includes relapses."

APPENDIX

SECTION XIV, P. 425.

Scheme of Dietary for Soldiers, Proposed by Colonel Sir A. M. Tulloch, K.C.B.

Breakfast.

Bread	.. ..	8 oz.
Coffee	.. ..	¾ oz.
Sugar	.. ..	1 oz.
Milk	.. ..	1 gill.

Supper.

Bread	.. ..	8 oz.
Tea	.. ..	¼ oz.
Sugar	.. ..	1 oz.
Milk	.. ..	1 gill.

Dinners.

No. 1.

Irish Stew	Mutton	12 oz.
	Potatoes	16 oz.
	Onions	½ oz.
Rice Pudding	Rice	2¾ oz.
	Milk	2¾ gill
	Sugar	11 drams

No. 2.—Salt Beef or Pork .. .. 12 oz.

Pease Soup	Pease	½ pint
	Onions	½ oz.
Colcannon	Potatoes	8 oz.
	Greens	8 oz.

Bread .. .. 5½ oz.

No. 3.—Mutton, baked			12 oz.
	Potatoes		16 oz.
	Yorkshire Pudding	Flour	5 oz.
		Suet	½ oz.
No. 4.	Beef, boiled		12 oz.
	Soup, containing	Vegetables	8 oz.
		Rice or Barley	2 oz.
	Potatoes		16 oz.
	Bread		5½ oz.
No. 5.	Beef, Baked		12 oz.
	Potatoes		16 oz.
	Plum Pudding	Flour	2½ oz.
		Raisins	1 oz.
		Suet	1 oz.
		Sugar	1 oz.
No. 6.	Mutton, boiled		12 oz.
	Soup, containing	Vegetables	8 oz.
		Rice or Barley	2 oz.
	Potatoes		16 oz.
	Bread		5½ oz.
No. 7.	Beef, stewed		12 oz.
	Vegetables		8 oz.
	Potatoes		8 oz.
	Bread		5½ oz.
No. 8.	Soup made of Head, Shanks and Feet. Roast Heart. Fried Liver and Tripe.		

Estimate of the probable Cost of the Dietary for the Soldier, proposed by Sir A. M. Tulloch, K.C.B.

The minimum pay of the British soldier of infantry in the United Kingdom is 1*s.* 1*d.* per day, less 4½*d.* for a ration of 1 pound of bread, and ¾ of a pound of meat, leaving a surplus of 8½*d.* In the Colonies the pay is 1*s.*, less 3½*d.* for a ration of

1 pound of bread and 1 pound of meat, leaving a like surplus as at home.

From this surplus there have to be deducted ½*d.* per day for washing, 2*d.* per day for necessaries, barrack damages, sheet washing, and small charges, 1*d.* per day to buy beer at home or wine abroad in lieu of the issue formerly made to the soldier in kind, and there should remain also 1*d.* per day for pocket-money, making a total of 4½*d.*, and leaving to be expended on messing, in addition to the ration, about 4*d.* per diem.

I shall first consider what portion of this requires to be applied to the breakfast and supper meal, viz.:—

Breakfast.	*d.*
Bread, 8 ozs., charged in ration	
Coffee, ¾ of an oz., at 9*d.* per lb.....	1⅜
Sugar, 1 oz. at 3*d.* per lb.	⅜
Milk, ¼ of a pint, at 1*d.* per quart	¼
Supper.	
Bread, 8 ozs., charged in ration	
Tea, ¼ of an ounce, at 1*s.* 4*d.* per lb. ..	1⅜
Sugar and milk as above	⅜
Total	1⅝*d.*

The sugar has been calculated at about 25*s.* per cwt., which is above the usual maximum price in the navy. The tea has also been calculated considerably in excess of the navy price, which is only about 11*d.* a pound; and the coffee has been taken at the price at which it was purchased by the navy during the Russian war.

These supplies, however, are all estimated *without duty*, as obtained on foreign stations. It is presumed that when issued by the commissariat in this country, arrangements could be made for their being also duty free here; but if that cannot be conceded, and it is considered inexpedient for the messing charge at home to exceed that in the colonies, cocoa might be issued either in the morning or evening, in place of tea. Its cost being only 4½*d.* a pound, and the duty as well as that on coffee and sugar, being limited to a very small amount, the

expense of the breakfast and supper at home, would, by this change, be much the same as in the colonies. Assuming, then, the cost of these meals, excluding bread, at 1½*d.* per day, there will remain 2⅞*d.* to be expended in such additions as are required to make the three-fourths of a pound of meat at home, or 1 pound on foreign stations, provide a good and substantial dinner for the soldier.

The following is the arrangement of the dinners, by which it is proposed to effect this, keeping in view that when there is no pudding, one-third of a pound of extra bread would have to be purchased, as the ration quantity would be consumed at breakfast and supper.

The prices of the chief items of each dinner, exclusive of the ration, are based on the following estimate:—

Potatoes, according to prices given in Navy Victualling List, 4*s.* 0*d.* a cwt., or about ⅔*d.* a lb.
Onions (per ditto) about ⅔*d.* per pound.
Other vegetables averaging, say ⅔*d.* per lb.
Bread, 2*d.* a lb.
Flour, about 2*d.*
Split peas, 1½*d.* per lb.
Rice, pearl barley, or sago, about 2*d.* a lb., the rice taken at the same price as purchased at the Royal Military Asylum.
Suet, 7½*d.*
Raisins, 6⅔*d.*

According to these prices, the dinner for the first day would cost,—

	s.	*d.*
1 lb. of potatoes per man, to make Irish stew with the ration meat	0	½
Onions and herbs for seasoning, say	0	½
Baked rice pudding, according to cost at Military Asylum, reckoning the same quantity for 75 men as for 100 boys	1	
Total	1	0

For the second day,—

	d.
¼ of a pint of pease to make pease soup with the pork ..	1/8
Onions and seasoning for ditto, say	1/8
½ lb. of potatoes, and ½ lb. of greens mashed, to be eaten with the pork	1/8
¼ of a pound of bread at 2d.	1½
Total	1¾

For the third day,—

1 pound of potatoes, to be placed under the baked or roast mutton	1/8
¼ of a pound of Yorkshire pudding, according to cost at Military Asylum, reckoning same allowance for 75 men as for 100 boys	1
Total	1 1/8

For the fourth day,—

¼ a pound of vegetables for soup	1/8
2 ounces of rice, pearl barley, or sago, for thickening it ..	1/8
1 lb. of potatoes to be eaten with the meat	1/8
¼ of a pound of bread with soup	1½
Total	1¾

For the fifth day,—

One pound of potatoes, to be placed under roast beef ..	1/8

One-third of a pound of plum-pudding, comprised of the following materials:—

3 lb. of flour, cost	6d.
1 lb. raisins (chopped fine)	6½
1 lb. suet	7½
1 lb. sugar	3
For 18 men	1s. 11½d.
Being for each	1 1/8
Total	1¼

For the sixth day,—

Same price as on fourth day, the only difference being mutton for the soup instead of beef	1¼

For the seventh day,—

Vegetables for stewing with beef ¼ lb.	½
Potatoes ¼ lb.	½
⅓ of a lb. of bread	1¼
Total..	1⅞

The expense of the proposed eighth day's diet I need not go into, for that would be considerably less than under the present system, as the materials proposed to be made use of would otherwise be sold much under the usual cost of the ration.

The total cost of these several days' dinners would therefore be under one shilling a week, or 1¾*d.* a day in addition to the ration, leaving one penny a day still available to meet any increased cost, or where that did not occur, to add butter to the morning, or cheese to the evening meal, for the whole should be expended.

If the additional third of a pound of bread were dispensed with on four days in the week, and pudding added on every day, which probably the soldier would prefer, it would only cost the difference between 2½½*d.*, the price of 1⅓ lb. of bread, and 4½½*d.*, the price of ½ lb. of plum-pudding for 2 days, and suet and rice-pudding on the other two. Even with this improvement in the diet the stoppage for dinner would only be 2*d.* a day instead of 1¾*d.*, leaving still about ¼*d.* over.

For this important variety and improvement in the diet, it is only requisite that the orders already existing should be carried into effect by the soldier being messed up to the full amount authorized by regulations, and taught to exercise a little ingenuity in the preparation of his food, which, it is hoped, would prove a useful and pleasing variety in his duties.

A bakehouse would no doubt be required in every regiment, but the expense of it would soon be covered, and a great improvement effected by some of the men learning to bake

their own bread. The description of bread might then also be varied occasionally with advantage.

The commissariat would, under the proposed arrangement, have to be charged in future with the issue of flour, suet, rice, raisins, pease, sugar, barley, &c., as on shipboard, in addition to the usual ration of bread and meat, and for which extras, if 2½*d.* were to be added to the present price of the ration, making a total of 7*d.* at home, or 6*d.* in the colonies, it would leave 1*d.* per day for the soldier to supply himself with vegetables and milk, which it might be inconvenient and often difficult for a commissariat officer to provide satisfactorily.

In the field, however, a ration of preserved vegetables and preserved potatoes should be issued by the commissariat at a charge of 1*d.*, whenever the soldier could not obtain these supplies in kind. Milk in such situations would probably not be obtainable.

To ensure the satisfactory working of these messing arrangements, the division of the meat into roasting, boiling, and stewing pieces would require to be carefully made. Those parts least adapted for roasting or stewing to be used for the days on which soup was made.

Difficulty might at first be experienced in cutting up the meat, so as to ensure the exact quantity to each mess in one piece, for it would be objectionable to have small pieces, which run to waste in cooking: to obviate this, however, it might be arranged that any quantity short of a pound in the piece might be made up on the following day, the sergeant keeping a tally against the contractor; any similar quantity in excess being adjusted in the same way. There need be no greater difficulty in this respect than the issue of salt beef or salt pork, which is given out in pieces as being of a certain weight, though often considerably below or over it.

If the quantity of meat which must necessarily be cut into small portions to give a proper size to roasting or boiling pieces be considerable, the eighth dinner might, instead of the other materials, occasionally be of meat pie, with a crust of flour and lard, which is always a favourite with the soldier, and would not add materially to the average cost of the messing.

This routine of messing is intended to apply to a battalion of eight companies, in which each company should have daily

in succession the dinners here described, so that all might not be roasting, boiling, baking, or stewing, on the same day.

For a small detachment, there might be a difficulty in following this routine, but an exceptional case of this kind which might occur affords no good reason why our soldiers should not have as varied a diet when in large bodies as circumstances and the rate of their pay will admit.

Observations on Sir A. M. Tulloch's proposed Scheme of Diets for Soldiers, by Dr. Christison.

I have examined the scheme of diets for soldiers proposed by Sir A. M. Tulloch, with the view of ascertaining "whether it appears to contain the carboniferous and nitrogenous constituents in the most desirable proportions;" and I append the numerical results.

In making the calculations I have used ascertained data as to the composition of most of the articles in the several diets. I have been obliged, however, in absence of experimental data, to assume conjecturally the constitution of raisins and onions; and I have assumed the nutritive constitution of salt meat to be the same as that of fresh meat. Raisins and onions form only a very small proportion of the dinners of which they are a part, so that there can be no serious error under these heads. But it is certain that salt meat is not so nutritive as fresh meat. Since there are no data, however, whether scientific or practical, for determining, even approximately, the total nutriment, or the relative carboniferous and nitrogenous nutriment of salt meat, I do not see what other method I can well follow except to use the data for fresh meat, with the reservation now attached.

The first Table shows the carboniferous, nitrogenous, and total true nutriment in the seven different dinners, and separately the same nutritive constitution of the breakfast and supper conjunctly, which do not vary from day to day.

The second Table shows the constitution of the diets for the whole day during seven successive days. That of the diet for the eighth day, of course, cannot be computed, as data cannot be supplied.

TABLE FIRST.

Shewing the Nutritive Constitution, in ounces, of the several Dinners of the proposed Scheme of Diet, and of the daily Breakfast and Supper conjunctly.

	Carbonaceous Nutriment.	Nitrogenous Nutriment.	Total Nutriment.
	oz.	oz.	oz.
First dinner	8·05	3·44	11·49
Second do.*	10·09	4·54	14·63
Third do.	9·77	3·63	13·40
Fourth do.	10·33	3·81	14·14
Fifth do.	9·74	3·23	12·97
Sixth do.	10·33	3·81	14·14
Seventh do.	7·04	3·21	10·25
Breakfast and Supper	11·04	2·13	13·17

TABLE SECOND.

Shewing the Nutritive Constitution, in ounces, of the whole daily Food on seven successive days.

	Carboniferous Nutriment.	Nitrogenous Nutriment.	Total Nutriment.
	oz.	oz.	oz.
First day	19·60	5·57	24·06
Second do.	21·13	6·67	27·70
Third do.	20·81	5·76	26·57
Fourth do.	21·37	5·94	27·31
Fifth do.	20·78	5·36	26·14
Sixth do.	21·37	5·94	27·31
Seventh do.	14·03	5·34	23·42

These several diets approach on the whole nearly in total real nutriment to the allowances for the British Navy, which contain 28¼ ounces of daily nutriment on an average, and which have been found very suitable. The diets of the first and seventh days alone are materially less. It would require an addition of four ounces of meat and four ounces of bread to

* NOTE.—The peas for this dinner I assume to be split peas, which weigh 7,100 grains, or almost exactly a pound per pint.

make them equal to the Navy allowances. This addition would raise their nutritive value as follows:—

	oz.	oz.	oz.
First day ..	21·75	0·70	28·45
Seventh do.	20·74	0·58	27·30

The relative proportion of the carboniferous to the nitrogenous nutriment of the seven diets approaches nearly to that which scientific analysis has shown to be very exactly the proportion in the dietaries hitherto examined, which have been practically found satisfactory, viz., the ratio of three to one. Every day's allowance, however, appears appreciably short of this proportion, except the second; and the closer approach of that day's diet depends on the nutritive value which I have assumed for salt meat, and which I have admitted to be overestimated. The diet of the first, fifth, and seventh days deviates the greatest from the general rule. Each of these ought to present about one ounce more of real nitrogenous nutriment, to bring it under the rule. In every way Nos. 1 and 7 therefore appear rather defective.

I will not say positively that in practice these occasional deficiencies would tell on the actual nourishment of the men. But equally from scientific analysis and from past practical observations, it is probable that they would do so. It is easy, however, to test the fact by experiment, viz., by weighing the men of a company in each of several regiments at the end of the fourth and eighth weeks. And, indeed, if I may be permitted to advise in this matter, I would recommend that this test should be applied, whatever scheme of diet may be ultimately adopted.

I apprehend I am to assume that the proposed diets are intended for soldiers in ordinary circumstances. When they have to encounter prolonged fatigue, exposure, and defective sleep, a larger allowance is necessary. Nothing can be more certain, at least, than that, in civil life, the nutriment must rise materially with the bodily expense, exposure, and night watching, otherwise work cannot be done so well, and the seeds of disease are ultimately sown.

Edinburgh,
11th November, 1857.

(From the Report of the Crimean Commissioners.)

Observations on a Report by Sir John M'Neill, relative to the Rations for Soldiers. By Dr. Christison.

In consequence of the advances made in physiology and chemistry, the nutritive value of any dietary, deduced from practical experience, may be tested with care and certainty by reference to its chemical composition. As this fact is little known to practical men, it may be well to explain the principles on which the method is founded.

1. All articles of food used by man consist of one or more, and generally several nutritive principles; and most of them contain water and an indigestible cellular tissue. The two latter must, of course, be deducted in estimating nutritive value.

2. The nutritive principles consist of two sets—one of which maintains respiration, and the other repairs the waste constantly incurred by the animal textures in the exercise of their functions. As the respiratory principles commonly abound in carbon, they are sometimes called carboniferous, while the reparative principles, because they all contain nitrogen, are termed nitrogenous.

3. Experience has shown that the most successful dietaries for bodies of men, deduced from practical observation, contain carboniferous and nitrogenous food in the proportion of about three of the former to one of the latter, by weight. During two-and-twenty years that my attention has been turned to the present subject, not a single exception has occurred to me.

4. Hence it is obvious that the least weight of food in the rough state will be required, first, when there is least moisture and cellular tissue in it; and secondly when the carboniferous and nitrogenous principles are nearest the proportion of three to one.

5. Of the various nutritive principles belonging to each set, some may replace one another; some are better than others: some are probably essential. This branch of the science of the subject is unfortunately still imperfect.

6. Two things, however, are certain—that nitrogenous may

replace carboniferous food, for supporting respiration, though at a great loss; but that carboniferous food (without nitrogen) cannot replace nitrogenous food, for repairing textural waste.

7. The daily amount of nutritive principles of both sets must increase with exercise and exposure, otherwise the body quickly loses weight, and ere long becomes diseased. If the above proportion between the two sets be maintained, the weight of real nutriment per day varies, for adults at an active age, between seventeen and thirty-six ounces; the former being enough for prisoners confined for short terms, the latter being required for keeping up the athletic constitution, or that which is capable of great continuous muscular efforts, as in prize-running and other similar feats.

8. Dietaries ought never to be estimated by the rough weight of their constituents, without distinct reference to the real nutriment in these, as determined by physiological and chemical inquiry.

Keeping these principles in view, and with the help of a simple table, it is not difficult to fix the dietary suitable for any body of men, according to their occupation. It is, also, in general, easy to detect the source of error in unsuccessful dietaries. For example, any scientific person conversant with the present subject could have foretold, as a certain consequence, sooner or later, of their dietary, that the British troops would fall into the calamitous state of health which befel them last winter in the Crimea.

Soldiers in the field will be the more efficient the nearer they are brought to the athletic constitution. But as the demand for protracted, unusual exertion occurs only at intervals, the highly nutritive athletic dietary is not absolutely necessary. On the whole, from experience in the case of other bodies of men somewhat similarly circumstanced, 28 ounces of real nutriment, of which 7 are nitrogenous or reparative, will probably prove the most suitable. Any material reduction below 28 ounces will certainly not answer; and under unusual exertion kept up for days continuously, as in forced marches, or forced siege labour, the quantity should for the time be greater, if possible.

One dietary proposed, in the report put before me, corresponds very closely, in all respects, with the principles now laid down.

The articles are well chosen. The standard ration contains 8¼ ounces of carboniferous, 6¼ of nitrogenous, and therefore 26½ of total real nutriment. When biscuit and compressed vegetables are substituted for soft bread and fresh vegetables, the day's ration consists of 10¼ carboniferous food, 6¼ nitrogenous, and 26½ total.

In both of these scales, the proportion of the two sets of principles is nearly as three to one. In both, the total quantity falls a little short of what appears the most advisable. In all other respects the dietary seems unexceptionably good. It cannot be said that the deficiency will certainly occasion ill health; but there is too little to keep up the strength and energy of the men in circumstances of unusual exertion. The following is an apt illustration:—In the general prison at Perth, the dietary for long terms of imprisonment consists of 19 ounces of carboniferous, and 6 ounces of nitrogenous food; in all, 25 ounces. Now, in the first place, it has been found easy to reduce this amount for ordinary sedentary occupations; but, secondly, prisoners under vigorous exercise are found to require a material increase. Some years ago, when I was appointed to inquire into certain points relative to the management of the prison, there were several men employed at the pumps for raising water daily from the Tay, for prison use—an occupation requiring much expenditure of muscular strength. These men were, without exception, compelled to desist when fed on 25 ounces a-day. An addition of 8 ounces of meat and 6 ounces of bread was found necessary, and then they all worked vigorously and cheerfully. This raised their allowances to 23½ ounces of carboniferous, and 8½ of nitrogenous food, or 32 ounces in all.

The standard difficulty in regulating the dietary of soldiers in the field is the present necessity of substituting salt meat for fresh, when it becomes necessary to use only store provisions. The difficulty arises from the known tendency of salt meat to engender disease, or at least to favour its development, and the supposed impossibility of storing effectual substitutes for it. A third difficulty must be here admitted:—Neither by physiological experiment, nor by chemical analysis, is the nutritive value of salt meat scientifically known.

If soldiers could be supplied with what people in civil life

know as salt meat, there would be less difficulty; but military authorities ought to disabuse their minds of this very natural comparison. The salt meat for soldiers in the field has always been highly salted, in order to keep for two years or more in every climate. Now, my persuasion is that, apart from the tendency of the protracted use of such food to favour the development of disease, its nutritive value has been much overrated. This may appear evident from the fact stated in the Report, that of a body of men, fed even on rations by no means liberal, few continued to eat a pound of salt meat daily for any length of time. And the science of the question has been sufficiently looked into for an explanation; because meat highly salted must be so thoroughly steeped in cold water, to remove the salt, before it is eatable in large quantity, that much of its most nutritive constituents must be washed out, viz. its albumen, and sapid extract called osmazome.

Therefore it appears a good suggestion in the Report put before me to deduct four ounces from the ration of salt pork and salt beef, and to substitute half a pint (eight ounces) of peas instead of the four ounces of pork; and, for the *five* ounces of beef, six ounces of flour, an ounce of currants or raisins, and half-an-ounce of lard, for making a pudding. Besides qualifying the irksomeness and probable injurious effects of the daily salt meat, this substitution—which will be made chiefly during protracted marches, or other active operations at a distance from head stores, and when more food is needed to meet greater muscular efforts—raises the daily allowances to 23¾ ounces of carboniferous, 7¾ nitrogenous, and 31$\frac{1}{16}$ total nutriment, under the peas ration; and to 24½, 6, and 30½ ounces under the flour-pudding ration. In these estimates, however, the salt meat is assumed to equal fresh meat in nutritiveness—an extremely dubious assumption; but there is no authority by which to fix its true value.

It is much to be desired that a more material reduction of the salt meat could be effected. Nor does this seem impossible. Three substitutes have been proposed: preserved meat, pemican, and meat-biscuit.

The first of these consists of fresh meat, cooked and preserved hermetically in vacuo in tin cases. At present, a prejudice against it has arisen from the late discovery of abominable

frauds in our navy contracts. But this is unreasonable. Such frauds could not have been practised, except under a system of very lax examination on delivery. It is not to be doubted that meat may be preserved in vacuo certainly and securely, and the process is not now very costly. The men would probably object to the frequent use of it, because it palls on the taste; but it would be taken once a-week readily, when fresh provisions are scarce, and even twice a week when no other fresh animal food can be had.

Pemmican is meat thoroughly dried up by a cooking heat, and generally beat up with a proportion of fat. I understand it is said to be objected to on account of manufacturing difficulties, and its tendency to deteriorate in a temperate, and still more in a warm climate. But in these days of manufacturing ingenuity, one ought to be very slow to admit such an obstacle; nor can I see where any unconquerable difficulty can lie. Probably it would not be relished continuously by the men, but it would be taken readily as an occasional ration, at all events once a-week; and I am persuaded that, were the skill of the cook united with the art of the manufacturer, a more palatable article than common pemmican might be produced. It is of moment to consider that, were it found practicable to introduce this as an article of meat rations, a great saving would be effected over fresh meat, salt meat, or preserved meat, in weight, and consequently in transport, for pemmican contains the nutriment of at least three times its weight of fresh meat.

Meat-biscuit—consisting, I believe, generally of the ordinary biscuit materials baked with extract of meat—was tried, as I am aware, by some of our officers in the Crimea, but found to be often spoiled in store or transport. There must have been some palpable error, however, in either its composition or preservation; at least, a similar article was used successfully by some in the Burmese war. I see no difficulty on the part of a skilled manufacturer in preparing a meat-biscuit with biscuit-flour, dried meat instead of meat-extract (as being both more nutritive and cheaper), fat, salt, and pepper, which, on being thoroughly dried, might be perfectly preserved in tins, and which would constitute a highly nutritive and not unpalatable article of food. It could be easily converted into soup, either alone or with the help of compressed vegetables. It would also

be, in its biscuit state—the meat being cooked in the manufacture—a good resource for the men when turned out suddenly in the early morning, and without the opportunity of cooking their breakfast. And, like pemmican, it could be easily transported, as it consists almost entirely of nutriment, with extremely little moisture. Probably the men might not like to use it continously; but in urgent circumstances as on forced marches, it ought to prove of great service; and in circumstances less urgent it might be made the meat-ration of one day in the week, or possibly even two days.

On the whole, it is very desirable that careful experiments were made as to the preparation and preservation of pemmican and meat-biscuit. Such experiments ought not to be left entirely to practical men; scientific knowledge and practical skill should be combined; otherwise, serious errors may be committed.

In the proposed dietary, no mention is made of cheese among the substitutions for the standard articles. It is excellent, however, theoretically as an occasional substitute for meat, to qualify an otherwise too farinaceous food, because it consists, in a great measure, of an important nitrogeneous principle. Then, it has well-ascertained practical advantages. It is not costly; it is easily preserved for a time; it is all nutriment, and therefore cheap to transport; it is relished by all hard-working people; and there is reason to suppose that it constitutes an effective article of some successful dietaries in civil life.

Peas should be supplied, if possible, in the state of flour, when intended for part of the rations of troops on active service in the field. They are then much more easily cooked, as well as more compactly packed and more easily served out.

When practicable, half a pint of porter (ten ounces) would form a most desirable substitute for the ration of spirits. The nutriment is much the same, viz., one ounce, but the alcohol is only one-half; and nevertheless, its renovating power is greater. All officers engaged in active service in India, especially during the occasional privations in the late Burmese war, have borne strong testimony to the superior advantages of malt liquor over spirit.

It is difficult to over-value the proposed addition of tea and coffee to the men's rations. They possess a renovating power.

in circumstances of unusual fatigue, which is constantly experienced in civil life, and which I have often heard officers, who served in the Spanish campaigns, as well as in the late Burmese war, describe in the strongest terms. This, however, is not all, for it has been recently shown by a very curious physiological inquiry, that both of them, and especially coffee, possess the singular property of diminishing materially the waste and tear of the soft textures of the body in the exercise of its functions in an active occupation.

Edinburgh,
20th December, 1855.

The Dietary Scale of Emigrant Ships, an excellent one as most accounts, is here annexed as a good example.

DIETARY SCALE FOR EMIGRANT SHIPS SAILING UNDER GOVERNMENT SUPERINTENDENCE.

This is the Scale for each Adult. Women to receive the same Rations a Men. Children between 1 and 14 to receive one-half. Infants under 1 year to be allowed one quart of water daily, but no Rations. All the Issues are to continue on the same days as below.

	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Week
Biscuit* ..... oz.	8	8	8	8	8	8	8	One Pound.
Beef† ..... oz.	..	..	..	..	..	..	6	
Pork† ..... oz.	..	6	..	6	..	6	..	
Preserved Meat ..... oz.	6	..	6	..	6	..	..	
Flour ..... oz.	6	6	6	6	6	6	6	
Oatmeal ..... oz.	3	3	3	3	3	3	3	
Raisins ..... oz.	2	..	2	..	2	..	2	
Suet ..... oz.	1½	..	1½	..	1½	..	1½	
Peas ..... pint.	..	1	..	1	..	1	..	
Rice ..... oz.	..	..	..	..	..	..	..	
Preserved Potatoes‡ .. oz.	..	..	..	..	..	..	..	
Tea ..... oz.	1	..	1	..	1	..	1	
Cocoa ..... oz.	..	1	..	1	..	1	..	
Sugar ..... oz.	..	4	..	4	..	4	..	
Treacle ..... oz.	2	..	2	..	2	..	2	
Butter ..... oz.	..	2	..	..	..	2	..	
Water ..... qrts.	3	3	3	3	3	3	3	

While in Port, and for One or Two Days afterwards, if practicable, two-thirds of a pound of Fresh Meat and 1¼ lb. of Soft Bread, and 1½ lb. of Potatoes, per Adult, to be issued, in lieu of the Biscuit, Salt Meat, and Flour, Suet, Raisins, and Peas. It will be in the discretion of the Surgeon Superintendent to issue Three Times a Week to Children under Seven, 4 ozs. of Rice, or 3 ozs. of Sago, in lieu of Salt Meat.

By Order of her Majesty's
Colonial Land and Emigration Commissioners,
S. WALCOTT,
Secretary.

Government Emigration Office,
1st January, 1850.

* The Biscuit must not be inferior in quality to Navy Biscuits.

† These Articles are to be of the Best Quality, and to be approved by the Commissioners' Officer.

‡ From September to March inclusive, parties will have the option of taking a Supply of fresh Potatoes for the First Month or Six Weeks, substituting 1 lb. for the ½ lb. of Preserved Potatoes.

NOTES UPON "EXTRA" HOSPITAL DIETS, BY THE SUPERINTENDENT OF NURSES IN THE WAR HOSPITALS. Pp. 404, 420.

I. In England meat, (bone, offal, and the useless parts being *removed*) loses from ¼ to ⅓ weight.

In the Crimea, when the same parts were removed, the meat, when cooked (owing to its large quantity of moisture and *deficiency* of solid nutriment) lost from ⅓ to ½ weight. Therefore the Patient to whom was ordered 3 lbs. meat might *really* have about ½ lb. I have often seen the average consumption of the main articles of Diet in the Crimean Hospitals stated as exceeding 3 lbs. per man per diem. The causes of this waste were eight; one has already been stated.

II. Acute cases in our Hospitals are put on "Spoon Diet." This includes 8 oz. bread. (Convalescent cases may have extra bread.)

2 oz., among such sick as we had the first winter, at Scutari, might be the average consumption of the acute cases. 6,000 cases according to this computation, might be wasted, daily, at Scutari, or given, when stale, to Patients who could eat it, or to the Turks. (Were a small quantity of Butter substituted for half the allowance of Bread the expense would be but slightly increased, and more Bread would actually be eaten than with the present allowance.)

That the waste equals the penury in Military Hospitals has been truly asserted. This is obvious. But the Surgeon's attention is necessarily fixed on his "Hospital Regulations" Book, not on his Patient.

III. On Spoon Diets might be ordered 2½ozs. Arrowroot or Sago *daily*, *i. e.*, 4 oz. according to Regulation.

1 oz. Arrowroot made 1 *thick* pint in the Nurses' extra-diet kitchens, 2 oz. 1 *thin* pint in the general kitchens.

This was partly but not wholly attributable to the Nurses' superior attention in using boiling water. But where does that spare oz. of Arrowroot go?—is the riddle.

2 oz. Rice were saved on every four puddings, with us.

There was a proportional saving on sugar, tapioca, barley, &c. We adopted three ways to save waste and not rob the Queen.

1. We drew in bulk. This we were obliged to discontinue, by order and by Returns incorrectly made against us.

2. We drew the quantity prescribed in the "Regulations" Book and returned the overplus—but still the Queen is robbed, for the overplus, issued again, is charged as a new issue.

3. We accounted each night to the Purveyor, the Staff Surgeon drawing in bulk for our extra-diet kitchen.

The "Regulations" Book is very clever but it is no cook.

IV. Extra Diets are ordered (not always, but generally) for the next day. Men die, are discharged, or undergo changes of disease, still the Extras are drawn. I have seen Extras thus drawn for a Ward in which was not a single Patient.

V. Waste is essential to a sick room; but waste in a Military Hospital is incalculable. A Patient who should be fed every half-hour may receive the whole of his Extras at once.

VI. 70 bottles malt liquor were given, in one Hospital, to 100 diets; this was complained against as extravagance: but really it was hardly one pint per diet, for the quart bottle holds scarcely 1⅔ pt.

VII. The heterogeneous composition of Extras, by young Assistant Surgeons, has been often mentioned.

VIII. The Preserved Meat (3 lb.) tins sometimes held only 1½ lbs.

Five Examples of Hospital Diets.

Five schemes of Hospital Diets are here annexed, as illustrations of different dietetic methods.

p. xxii.

I. The first is that at present used in Military Hospitals. The immense prescribing of extras which it necessitates is the objection to it. For it will be seen that the only idea which it incorporates is, that men, sick of disease which causes them to be placed on "Half Diet," will eat half or two-thirds as much (but of articles of the same kind and quality) as men well enough to be placed on "Full Diet," and Patients again who are too ill to be placed on "Half Diet," will eat a third as much, and so called "Low Diet Patients,"—though this "Low Diet" does not contain a single article different from the "Full Diet."

The eternal *boiled* meat will be observed.

II. The Naval Scheme of Diets, it will be seen, is better. p. xxiii.

III. Guy's Hospital Dietary is given as a specimen of a p. xxiv.
Civil Hospital Scheme.

IV. The Scheme of Diets of the Edinburgh Infirmary was p. xxv.
drawn up by Dr. Christison.

The advantages derived from this Scheme are twofold:

1. It sets forth a new principle, viz.: that of assigning the Nutritive Value to each Diet, for the guidance of the Medical man. It would have been better, however, had the Nutritive Value been assigned to each *article* of Diet.

2. It renders the use of extras almost unnecessary; nine distinct Diets, with special names, being given. The facility of prescribing and of keeping accounts thereby afforded is obvious. The Table, P. xxx, will shew the method of making up the Diet Bill. p. xxx.

It is not our province here to discuss whether the Diets themselves are good for adult military patients.

They will probably be thought too *low*.

But Dr. Christison has, himself, been called upon to give his invaluable opinion upon this subject.

This Scheme of Diets is merely given as a specimen.

V. The fifth Scheme is that proposed to be used in our Military Hospitals in future, and is the very best I have ever seen. It was composed by Mr. Alexander and Dr. Christison, who has annexed the nutritive value to each article of the several diets. pp. xxxii, xxxiii. pp. xxxiv, xxxv.

Table I.

Military Hospitals.

Articles Composing the different Diets for a Day.

Full.	Half.	Low.	Spoon.	Milk.	Note.
12 oz. Meat	8 oz. Meat	4 oz. Meat	8 oz. Bread	14 oz. Bread	The *Meat* is to be boiled with the addition of the Barley, ½ oz. Sugar and Flour, Small Vegetables, and Pepper, so as to make good Broth for the Diners of Patients, of whose diet salted food forms a part; the Broth is to be issued to individual Patients in the quantity to each specified in the Diet Table.
10 „ Bread	10 „ Bread	12 „ Bread	4 „ Tea	2 „ Rice	
8 „ Potatoes	8 „ Potatoes	8 „ Potatoes	12 „ Sugar	3 pints Milk	
2 „ Barley	1½ „ Barley	½ „ Barley	6 „ Milk		
½ „ Salt	½ „ Salt	½ „ Salt			
½ „ Tea	½ „ Tea	½ „ Tea			
1½ „ Sugar	1 „ Sugar	1½ „ Sugar			
6 „ Milk	6 „ Milk	6 „ Milk			
4 „ Vegetables	5 „ Vegetables	3 „ Vegetables			
1 „ Flour	½ „ Flour	½ „ Flour			

When Potatoes cannot be procured of a sufficiently good quality, and at a reasonable price, Bread or Rice may be substituted in their place, in the following proportions:—

Full Diet, 8 oz. Bread, or 4 oz. Rice, in lieu of 16 oz. Potatoes
Half „ 5 „ „ 3 „ „ 8 „
Low „ 4 „ „ 2 „ „ 8 „

Diet Table.

Meal.	Full.	Half.	Low.	Spoon.	Milk.	Extras, including Wine, Porter or Spirits, may be given when required, with any of the Diets containing the Meals.
Breakfast ...	1 pint Tea 6 oz. Bread	1 pint Tea 6 oz. Bread	1 pint Tea 6 oz. Bread	1 pint Tea 4 oz. Bread	1 pint Milk 6 oz. Bread	* Puddings to consist of the following ingredients:—4 oz. of Rice, or 2 oz. of Sago, or 6 oz. of Bread; 1 oz. of Sugar, 1 pint of Milk, 1 Egg; Ginger or Cinnamon, a few grains.
Dinner ...	12 oz. Meat 8 „ Bread 16 „ Potatoes 1 pint Broth	8 oz. Meat 6 „ Bread 8 „ Potatoes ½ pint Broth	4 oz. Meat 4 „ Bread 8 „ Potatoes ½ pint Broth	Any article of the discretion of the Medical Officer, as Puddings,* &c.	1 pint Milk 2 oz. Rice 4 „ Bread	The Medical Officer in charge of sick must, at his discretion, order Coffee in lieu of Tea, in such cases as he may deem necessary.
Supper ...	1 pint Tea 6 oz. Bread	1 pint Tea 6 oz. Bread	1 pint Tea 4 oz. Bread	1 pint Tea 4 oz. Bread	1 pint Milk 4 oz. Bread	½ oz. of Coffee may be substituted for ½ oz. of Tea at each meal, Breakfast or Supper.

Table II.

TABLE II.

A Scheme of Diet for Patients in the Royal Naval Hospitals and Marine Infirmaries.

Full.	Half.	Low.	Fever.
Bread ... ... 1 lb.	Bread ... ... 1 lb.	Bread ... ... 8 oz.	Bread ... 8 oz., or Sago 4 oz.
Beef or Mutton ... 1 lb.	Beef or Mutton ... 8 oz.	Herbs for Broth ...1½ drams	Tea ... ... 4 drams
Potatoes or Greens ... 1 lb.	Potatoes or Greens ... 8 oz.	Barley ... ... 7 drams	Sugar ... ... 2½ drams
Herbs for Broth ...2½ drams	Herbs for Broth ... 1½ drams	Salt ... ... 9 drams	Milk for Tea ... ½ pint
Barley ... ...1½ drams	Barley ... ... 1½ drams	Tea ... ... 4 drams	Milk for Diet ... ½ pint
Salt ... ... 6 drams	Salt... ... ... 6 drams	Sugar ... ...1½ drams	
Vinegar ... ...1½ drams	Vinegar ... ... ½ drams	Milk for Tea ... ½ pint	
Tea ... ... 4 drams	Tea ... ... 4 drams	Milk for Diet ... ½ pint	
Sugar ... ...1½ drams	Sugar ... ... 1½ drams	Broth ... ... ½ pint	
Milk for Tea ... ... ½ pint	Milk for Tea ... ½ pint		
Broth ... ... ½ pint	Broth ... ... ½ pint		
Dinner: Beer (Small) or Strong ...1½ pint; Beer for Servants, viz. —; Nurses ... ...½ pint; *Overseers of Washers, Washers and Attendants on Lunatics ... 2 pints	Dinner: Beer (Small) or Strong ... 1½ pint; ½ pint		
Supper: Wine or Porter (at the Surgeon's discretion, not exceeding ... 1 pint; 1½ pint	Supper: Wine at the Surgeon's discretion, not exceeding ... ½ pint		
Veal / Pork / Fish — Such quantities in lieu of Beef and Mutton as the Medical Officer may prescribe			
Rice or Flour Pudding—at the discretion of the Medical Officers to Patients on Low or Fever diet only			

Note.

Two Drams of Souchong Tea, Eight Drams of Muscovado Sugar, and One-fifth part of a Pint of genuine Milk, to be allowed to each Patient for a Pint of Tea, Morning and Evening.

The Meat for the Full and Half Diet is to be boiled together, with Fourteen Drams of Scotch Barley, Eight Drams of Onions, One Dram of Parsley, and Sixteen Drams of Cabbage for every Pint of Broth, or at the discretion of the Medical Officers, Eight Drams of Carrots, and Eight Drams of Turnips, in lieu of the Cabbage, which will make a sufficient quantity of good Broth, to allow a Pint to each on Full and Half Diet, and Half a Pint to each on Low Diet :—

Rice Pudding. Each to contain—

Rice	1 oz.
Sugar	1 oz.
Milk	½ pint
Eggs	No.
Cinnamon	1 blade

Flour Pudding. Each to contain—

Flour	4 oz.
Sugar	1 oz.
Milk	½ pint
Eggs	No.
Ginger ...	a few drops

* Labourers, Seamstresses, and Scrubbers, &c., to have 1d. a day in lieu of Beer, and the Matron, Porter, and Butler, 1½d. a day in lieu of Rations.

N.B.—As this Scale provides liberally for each class of Patients, Medical Officers are carefully to avoid all deviations from it as far as their Duty towards the Sick may permit ——Such Patients (not exceeding six) as may be inclined, are to be permitted to attend the Weighing, Measuring, &c. of the Provisions in the Morning, and serving them out when cooked.

III.

DIET TABLE for Patients in Guy's Hospital.

Full or Extra Diet.	Middle or Ordinary Diet.	Milk or Pudding Diet.	Low Diet.	Fever Diet
Fourteen Ounces of Bread	Twelve Ounces of Bread	Twelve Ounces of Bread	Ten Ounces of Bread	Tea and Sugar
One Pint of Porter, for Males Half Pint of Porter, for Females	Half a Pint of Porter	Two Pints of Milk; or, One Pint of Milk, with Rice, Sago, or Arrowroot, boiled, or made into light Pudding	Tea and Sugar	
Six Ounces of Dressed Meat, roasted and boiled, alternately, with Potatoes. Half a Pint of Mutton Broth, in addition, on days when Boiled Meat is given One Pint of strong Vegetable Soup, with Meat, twice a week	Four Ounces of Dressed Meat, roasted and boiled, alternately, with Potatoes. Half a Pint of Mutton Broth, in addition, on days when Boiled Meat is given One Pint of strong Vegetable Soup, with Meat, twice a week; with the full diet allowance of Bread	Half a Pint of Beef Tea, when ordered	Half a Pint of Beef Tea, Mutton Broth, Rice, Arrowroot, or Sago, when specially ordered	One Pint of Beef Tea, Sago, Arrowroot, Gruel or Barley Water as required
One Ounce of Butter each day	One Ounce of Butter each day	One Ounce of Butter	Three Quarters of an Ounce of Butter	
Porridge, Gruel, and Barley Water, as required	Porridge, Gruel, and Barley Water, as required	Gruel and Barley Water, as required.	Gruel and Barley Water, as required	

Fish, Chops, Steaks, Chicken, and Chicken Soup, Eggs, and other extras, are to be specially ordered by the Medical Attendant, and will be given with the Low Diet. Wines and Spirits, if continued, must be mentioned each time the Physician or Surgeon attends.

January, 1857.

IV.

DIETS OF THE EDINBURGH INFIRMARY.

1. Low Diet.

				Cost.
Breakfast	Bread			3 oz.
	Tea, ½ pint	Tea		½ oz.
		Milk		1 oz.
		Sugar		½ oz.
				—1ᵈ·00
Dinner ..	Panado	Bread		3 oz.
		Milk		2 oz.
		Sugar		½ oz.
				—0ᵈ·57
Supper ..	Bread			3 oz.
	Tea, ½ pint	Tea		½ oz.
		Milk		1 oz.
		Sugar		½ oz.
				—1ᵈ·00

Solid Animal Nutriment ..	0·40 oz.
Solid Vegetable Nutriment ..	6·95 oz.
Total Solid Nutriment ..	7·35 oz.
Total Cost	2ᵈ·57

2. Rice Diet.

Breakfast	Bread			3 oz.
	Coffee, ½ pint	Coffee		½ oz.
		Milk		2 oz.
		Sugar		½ oz.
	An Egg			2 oz.
				—1ᵈ·92

					Cost.
Dinner ..	Beef Tea* (from 8 oz. meat)		..	..	½ pint
	Rice Pudding	Rice	..	..	1½ oz.
		Sugar	..	..	½ oz.
		Milk	..	..	2½ oz.
		Egg, ¼	..	..	1 oz.
		Ess. Oil of Lemon			1 drop
					—1·79
Supper ..	Bread	..	..	..	3 oz.
	Tea, ½ pint	Tea	..	..	½ oz.
		Milk	..	..	1 oz.
		Sugar	..	..	½ oz.
					—1·09

Solid Animal Nutriment	..	1·45 oz.
Solid Vegetable Nutriment	..	6·40 oz.
Total Nutriment	..	7·85 oz.
Total Cost ..	..	.. .. $4.71

3. Steak Diet.

Breakfast	Bread ..	..	..	..	6 oz.
	Coffee, ½ pint	Coffee	..	..	½ oz.
		Milk	..	..	2 oz.
		Sugar	..	..	½ oz.
					—1·56
Dinner ..	Potatoes ..	..	..	..	16 oz.
	Beef-Steak†	..	..	..	4 oz.
	Broth, 1 pint	Barley ..	..	..	1 oz.
		Vegetables	..	..	½ oz.
		Meat ..	..	..	2 oz.
					—1·63

* The cost of the Beef-Tea is not all charged against the patients' rations of that article. As the Beef is used for the rations of meat in Nos. 7, 8, and 9, one-half of the cost is charged under that head.

† In this and all the other diets, the weight is to be understood as applying to the food before being cooked.

					Cost.
Supper ..	Bread ..	..	..	..	6 oz.
	Tea, ½ pint	Tea	..	..	½ oz.
		Milk	..	..	1 oz.
		Sugar	..	..	½ oz.
					—1d·30

Solid Animal Nutriment ..	1·4 oz.
Solid Vegetable Nutriment ..	13.77 oz.
Total Solid Nutriment	15·18
Total Cost	4d·51

4. Steak Diet with Bread.

This is the same with No. 3, except that the 6 oz. of Bread are substituted at Dinner for Potatoes, and ½ of a pint of Beef-Tea for Broth.

The substitution makes the *Total Solid Nutriment* 13·87 oz., and the *Cost*, 5d·47.

5. Common Diet.

Breakfast	Bread ..	..	..	..	6 oz.
	Coffee, ½ pint	Coffee	..	..	½ oz.
		Milk	..	..	2 oz.
		Sugar	..	..	½ oz.
					—1d·50
Dinner ..	Potatoes ..	..	..	..	10 oz.
	Broth, 1 pint	Barley	..	..	1 oz.
		Vegetables	..	..	½ oz.
		Meat	..	..	2 oz.
					—0d·65
Supper ..	Bread ..	..	..	..	6 oz.
	Tea, ½ pint	Tea	..	..	½ oz.
		Milk	..	..	1 oz.
		Sugar	..	..	½ oz.
					—1d·30

		Cost.
Solid Animal Nutriment ..	0·33 oz.	
Solid Vegetable Nutriment ..	13·77 oz.	
Total Solid Nutriment	14·10 oz.	
Total Cost		3ˢ·51

6. Common Diet with Bread.

The same as No. 5, except that 6 oz. of Bread are substituted at Dinner for Potatoes.

Total Nutriment, 13·56 oz. *Cost*, 3ˢ·90.

7. Full Diet.

Breakfast	Porridge, 1½ pint, made of Oatmeal			4½ oz.
	Butter-Milk, 1 pint			20 oz.
				—0ˢ·81
Dinner ..	Boiled Meat *			6 oz.
	Potatoes			16 oz.
	Bread			3 oz.
	Broth ..	Barley		1 oz.
		Vegetables ..		½ oz.
		Meat		2 oz.
				—1ˢ·70
Supper ..	Potatoes			16 oz.
	New Milk, ½ pint			10 oz.
				—0ˢ·80
Solid Animal Nutriment ..		3·85 oz.		
Solid Vegetable Nutriments ..		15·17 oz.		
Total Solid Nutriment ..		19·02 oz.		
Total Cost				3ˢ·31

* The rest of the Meat is not all here charged. One-half is charged to the account of Beef Tea, which is made with it.

8. Full Diet with Bread.

The same as No. 7, except that *Bread*, 8 oz., is substituted for Potatoes and Bread at Dinner; and *Bread*, 6 oz., for Potatoes at Supper.

Total Solid Nutriment, 17·29 oz. *Cost*, 3ᵈ.03.

9. Extra Diet.

			Cost.
Breakfast	Porridge, 2 pints, made of Oatmeal	6 oz.	
	Batter-Milk, 1 pint	20 oz.	
			—0ᵈ·02
Dinner ..	Boiled Meat	8 oz.	
	Potatoes, 1 ½ lb.	20 oz.	
	Bread	3 oz.	
	Broth, 1 pint — Barley	1 oz.	
	Broth, 1 pint — Vegetables ..	¼ oz.	
	Broth, 1 pint — Meat	2 oz.	
			—2ᵈ·02
Supper ..	Potatoes, 1¼ lb.	20 oz.	
	New Milk	15 oz.	
			—1ᵈ·13

Solid Animal Nutriment ..	4·85 oz.	
Solid Vegetable Nutriment ..	18·58 oz.	
Total Solid Nutriment ..	23·43 oz.	
Total Cost		4ᵈ·07

Return of Diets made up at Edinburgh Infirmary.

No.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
From							
To							
Number of Ordinary Cases							
" Fever do.							
Diets.							
Low Diet							
Rice Diet							
Steak Diet							
Steak Diet, with Bread							
Common Diet, with Porridge ..							
Common Diet, with Bread							
Full Diet							
Full Diet, with Bread							
Extra Diet							
Extras.							
Eggs							
Butter Milk .. .. .. pints							
New Milk .. .. half pints							
Beef Tea .. .. .. pints							
Table Beer .. .. quarts							
Rice .. .. oz.							
Arrowroot .. .. .. oz.							
Sugar .. .. oz.							
Butter .. .. oz.							

N.B.—This return to be filled up and signed by the Resident Physician or Surgeon

V.

PROPOSED DIET FOR MILITARY HOSPITALS.

I now add, on the two following pages, the proposed Scheme *of* Diets *for* our Military Hospitals, which has been drawn up by Mr. Alexander, who is shortly, it is said, to fill the important post of Director-General to the Army Medical Department, and by Dr. Christison. They are the very best I have ever seen for any Hospital, Civil or Military, at home or abroad. Dr. Christison has annexed the Nutritive Values to each article *of* each Diet.

Military Hospitals.—Articles composing the differ

Tea.	Sparo.	Beef Tea.	Milk.	Low
Bread ... 6 oz.	Bread ... 6 oz.	Bread ... 12 oz.	Bread ... 14 oz.	Meat ... 4 o
Tea ... ... ½ „	Tea ... ... ½ „	Tea ... ... ½ „	Rice ... 2 „	Bread ... 10 „
Sugar ... 2 „	Sugar ... 1½ „	Sugar ... 1½ „	Milk ... 3 pts.	Salt ... ½ „
Milk ... ... 6 „	Milk ... 6 „	Milk ... 6 „	Sugar ... ½ oz.	Tea ... ... ½ „
		Beef ... 6 „		Sugar ... 1½ „
	Also	Salt ... ½ „		Milk ... 4 „
	Arrowroot 2 „			Butter ... ½ „
	Sugar ... 1 „			
	Made into Jelly.			Rice ... 1 „
				Milk ... 1 pt.
				Sugar ... 1 oz.
				Egg ... ... 1 „
				For Pudding, &c.

BREAKFAST.

Tea ... ... 1 pint Bread	Tea ... ... 1 pint Bread ... 4 oz.	Tea ... ... 1 pint Bread ... 4 oz.	Milk ... ... 1 pint Bread ... 4 oz.	Tea ... ... 1 pint Bread ... 1 oz. Butter ... ½ „

DINNER.

Tea ... ... 1 pint Bread.	Arrowroot Jelly.	Beef Tea ... 10 oz. Bread ... 6 „	Rice Milk 1 pint Bread ... 4 oz.	Beef Tea ... 12 oz Bread ... 4 „ Sago Rice Pudding

SUPPER.

Tea ... ... 1 pint Bread.	Tea ... ... 1 pint Bread ... 4 oz.	Tea ... ... 1 pint Bread ... 4 oz.	Milk ... ... 1 pint Bread ... 4 oz.	Tea ... ... 1 pint Bread ... 1 oz. Butter ... ½ „

Note.—Drinks for patients on tea, cocoa, and beef tea diets:—
Barley Water.—Barley, 1 oz.
Rice Water.—Rice, 1 oz.
Lemonade.—One large lemon

Diets for a Day.—Avoirdupois Weight.

Chicken.	Hall.	Fish.	Roast.	Kidney.
Diet — 8 oz.	Meat — 8 oz.	White Fish 8 oz.	Roast, Chop, Steak.	Meat — 12 oz.
Bread — 10 „	Bread — 16 „	Bread — 10 „	——	Bread — 10 „
Salt — ½ „	Potatoes... 8 „	Potatoes... 8 „	Meat — 8 oz.	Potatoes ... 10 „
Tea... — ½ „	Barley — 1½ „	Salt... ... ½ „	Bread ... 10 „	Barley — 2½ „
Sugar — 1½ „	Salt ... ½ „	Tea... ... ½ „	Potatoes... 8 „	Salt ... ... ½ „
Milk — 6 „	Tea... ... ½ „	Sugar — 1½ „	Salt — ½ „	Tea ... ... ½ „
Butter — ½ „	Sugar — 1½ „	Milk — 6 „	Tea... ... ½ „	Sugar — 1½ „
	Milk ... 6 „	Butter — 2 „	Sugar — 1½ „	Milk ... 6 „
	Vegetables 8 „		Milk ... 6 „	Vegetables 4 „
	Butter ... ½ „		Vegetables 8 „	Butter ... ½ „
	Flour ... ½ „		Butter ... ½ „	Flour — ½ „
				——
				When meat, roasted, baked, or stewed—
				Bread... ... 10 oz.
				(being 3 oz. extra) in lieu of barley and flour.
				To be marked "roast" on bill.

BREAKFAST.

Tea ... ... ½ pint	Tea ... ... ½ pint	Tea ... ... ½ pint	Tea ... ... ½ pint	Tea ... ... ½ pint
Bread ... 4 oz.	Bread ... 4 oz.	Bread ... 4 oz.	Bread ... 6 oz.	Bread ... 6 oz.
Butter ... ½ „	Butter ... ½ „	Butter ... ½ „	Butter ... ½ „	Butter ... ½ „

DINNER.

Beef... ... 8 oz.	Soup... ... ½ pint	Fish ... ... 8 oz.	Roast Chop or Steak.	Soup ... ½ pint
Liver roasted or made into chicken pie ... ... 12 oz.	Meat ... 8 „	Bread... ... 6 „	——	Meat ... 12 oz.
Bread ... 6 „	Bread ... 6 „	Potatoes ... 8 „	Meat ... ... 8 oz.	Bread ... 4 „
	Potatoes ... 8 „	Butter ... 1 „	Bread... ... 6 „	Potatoes ... 10 „
			Potatoes ... 8 „	——
			Vegetables... 2 „	When meat, roasted, baked, or stewed—
				Meat ... 12 oz.
				Bread ... 7 „
				Potatoes ... 10 „
				Vegetables 4 „

SUPPER.

Tea ... ... ½ pint	Tea ... ... ½ pint	Tea ... ... ½ pint	Tea ... ... ½ pint	Tea ... ... ½ pint
Bread ... 4 oz.	Bread ... 6 oz.	Bread ... 6 oz.	Bread ... 6 oz.	Bread ... 6 oz.
Butter ... ½ „	Butter ... ½ „	Butter ... ½ „	Butter ... ½ „	Butter ... ½ „

To be made and sharpened according to the following proportions:—
sugar, 1 oz.; for every five pints.
sugar, 2 oz.; for every five pints.
and sugar, 1½ oz. to two pints.

Nutritive Value of the above Diets.

1.—Tea.

	Carbon.	Nitrogen.	Total.
Bread, 5 oz.	4·12	0·84	4·96
Tea, ½ oz.	..	..	..
Sugar, 3 oz.	3·	0·0	3·
Milk, 6 oz.	0·48	0·27	0·75
	7·60	1·11	8·71

4.—Milk.

	Carbon.	Nitrogen.	Total.
Bread, 14 oz.	7·21	1·44	8·65
Rice, 2 oz.	1·60	0·20	1·80
Milk, 60 oz.	4·80	2·70	7·50
Sugar, ½ oz.	0·50	..	0·50
	14·11	4·37	18·45

One pint of milk with 6 oz. of bread for breakfast; 1 pint of milk with 2 oz. of rice and 4 oz. of bread for dinner; 1 pint of milk with 4 oz. of bread for supper.

5.—Low.

		Carbon.	Nitrogen.	Total.
Meat, 8 oz. exclusive of bone.		1·20	1·61	2·81
Bread, 14 oz.		7·21	1·47	8·68
Sugar, 1½ oz.		1·50	..	1·50
Milk, 6 oz.		0·48	0·27	0·75
Pudding	Rice, 2 oz.	1·60	0·20	1·80
	Milk, 15 oz.	1·20	0·67	1·87
	Sugar, ½ oz.	0·50	..	0·50
	Egg	0·30	0·10	0·70
		13·99	4·62	18·61

A pint of tea with 5 oz. of bread for breakfast; the same for supper; three quarters of a pint of beef tea with 4 oz. of bread for dinner, also a pudding, consisting of 2 oz. of rice with half an ounce of sugar, three quarters of a pint of milk, one egg, ginger, or cinnamon a few grains.

7.—Half.

	Carbon.	Nitrogen	Total.
Meat, 4 oz. exclusive of bone..	1·20	1·62	2·82
Bread, 16 oz.	8·24	1·68	9·92
Potatoes, 8 oz.	1·94	0·20	2·14
Barley, 1½ oz.	1·17	0·28	1·45
Sugar, 1½ oz.	1·75	..	1·75
Milk, 6 oz.	0·48	0·27	0·75
Vegetables, 3 oz.	0·06	0·01	0·07
Butter, 1 oz.	1·00	..	1·00
Flour, ¼ oz.	0·18	0·04	0·22
	16·04	4·10	20·14

One pint of tea with 6 oz. of bread for breakfast; the same for supper; 1 pint of soup, also the meat, 4 oz. of bread, and 8 oz. of potatoes for dinner.

10.—Entire.

	Carbon.	Nitrogen.	Total.
Meat, 12 oz.	3·60	2·43	4·28
Bread, 16 oz.	8·24	1·68	9·92
Potatoes, 16 oz.	3·92	0·40	4·32
Barley, 2½ oz.	1·77	0·37	2·14
Sugar, 1½ oz.	1·75	..	1·75
Milk, 6 oz.	0·48	0·27	0·75
Vegetables, 4 oz.	0·08	0·02	0·10
Butter, 1 oz.	1·00	..	1·00
Flour, ¼ oz.	0·18	0·04	0·22
	19·22	5·21	24·43

A pint of tea with 6 oz. of bread for breakfast; the same for supper; 1 pint of soup with the meat, 4 oz. of bread, and 16 oz. potatoes for dinner; the meat to be roasted, boiled, or stewed, on alternate days. When meat roasted, or stewed, 3 oz. bread extra, instead of the barley and flour for soup.

6.—Fowl.

Nearly the same as half diet, with half a fowl or chicken, weighing 8 oz. exclusive of bone, either to be roasted or made into soup, in lieu of the 8 oz. of meat.

8.—Fish.

Nearly the same as half diet; but 8 oz. of white fish in lieu of the 8 oz. of meat.

9.—Roast.

Nearly the same as half diet; but 8 oz. of mutton chops or steak in lieu of the 8 oz. of meat.

The foregoing diets are composed of nearly the same ingredients as the present Hospital diets, with the exception of the "Low," where pudding and some extra meat are marked in lieu of potatoes. 1 oz. of butter is also added on all above milk diet. Being ten in number in place of five, they allow a greater variety to be given to the patients, without issuing extras, thereby saving a good deal of writing as well as time.

Were the above ten diets or other such laid down, extras could be dispensed with (with the exception of spirits, wine, or malt liquor, and perhaps occasionally some article for certain patients on tea diet).

During war, in General Hospitals, the above, or a similar dietary could be carried out, but in Regimental Field Hospitals, the Medical Officer must make the most of the usual rations, preserved vegetables being issued in certain proportions in lieu of fresh, when these cannot be obtained. Generally speaking, no serious cases (if possible) should be treated in Regimental Field Hospitals. All other diet tables, and the writing they entail, should be dispensed with in Regimental Field Hospitals. It is presumed that fresh or preserved vegetables will in future be issued as a daily portion of the soldier's ration.

Instructions as to the above Diets.

By Mr. Alexander.

The diets to be marked by the prescribing Medical Officer on the rolls by their initials.

The bread and tea in the tea diet are to be apportioned according to the instructions of the Medical Officer.

On tea, spoon and beef tea diets, drinks of barley water, rice water, and lemonade, may be given when deemed necessary by the Medical Officer, and the quantities so given must be marked daily on the abstract of diets.

The meat for the various diets, as also the fowls, are to be of good quality, and must weigh in the raw state, exclusive of bone, the weights specified in the diet table.

The bread is also to be of the best household kind.

The meat on low diet is to be used for beef tea, so as to make three quarters of a pint of good beef tea for each patient on such diet.

The meat on half and whole diets is to be boiled with the vegetables, barley, and flour, and a quarter of an ounce of sugar for each diet may be charged in addition to that on the dietary, marking "for soup" (also pepper for seasoning), so as to allow to each patient the quantity specified in the diet table. The meat on full diet when not made into soup, is to be roasted, baked, or stewed, and 3 oz. of extra bread will be given in lieu of the barley and flour.

In the diets, when no soup is given, the vegetables are to be cooked in bulk, and served up to each patient in the proportions specified.

When potatoes cannot be procured of a sufficiently good quality, either 3 oz. of rice, 3 oz. of flour, or 8 oz. of bread may be issued in lieu of 16 oz. of potatoes.

Preserved potatoes, when issued, will be in the proportion of 1 oz. of the preserved to 5 oz. of fresh and 1 oz. of mixed preserved vegetables in lieu of 10 oz. of fresh.

Half an ounce of coffee may be substituted for one-eighth of an ounce of tea at breakfast and supper.

Milk is to be calculated at 20 oz. to the imperial pint.

As the above scale of diet allows of considerable variety, and supplies sufficient nourishment, Medical Officers are requested to avoid all deviations from the same, as far as their duty towards their patients may permit. In cases of emergency, or when patients are brought into Hospital, and before being placed on the diet roll, the Medical Officer may draw what he deems necessary from the reserve kept by the Nurse or by the Assistant Wardmaster in General Hospitals, and by the Assistant Steward in Regimental Hospitals.

Wine, spirits, and malt liquors will be considered as extras, and, when ordered, will be marked as such on the diet roll opposite the names of the patients receiving them.

During war, the above scale of diets may be used in General and other Hospitals, but should any deviations from the same be necessary, it will be the duty of the Principal Medical Officer in the field to decide what those deviations may be, and to lay down a scale adapted to the position, climate, and the supplies obtainable.

In Regimental Field Hospitals, during war, in the event of the diets on the table not being obtainable, the usual ration being drawn from the Commissariat, the Medical Officer of the corps will order the same to be cooked and distributed to the patients according to the manner he thinks best suited for them, and should extras, such as arrowroot, sago, sugar, tea, essence of beef, Gillon's preserved meat juice, or other articles for soup, also wine, spirits, &c., be deemed necessary by the prescribing Medical Officer, they are to be given and marked on the diet roll, against the names of the patients receiving them.

RECEIPTS FOR HOSPITAL DIETS AND DRINKS, MOST OF WHICH WERE USED IN THE WAR HOSPITALS OF THE EAST.

The following receipts for Hospital diets and drinks, prepared by M. Soyer, and composed mainly of the ingredients of the different diets in the proposed diet table, were what we found most useful in the War Hospitals of the East, as far as our means and materials allowed us to use them.

BILL OF FARE FOR MILITARY HOSPITALS.

	PAGE		PAGE
Mutton soup ..	xl	Mutton tea ..	xlii
Beef soup	xli	Veal ditto ..	xlii
Beef tea	xli	Lamb ditto ..	xlii
Thick ditto	xli	Chicken tea ..	xlii
Thick white beef tea ..	xlii	Chicken broth ..	xlii

Fish.

Sole water souchet ..	xliii	Broiled whiting ..	xlv
Brill ditto	xliii	Fried fish ..	xlv
Flounder ditto .	xliii	Fried sole ..	xlv
Whiting ditto ..	xliv	Whiting ..	xlvi
Skate ditto	xliv	Smelts ..	xlvi
Cod fish ditto ..	xliv	Flounders. ..	xlvi
Gelée ditto	xliv	Skate	xlvi
Sauté and baked fish ..	xliv	Brill	xlvii
Ditto whiting ..	xliv	Boiled fish ..	xlvii
Broiled sole	xlv		

Steaks	xlvii	Beef, roast ..	xlviii
Chops	xlvii	Roast fowls ..	xlviii
Ditto, broiled ..	xlviii	Grilled ditto ..	xlviii
Mutton, roast ..	xlviii		

Puddings.

	PAGE		PAGE
Rice, plain, boiled ..	xlix	Panada arrowroot	lii
Rice pudding.. ..	xlix	Rice, pulp, ground	lii
Sago	l	Bread and milk ..	lii
Arrowroot	l	Thick milk ..	liii
Rice	l	Rice milk ..	liii
Tapioca	l	Bread pudding ..	liii
Macaroni	li	Bread and butter pudding ..	liii
Batter pudding ..	li	Observations on pudding ..	liii
Sago jelly	li	Stewed French plums.. ..	liii
Custard	li		
Plain arrowroot ..	lii		
Pulp ditto	lii		
Wine ditto	lii		

Beverages.

Semi-citric lemonade..	liv	French Beverages:—	
Soyer's plain lemonade	liv	Tea of violet flowers ..	lvii
Tartaric lemonade ..	liv	Elderflower water	lvii
Lime juice lemonade..	lv	Lime ditto ..	lvii
Toast and water ..	lv	Frenchplum water	lvii
Apple toast and water	lv	Effervescent Beverages:—	
Barley water	lv		
Apple barley water ..	lv	Raspberry water	lvii
Arrowroot water ..	lvi	Pine-apple syrup	lvii
Rice water	lvi	Currant ditto ..	lvii
Citronade	lvi	Orgeat syrup ..	lvii
Spring drink	lvi	Camomile water	lvii
Summer ditto ..	lvi	Dandelion tea ..	lvii
Mulberry	lvi		

Receipts for Cooking in Military Hospitals.

Semi-Stewed Mutton and Soup.

Full Diet.—Put into a stewpan 12 oz. of mutton, 1 teaspoonful of barley, half one of salt, 2 oz. of vegetables, composed of a little onion, celery, turnip, and carrot, mixed

in due proportion; add 2 pints of water. If diets for twenty-five are boiled in one mess, 1½ pints of water will suffice to each ration, put all on the fire, simmer gently one hour and a quarter; skim off the fat; mix a teaspoonful of flour with a little water, so that it may form a thin batter, pouring it over the soup one quarter of an hour before serving; add a quarter teaspoonful of sugar; skim if required, and serve. This will make a good soup, and will serve for full diet. The meat may be put back into the stewpan, warmed up, and served separately.

For half diet, 8 oz. of meat, use the same proportions.

Variation for seasoning.

A little pepper, cloves, thyme, bayleaf, parsley, celeryleaf, &c., may be introduced.

Semi-Stewed Beef and Soup.

Proceed as for mutton soup. Rice may be used instead of barley, adding a gill more water, as beef takes longer to cook. If, to each diet a teaspoonful of browning be added, it will give it an inviting colour.

Beef Tea.

Cut 1 lb. of stock beef into large dice, put ½ oz. of butter in a stewpan, place in your beef, set on a slow fire, stirring occasionally, until a brownish colour comes at the bottom, and the meat gets set, then place in 2 pints of boiling water, with half a teaspoonful of salt, a pinch of sugar, a clove, and one-fourth part of a middle-sized onion, cut into slices; simmer gently thirty minutes; skim and serve.

N.B.—If the beef tea is wanted plain, omit the seasoning, excepting the salt.

Thick Beef Tea.

Put in your mixture half a teaspoonful of arrowroot, mixed with 2 tablespoonfuls of water. This will be found a delicate diet for weak cases.

Veal, lamb, and even fowls may be done the same, the meat is very palatable, and may be served in the broth when done for convalescent patients.

Thick White Beef Tea.

Proceed as for beef tea, only prevent its browning, it should be removed from the fire when the stock at the bottom begins to get thick and white, which it does just before browning, then add in your water as for brown beef tea, simmer little; skim and serve.

This beef tea will be found very suitable for weak stomachs.

Mutton Tea.

Take 1½ lbs. weight of mutton, bone included, the scrag will do. Proceed as for beef tea; skim and serve.

Veal Tea.

Cut 1 lb. of solid veal stock meat in dice, put it into a stewpan, with a little butter, as for beef tea; stew gently till a glaze is formed at the bottom, stirring now and then; add 2 pints of water, half a teaspoonful of salt, and a little pinch of sugar. When boiling, add a small slice of onion, and a few sprays of fresh parsley. Skim off the fat, pass through a sieve and serve.

Lamb Tea.

Take some of the scrag or inferior trimmings of lamb, bone and all; proceed as for veal tea, and only put in 1½ pints of water; a little less salt. Skim off and serve.

N.B.—If the meat is to be eaten, the meat of the chump of lamb is preferable. If made in quantities, lambs' heads may be introduced with great advantage, the meat and brains being very delicate.

Chicken Tea.

Take half a chicken, cut into six neat pieces, put it into a stewpan with butter, proceed as for veal tea; skim, and serve the fowl in the tea.

Either of the teas may be made thick by the addition of a little arrowroot, as in thick beef tea.

Chicken Broth.

Properly trim, and place half a small chicken, cut in two lengthways in a stewpan, also 1 tablespoonful of rice, 1 small

teaspoonful of salt, 2 oz. of mixed vegetables cut in dice, add a pinch of sugar, and 2 pints of water; boil half an hour; skim and serve.

If a large fowl, cut it into four, and proceed as with the chicken, allowing half a pint more water for evaporation, as large fowls require longer doing. A few herbs may be added, if allowed by the medical attendant.

Two tablespoonfuls of sago in lieu of rice is a good variation.

Rule for Fish, either boiled, broiled, baked or fried.

You may always ascertain when fish is done, as then the flesh separates from the bone easily with the aid of a fork if tried in the thickest part. Take care that it does not overdo, which takes all the nutriment from the fish.

Sole Water Souchet.

Trim a sole by cutting off the fins, let it weigh 8 oz. before cooking, cut crossways in four pieces, put them in a stewpan, add half a pint of water, a quarter of a teaspoonful of salt, half that quantity of sugar, about twenty leaves of fresh paraley; put on a sharp fire, cover over, boil from five to eight minutes, and turn out the contents of the pan into a soup plate and serve. The liquor is of course the best part of the water souchet for weak digestions.

Brill Water Souchet.

Take half a pound of brill, cut into four slices, add seasoning, &c., as for sole, with the addition of another gill of water, boil minutes, or till done, and serve.

Flounders Water Souchet.

Take two middling-sized flounders, weighing together 8 oz., cut off the fins, cut each flounder in two, crossways, season, &c., as for sole, putting in only one gill and a half of water; boil fast five minutes, and serve.

Whiting Water Souchet.

Have a nice firm whiting, or two small ones, with the skin on, cut them each in three pieces, season as for sole; boil quickly five minutes, and serve.

Take care not to break the pieces, this fish being very delicate.

Skate Water Souchet.

Take a nice piece of skate weighing half a pound, divide it into four, add seasoning as for sole; boil slowly ten minutes, according to the thickness, and serve.

For a variation a little pepper, a slice of onion, a small sprig of thyme, or winter savory may be introduced.

Cod Fish Water Souchet.

Cut 8 oz. in four pieces, proceed as with brill, and serve.

Gelée Water Souchet.

To any of the above souchets add half a teaspoonful of arrowroot, mixed with 2 tablespoonfuls of water, pour over the fish five minutes before serving.

N.B.—In special cases, if lemon or lime juice is suitable, a few drops will be found relishing.

Sauté and Baked Fish.

Fish, such as used for water souchet, may be sautéd as follows:—

Put in a sauté or fryingpan 1 oz. of butter, place the sole or other fish over the butter, season with a quarter teaspoonful of salt and a little pepper, put in a slow oven or on the stove for five minutes, then turn it the other side, put it back for ten minutes longer and serve.

If fish cooked thus is done in large quantities, half an ounce of butter for each diet will suffice. A little light melted butter may be served with any of the above fish. A little pepper and lime or lemon-juice, where allowed, is very relishing.

Sauté and Baked Whiting.

For whiting proceed as for sole; whiting with the skin on is preferable to those already prepared by the fishmonger, which

se dressed round. The fish being very delicate must be turned *carefully*. For any baked fish, egg and bread-crumb over lightly and do not turn your fish as it should have a little brownish colour.

Broiled Fish.

Sole.—Trim as for frying and dip in flour; butter very lightly over with a paste brush, put on a gridiron previously well greased (to prevent sticking) over a very slow fire, turn once; eight minutes will do a sole of as many ounces weight, and other fish in proportion.

Whiting.—Proceed in the same manner.

Note.—This is the lightest and most difficult way fish can be dressed.

Conger eels are now daily dressed in French Hospitals, halibuts might replace this fish in England.

Fried Fish.

Any kind of fish, though fried in fat, when properly done, does not retain the slightest particle of fat, which would be prejudicial to the patient. This is avoided by having the fat at a proper degree of heat, which can be ascertained when it begins to smoke, and when all boiling has ceased. If you then dip your finger in water, and let a drop fall into the fat, it will hiss loudly, if properly heated. Fat overheated is equally unfit for use, which fact can also be ascertained by the quantity of black smoke emitted by the fat, and making a very disagreeable smell.

A quarter of a teaspoonful of salt, or half that quantity as permitted, must be sprinkled over all kinds of fried fish, when taking up.

Fried Sole.

Trim and dry a sole in a clean cloth, dip lightly in flour, break an egg, which beat up well, egg the sole lightly over with a paste brush, roll it in bread crumbs, make the crumbs adhere with the flat of a knife, then have ready placed in a flat fryinggpan 2 lbs. of either lard or clarified dripping, set on the fire, and when the fat emits a light smoke, then is the time to place in the sole as it proves that all moisture is

exhausted; another test is, when the white smoke appears, to throw in a few bread crumbs and if they hiss and frizzle it is ready for the sole; let the flattest part of the sole be at the bottom of the pan, and when that side is of a nice colour, turn it with a slice to the other. It will take from four to five minutes; take it up with a fish slice, thereby draining off the fat, and serve.

N.B.—All fried fish which are taken from the frying-pan should be drained on a clean cloth, or sieve, laying the best side of the fish next the cloth.

The above quantity of lard or dripping will cook diets for about twenty-five patients; but care must be taken that the fish is always thoroughly emerged in the fat; the remains to be saved, as it will keep good several days.

Fried Whiting.

Take one large or two small whitings, dry in a cloth, flour, and bread-crumb them as sole, and when the fat is hot, place the back down in the pan till it takes a nice colour, then turn the other side; three minutes will do the small, and five minutes the large whitings.

They may be fried with the skin on, and fixed lengthways, instead of trussing them round.

Fried Smelts.

Flour, egg, and bread-crumb as whiting, have your pan moderately hot, then place in the smelt, turn once; two or three minutes will do them yellowish. They are extremely delicate.

Fried Flounders.

Proceed as for sole, only the fat should be hotter than for sole. This fish being of a watery nature, is unpalatable if not done nice and crisp.

Skate Fried.

Use eggs, flour, and bread-crumb for the early part of skate, and fry as for whiting. It will take six minutes doing; and serve.

Brill Fried.

Cut half a pound of this fish into three or four pieces, egg and bread-crumb, and fry as skate.

Cod fish and halibut may be fried the same.

Salmon, if obtainable, cheap and allowable, may be fried the same.

Plain Boiled Sole, Skate, or Brill.

Put 1½ pints of water to boil. When boiling, put in either of the above fish, whole or in pieces, with half a teaspoonful of salt, taking care that the fish is well under the water. Boil fish from five to six minutes, or rather more, and serve plain. A little butter, melted with lemon-juice, makes either very appetising; or pour over a little plain melted butter, or a little parsley butter. All the above mentioned may be boiled and served up the same.

Steaks.

Cut 8 oz. of steak, or rump steak, flatten either to the thickness of three-fourths of an inch, taking care that each piece contains a little fat. Put a clean fryingpan on the fire, with half an ounce of butter, which, when browned a little, is ready to receive the steak; keep it on a rather quick fire, turning it several times, and while cooking, season each side with one-fourth of a teaspoonful of salt and a pinch of pepper (if allowed). Six minutes will do the steak; and, by pressing it with a fork, or with your finger, you can ascertain if the steak is equally done through.

When done, suspend the steak over the pan, to allow the melted fat, if any, which clings to the meat to fall back into the pan.

Chops.

Have a fine chop weighing 8 oz., and three-fourths of an inch in thickness, or rather more, having not too much bone or fat. *Sauté* the same as steak, turning the chop two or three times while doing; and after becoming well browned on either side, it is done.

Six minutes will cook it on a good sharp fire, as it thereby becomes carbonized, and retains its gravy. This remark also applies to steaks.

Lamb chops, half small chickens, and veal cutlets, may be done the same.

Note.—Veal is much used in French Hospitals, dressed in many ways, such as broth, stews, broiled, &c.

Broiled Chops and Steaks.

For broiling chops and steaks, place them on a gridiron, on a sharp fire; turn either three or four times. Five or six minutes will do either. Season as for fried steak.

More is lost in weight by broiling than by *sautéing*, but it improves the flavour, and is more succulent.

Roasting Mutton or Beef.

A joint not weighing less than 6 lbs. should be done at one time, and afterwards divided into diets.

How to Roast.—Hang up the meat, light the gas, one hour to seventy-five minutes will do a joint of 6 lbs. Two or three joints of the same size might be roasted at once, giving them one and a half hours; and for a large leg of mutton one hour and three quarters. Lamb and veal require less time doing. The meat does not require basting.

To Make Gravy.—Pull out the dripping-pan, extract all the fat which floats on the top, add a teaspoonful of salt to the gravy, also half a pint of hot water, and 1 tablespoonful of browning, set back into the oven a few minutes to get hot, and to each diet put a tablespoonful, the quantity of gravy in proportion to the meat.

Roast and Grilled Fowls.

Fowls should be roasted whole and divided into diets, according to size.

They should also be grilled whole, being divided up the back, and trussed as usual for grilling; rub over a little butter, and grill on a moderate fire, turning several times, keeping a light yellow colour. When partly done, season with a small te-

spoonful of salt and a little pepper. When done, rub over a little fresh butter, serve whole or in portions.

A slow fire is preferable to a sharp one. For a change, the fowl prior to cooking might be egged and bread-crumbed.

Plain Boiled Rice.

Set a pint of water to boil in a stewpan, add 2 oz. of rice, previously washed; boil ten minutes, or until the grains become rather soft; drain into a colander, then slightly grease a stewpan with butter, and place the rice in again; let it now steam ten or twelve minutes slowly, near the fire, or in a slow oven; each grain of rice will then swell up, and become well separated. It is then ready for use, plain or in various ways.

The addition of ¼ ounce of butter, ditto of sugar, a pinch of salt, mixed lightly together with a fork, will make it very substantial, although light, and it may then be eaten as solid food.

For a variation, a drop of milk or cream may be added, or a little sweetmeat, such as jam, may be introduced.

Also with 1 lb. of plain rice, half a pint of thinnish arrowroot or milk will form a delicate food; ditto flavoured with a little lemon or powdered cinnamon.

Sago milk or water sago may be added to the rice. Half a pint of prepared calves' foot jelly, partly dissolved, may be added, and used when required.

If required savoury, a teaspoonful of essence of beef, or strong beef tea, a pinch of salt and butter may be introduced.

This rice may be used in puddings, by laying it lightly in a dish, and pouring over custard, seasoning rather highly to compensate for the plain rice.

When large quantities of rice pudding are required, this receipt will be found excellent, as it saves a great deal of trouble in making, always observing that the rice must be thoroughly boiled before going into the oven.

Cheap Plain Rice Pudding for Campaigning

In this no eggs or milk are required.

Put on the fire in a moderate sized saucepan, 12 pints of water, when boiling add to it 1 lb. of rice, or 16 tablespoonfuls, 4 oz. of brown sugar, 1 large tablespoonful of salt, and the rind

of a lemon thinly peeled; boil gently for half an hour, then strain all the water from the rice, keeping it as dry as possible. The rice water is then ready for drinking, either warm or cold. Lemon or lime juice may be introduced, which will make it palatable and refreshing.

The Pudding.

Add to the rice 3 oz. of sugar, 4 tablespoonfuls of flour, half a teaspoonful of pounded cinnamon; stir it on the fire continually for five to ten minutes, put it in a tin or pie dish and bake. By boiling the rice fifteen minutes more it will be very good to eat without baking. Cinnamon may be omitted.

Sago Pudding and Pulp.

Put in a stewpan 1½ oz. of sago, two-thirds of a pint of milk, stir it till it boils, then stir in half an ounce of sugar, a pinch of cinnamon, add an egg, and bake in a moderately heated oven ten minutes.

Arrowroot Pudding and Pulp.

Take 1½ oz. of arrowroot, which put into a stewpan with three-fourths of a pint of milk, half an ounce of sugar, of cinnamon and salt each a pinch; set on the fire, and stir continually until it boils. When done, turn out, butter and put it in your mould, bake as above.

Delicate Rice Pudding and Pulp.

Take 2 oz. of rice, let it boil in a stewpan till tender, about ten minutes, dry it, and put it back again into the stewpan, adding quarter of an ounce of sugar, half a pint of milk, a pinch of salt, and cinnamon, set it on the fire, and boil a few minutes; break an egg, beat it well, then take the pan off the fire, mix your egg in quick; butter your tin or pie dish, pour in, and bake until set, and serve.

Tapioca Pudding and Pulp.

Put 2 ozs. of tapioca in a stewpan, with half-a-pint of milk, add in half an ounce of sugar, a pinch of cinnamon, boil a few minutes, stir in an egg, and bake as usual.

Macaroni Pudding and Pulp.

Put 2 pints of water to boil, then put in 2 oz. of broken macaroni, and let it boil till tender; throw the water away; add half a teaspoonful of flour, and mix well, then put in half a pint of milk, a little butter, a pinch of cinnamon, and salt, with a little lemon peel or juice, boil gently for five minutes, beat an egg, which put in, mix well, butter the mould, and bake as usual.

Sago Jelly.

Put into a pan an oz. of sago, half an oz. of sugar, a little piece of lemon peel or cinnamon, add to it a pint of water, a small pinch of salt; boil gently five minutes, stirring continually until rather thick; then add a tablespoonful of either port, sherry, or Marsala wine; mix well. Serve hot or cold.

Batter Pudding.

Break an egg in a small basin, add a small tablespoonful of flour, a pinch of salt, a quarter of a pinch of sugar, a pinch of chopped lemon peel or pounded cinnamon, beat all well together till it forms a smooth batter; then add five tablespoonfuls of milk (if wanted very delicate, six); butter well a small basin, pour in your mixture. Pour some water in a stewpan, enough to immerse half way the basin, and when boiling put in your pudding; boil twenty minutes; pass the knife round the basin, turn out and serve plain, or with a teaspoonful of pounded sugar, the juice of a quarter of a lemon, or a little port or sherry. A little melted butter with sherry may be poured over.

Custard Pudding.

Put into a pan to warm 1 gill of milk, add to it a quarter of an ounce of sugar, a little cinnamon, break and beat an egg well, pour the milk over, mixing very quickly; butter a small cup, pass the custard in it through a fine colander, put the pudding to steam in boiling water, boil fast, and in about ten minutes it will be quite set; pass a knife between the cup and the pudding, turn out on a plate and serve.

The same may be baked.

Plain Arrowroot.

Put half a pint of milk to boil, or rather less, moisten 1 oz. of arrowroot in a basin with cold milk, then pour it into the boiling milk, add a quarter of an ounce of sugar, a pinch of salt, and serve. A nut of butter may be introduced.

Pulp Arrowroot.

Put 2 oz. of arrowroot into a stewpan, moisten with a pint of milk, add a pinch of salt, half an ounce of sugar, and a pinch of cinnamon, put on the fire, stir the whole, and when thick leave it two minutes to set, put in a basin and serve.

Wine Arrowroot.

Place on the fire two-thirds of half a pint of water, with half an ounce of sugar, and when the water boils, have ready mixed up in a basin, 1 oz. of arrowroot, a nip of cinnamon, a sprinkle of salt, and two tablespoonfuls of water; mix till this form a batter, and place it in the boiling water, stirring the while; let simmer another minute, pour in half a wine glass of wine, either port, sherry, or Marsala, and serve.

Arrowroot Panada.

The addition of the yolk of an egg, well beaten, if put in the above pulp, when cooked, will form panada, and keep good two days.

Ground Rice Pulp.

Put 2 oz. of ground rice in a stewpan, with three quarters of a pint of milk, and three-quarters of an ounce of sugar, and a little cinnamon; set on the fire, boil a few minutes and serve. For panada add the yolk of an egg; serve hot or cold.

Bread and Milk.

Boil 1 pint of milk, add to it a quarter of an ounce of sugar, cut a quarter of a pound of bread into slices, put the same into a basin, put on the bread two small nuts of fresh butter (if allowed), pour your milk over, cover over to soak, and serve.

Tops and bottoms or rusks may be used instead of bread.

Thick Milk.

Put into a basin 1 tablespoonful of flour, with 3 of water, mix well to form a batter; then set a pint of milk to boil, and when boiling pour it over the pulp; then place all in a stewpan, give it a few minutes boil, add in a little salt, half an ounce of sugar, a nut of butter; mix well and serve.

Rice Milk.

Put 2 oz. of rice in a stewpan, add half an ounce of sugar, with half a pint of water, and a little lemon peel; let the rice simmer till all the water has evaporated, then work in by degrees one pint of milk, let it simmer gently till the rice is in pulp, and serve.

Bread Pudding.

Boil half a pint of milk, add in the milk 1 oz. of bread crumbs, half an ounce of sugar, and a piece of lemon peel; beat up an egg well, add it in, pour your pudding in a tart dish, bake or steam for fifteen or twenty minutes, and serve.

Bread and Butter Pudding.

Butter well a tart dish, lay in a few slices of bread and butter, boil half a pint of milk, pour the milk over a well-beaten egg, stirring the while, then pour all over the pudding; bake in a hot oven from ten to fifteen minutes till nicely coloured. A few raisins or currants laid on the top when put in the oven are a good variation.

I have tried the preceding puddings both steamed and baked, and though both are indispensable to diet, I consider that the pulp of each of the puddings is more palatable, and contains more nutriment than either a baked or steamed pudding, which is submitted to greater evaporation, especially the baked pudding, which is often partly destroyed through being overdone. When any of the above puddings are not to be baked or steamed, a boil should be given to the pudding to set the egg.

Stewed French Plums.

Soak 12 large or 18 small-sized plums for half an hour. Put them into a stewpan, with a spoonful of brown sugar, a gill of

water, a little cinnamon, and some thin rind of lemon, let them stew gently twenty minutes, then put them into a basin with a little of the juice till cold. A small glass of either port, sherry, or claret, is a very good addition. The syrup is excellent. These plums are freely given in the French Hospitals.

Soyer's Plain Lemonade for 2 pints of water.

Thinly peel the outside of a lemon, which put into a basin, with two teaspoonfuls of sugar, roll the lemon on a table with your hand so as to soften it, then cut the lemon in two, lengthways, squeeze the juice over the peel, stir all round with a spoon for a minute or two, pour two pints of water, mix well, pass through a colander or sieve, it is then ready.

Semi-Citric Lemonade, for 12 patients.

Put a quarter of an ounce of citric acid to dissolve in half a pint of water; peel 5 lemons thinly, and put the peel in a large vessel, with three-quarters of a pound of white sugar, broken up; roll each lemon on the table to soften it; cut each in two, and press out the juice in a colander or sieve, over the peel and sugar: then well macerate the same with a spoon; then pour half a pint of water through the colander, so as to extract all the juice; triturate the sugar, peel and juice for a minute with the spoon, so as to form a syrup, and extract the zests from the peel and the dissolved acid, and mix all well together; pour on 12 pints of water, stir well: it is then ready. A little ice in summer is a great addition.

Note.—If made in smaller quantities, reduce the proportions by one-half or one-fourth. It will keep good for several days in a cool place.

Tartaric Lemonade.

Dissolve a quarter of an ounce of crystallized tartaric acid in half a pint of water, which put into a large vessel; when dissolved, add 7 oz. of pounded white sugar; mix well to form a white syrup; add to it 6 pints of cold water, mixing slowly. It is then ready.

Note.—This lemonade, which has been submitted to eminent Medical officers at Scutari, has been approved of, when other

lemonades are not obtainable. It can be made for either the Hospitals or camps, and will be found to answer equally well for domestic consumption, if lemons are not to be obtained.

Lime Juice Lemonade.

Take 1 tablespoonful of lime juice, ditto of sugar, mix well to form a syrup, then pour over 2 pints of water and it is then ready.

Toast and Water.

Cut a piece of crusty bread about a quarter of a pound in weight; place it upon a toasting-fork, and hold it about six inches from the fire; turn it often, and keep moving it gently until it is of a light yellow colour, then place it nearer the fire, and, when of a good brown chocolate colour, put it into a jug, and pour over it 3 pints of boiling water; cover the jug until cold, then strain it into a clean jug, and it is ready for use.

Apple Toast and Water.

Bake a middle-sized apple, over which you have put a teaspoonful of brown sugar; when well done, and nice and brown, add in the toast and water. In an hour after it is ready for drinking.

The apple is good to eat, by the addition of a little more sugar.

Barley Water.

Put into a stewpan 7 pints of water and 2 oz. of barley, which stir occasionally while boiling; add 2 oz. of white sugar, the rind of half a lemon, thinly peeled; let all boil gently for about two hours, without covering; pass through a colander into a jug. It is then ready. The barley may be left in.

Note.—If the process of boiling is carried on too slowly, the barley water will turn reddish, which must be avoided, as it should be white.

Apple Barley Water.

Add to barley water half a pound of apples, cut in slices, with the skin on, removing only the pips; cut a lemon in

slices; boil gently till the apples are done; pass through a colander. This is a very refreshing beverage.

Arrowroot Water.

Put into a pan 3 oz. of arrowroot, 2 oz. of white sugar, the peel of half a lemon, one-fourth of a teaspoonful of salt, 4 pints of water; mix well; set on the fire; boil a few minutes. It is then ready for use either cold or warm.

Rice Water.

Put 7 pints of water to boil, add to it 2 oz. of washed rice, 2 oz. of sugar, the peel of two-thirds of a lemon, boil gently three-quarters of an hour, by which time it will be reduced to 5 pints; strain through a colander, it is then ready.

Note.—The rice may be left in the beverage, or made into a pudding; or by the addition of a little jam, or sugar, it will be found very good.

Citronade.

Put a gallon of water on to boil, cut up 1 lb. of apples, each into quarters, two lemons in thin slices, put them in boiling water, and boil until they can be pulped; pass the liquor through a colander; boil it up for a few minutes with half a pound of brown sugar; skim and bottle off, taking care not to cork the bottles, and keep it in a cool place.

For Spring Drink.

Rhubarb in the same quantities, and done in the same way as apples, adding more sugar.

For Summer Drink.

One pound of red currants, bruised with some raspberries, half a pound of sugar, added to a gallon of cold water, well stirred and allowed to settle, adding the juice of a lemon.

Mulberry.

The same, adding a little lemon peel.

French Beverages.

The following are some of the principal French tisannes and sweet beverages:

Tea of Violet Flowers.

Put into a teapot two teaspoonfuls of dry violet flowers, pour over them a pint of boiling water, let it stand a few minutes, pour into a cup, and sweeten with half a teaspoonful of honey.

Elder Flower Water.

Proceed as above, using elder flowers.

Lime Flower Water.

Put two pinches of lime flowers in a teapot, proceed and sweeten as above.

French Plum Water.

Boil 3 pints of water, add in 6 or 8 dried plums, previously split, 2 or 3 slices of lemon, a teaspoonful of honey or sugar, boiled half an hour.

For fig, date, and raisin water, proceed as above. For fig water, use 6 figs.

Effervescent Beverages.

Raspberry Water.

Put 2 tablespoonfuls of vinegar into a large glass; pour in half a pint of water, mix well.

Pine Apple Syrup.

Three tablespoonfuls to one pint.

Currant Syrup.

The same proportions.

Syrup of Orgeat.

Proceed the same. The orgeat to be obtained at a French confectioner, as well as the other syrups; this beverage, made

of almonds, is in daily consumption in the *cafés* of Paris, and is considered very cooling.

Camomile Water

May be made in the same way. Add a double quantity of sugar or honey.*

Dandelion Tea.

Put 1½ pints of water to boil, place one-eighth part of an ounce of the dandelion root in a teapot, give it a boil, sweeten as above, it is then ready.

NOTE.—For the above French beverages, sugar may be used instead of honey.

* This drink is seldom used in France.

Sanitary Notes on Encampments.

We have not yet spoken of one operative cause of such paramount importance in its effects on life and health that it is impossible to omit it in treating of Sanitary matters at all; and yet, because it involves a question purely military, it is difficult to approach it without impertinence.

The providential law may be stated thus: mortality, all other circumstances being the same, bears a proportion, within certain limits, to the number of persons placed together upon the same ground.

To illustrate:

The ratios of density of population are in—

Liverpool (Parish)	138
Manchester	109
London	50
Birmingham	40

these figures representing the number of inhabitants dwelling on equal spaces of ground.

Mortality increases in a corresponding ratio—

Deaths in the whole population annually.

	From Consumption.	From Fever.
Liverpool (Parish) ..	1 in 166	1 in 407
Manchester	1 in 172	1 in 498
London..	1 in 246	1 in 690
Birmingham	1 in 207	1 in 917

Inhabitants to the Square Mile.

	Built and Unbuilt Area.	Built Area.
London (Metropolis)	27,423	
Birmingham	33,669	
Manchester (Township)	83,224	
Liverpool (Parish) ..	100,809	138,224

	Annual Deaths.	Average Age at Death. Years.
London	1 in 37	26½
Birmingham ..	1 in 26	
Manchester (Union)	1 in 29	20
Liverpool (Parish) ..	1 in 28	17

The Quartermaster-General's regulations for Camping are purely of a military nature; and as a camp is nothing more nor less than a town without paving, they may be considered, for all practical purposes connected with the health of the inhabitants, about on a par with the instructions (if there were any) delivered by the Anglo-Saxon Quartermaster to his men when they took possession of England, and constructed those aggregations of villages and farm steadings which they dignified with the name of "Towns," and which for 1,000 years afterwards were the nurseries of plague, black death, sweating sickness, typhus, and lastly cholera.

The Saxon rule of castrametation was a very simple one. It consisted of one instruction, namely, "put as many huts on a given space as you can."

The modern Quartermaster repeats this very simple maxim, and adds a second, "make as good a front as you can." And, as there are troublesome laws of nature, called sanitary laws, he throws a sop to them, and having laid down certain conditions, which are essentially unhealthy, he recommends attention to salubrity.

Let us now see what he advises in the way of crowding.

He gives three methods for encamping a Battalion, 850 strong, in 60 tents.

No 1.

The ground occupied by these 60 tents is 210 yards long and 36 yards wide, or 7,560 square yards—so that the occupied and unoccupied area, appropriated to the tents of these 850 men, gives a density of population equal to 348,000 per square mile. But this is not the worst. The tents are arranged in two single lines and four double lines, each tent touching the other in the length. By this arrangement 170 men sleep in

an area of 504 square yards, so that the crowding on the inhabited area of the camp so arranged is in the ratio of 1,044,820 per square mile. It may be stated, as an illustration of the extent of this crowding, that London, if equally crowded, would hold on its built inhabited area 127,000,000 of people, or about four times the population of the three Kingdoms. If we compare the population placed on the whole 7,560 square yards (namely, the tent spaces and the ground between) with the population of London, on the built and unbuilt area, we find that, if London were equally crowded as is the camp of these 850 rank and file, it would hold 42,000,000 of people.

No. 2.

The title bestowed on this plan of entrenchment is an emphatic one. It is called "compressed," and so it is.

The 60 tents with their 850 occupants are arranged in ten *double* rows, three in a row. The density of population in the occupied area is in the ratio of 1,200,000 souls per square mile. The density on the whole area occupied and intervening is enormous. There are 850 men on 3,960 square yards (220×18), which gives 664,000 to the square mile. A similar density over the built and unbuilt area of the metropolis would enable it to hold 81,000,000 of people.

No. 3.

In this plan the 60 tents are arranged in ten parallel rows, six tents in a row, with about 18 yards between the rows.

The space actually occupied is about 210×36 yards=7,560 square yards, on which 850 men are located. This gives a density of 347,000 to the square mile. The density in each row of tents is nearly the same as in No. 1. If the built and unbuilt area of London were similarly occupied, it would contain 42,000,000 of people.*

* The number of square miles within the area of the metropolis is 121·92.

Square Miles.	Persons.	Square Miles.	Persons.
Then as 1	347,000	121·92	42,000,000

The densities in all the Cavalry plans given are very much less, because the tents are spread to suit the picketted horses, which are placed among the tents, between the lines; a very bad arrangement, if it could be avoided.

The following are the populations of some Districts of great density, in comparison with the Infantry Camp plans:

Inhabitants per Square Mile.

	Occupied and Unoccupied Area.	Occupied Area and Streets.
The most dense district in England, viz., East London		175,816
London generally		17,678
Quartermaster-General's Plans for Encampments.*		
No. 3	347,000	1,044,820
No. 1	348,000	
No. 2	664,000	1,220,000

	Density. Square Yards to a Person.	Proximity or Mean Distance from Person to Person, including the space occupied by the body. Yards.
Quartermaster-General's Plans for Encampments.		
No. 3 Occupied and unoccupied area	8·9	3·2
No. 2 ditto	4·7	2·3
Nos. 1, 2, 3. Occupied area ..	3·0	1·9
The most dense district in England, viz., East London, built area and streets	17·6	4·5
London	100·0	14·2

N.B.—There were densities in Camps in the Crimea *greater* than any of these.

Two Regiments, belonging to our German Legion, have been

* *Vide* Quartermaster-General's Regulations for Encampments, Horse Guards, 11 May, 1853.

and encamped, side by side, on the Bosphorus, (in a friendly country),—the one, in close order, suffered from Zymotic Disease—the other, encamped in open order, had only three cases of disease at the same time. A Regiment in the Crimea, encamped on the finest ground we had, suffered severely from cholera—the operative cause being the density upon the ground.

It is also to be observed that, with the tents placed in double lines, back to back, as in the Quartermaster-General's plan No. 1, it is absolutely impossible, in cleaning out the tents, for the men of one tent to avoid quarrelling with those of another, because they can hardly help throwing the dirt out of one tent into another. This plan is therefore unfavourable to discipline.

It is hoped that, in offering these remarks, one shall hardly be suspected of such a preposterous thing as that of presuming to interfere with Military necessities; or of not knowing that there are circumstances, nature of ground, &c., where all other dangers must yield in importance to danger from the enemy.

The only object sought for here has been to point out a great and invariable law of nature, in the most unpretending and practical manner.

It would appear as if the following conclusions might flow from the above. But, in order to give all the details necessary, a short Manual on the subject of Encampment would have to be drawn up, by competent persons.

The well-known fact, referred to, that, other things being equal, towns or parts of towns are unhealthy in the ratio of the number of inhabitants upon a given area, cannot be put aside.

The more crowded the area, the higher is the ratio of sickness and mortality.

The diseases incident to overcrowding are Zymotics, especially Fever; also Consumption.

The Quartermaster-General's plans are defective, because the tents touch each other; and those of the Infantry Regiments give a degree of overcrowding in the Companies greater than exists in the most overcrowded parts of towns.

A double Company, arranged according to the plan for Infantry Encampment, viz., 12 tents on two rows, with 15 men to a tent, gives a population of 1,044,820 to the square mile.

The population of London is less than a twentieth part of this density.

The existing "Quartermaster-General's Regulations" do not admit of improvement.

The Sanitary points, requiring discussion, would be much better treated in detail, as has been said, in a Manual.

Suggestions.

1. When an Army takes the field, a Sanitary Officer should be attached to the Quartermaster-General's Department, who shall give advice on all subjects connected with the health of the Camp, and who for this purpose shall be consulted by the Quartermaster-General.

2. Before a Regiment or Detachment is encamped, the Medical Officer in charge shall be consulted as to the selection of the ground.

3. The following are among the chief Sanitary points requiring attention:—

(*a*). Sufficient labour should be set apart for the daily cleansing of the camp, and for removing the refuse to a distance.

(*b*). Latrines should be placed at a sufficient distance from the nearest tent or hut, and always to leeward of the prevalent wind.

(*c*). Slaughtering-places should be established in a similar position.

(*d*). Suitable Kitchens should be constructed in a convenient position.

(*e*). The ground should be always surface-drained, and, if on a slope, the drainage from the high ground behind should be cut off.

(*f*). Tents should never be placed close together; but should always have a space between them, to allow of a free circulation of air; the larger the space over which a camp can be spread, the more healthy it will be.

(*g*). All towns and buildings occupied during war, either for Quarters or Hospitals, should be carefully inspected by the Sanitary Officer, and measures taken for placing them in a good sanitary condition, before they are occupied. Precautions should also be taken, by cleansing, draining, sewering, &c., to preserve occupied towns, after occupation, in a healthy condition.

(*h*). In erecting huts, in camp, the ground should be levelled

and drained, to the depth of at least a foot, round the site to be occupied. No earth should ever be heaped against the sides of the hut.

(*i*). Large ventilators should be placed in the ridge of each hut.

The subjects discussed in the preceding pages have been dealt with, as required by Lord Panmure's instructions, with special reference to the experience obtained during the Crimean war. While the sheets were passing through the press, those lamentable occurrences took place in India which have led to an universal conviction that this vast empire must henceforth be held by British troops. If we were to be led by past experience of the presumed effect of Indian climates on European constitutions, our country might almost despair of being able to supply men enough for the military occupation of so vast a region. The art of preserving health has hitherto made but small progress in our Eastern possessions. The British race has carried with it into those regions of the sun its habits, its customs, and its vices, without considering that there are penalties exacted by nature in her tropical dominions from those who neglect or transgress her laws far more severe than in the more temperate climates of our own country. Under a low temperature man may do with impunity what under a higher one is death. Our vast Eastern empire consists of many zones, of many regions, of many climates. Its plains, rivers, deltas, table lands, its sub-alpine districts, and regions of eternal snow present, perhaps, all the climates of the earth; and on the mere question of climate it is surely within human possibility so to select and arrange military stations and service that at all ordinary times our troops may have the opportunity of recruiting their health and strength, to a considerable degree at least, without interfering materially with military service. Might it not be possible, even in the great majority of instances, so to arrange the stations, and so to connect them, by railroads and telegraphs, that the troops would

hardly be required to occupy unhealthy districts? Even with regard to such districts the question arises to what extent the unhealthiness is inevitable, and to what extent it would be remediable. There have been and there are eminent men in the Indian service who entertain no doubt as to the practicability of introducing sanitary reform into almost every barrack and cantonment in the East. Considerable progress has indeed been made in this very matter within the last half century; and there can be little doubt but that, aided by the clearer light of modern discovery and especially by the complete experience of the Crimean war, a great deal may be done to diminish the disease and mortality in a large army of occupation by which we must hereafter hold our Indian Empire.

The subject is one which, it cannot be doubted, will receive the immediate attention of Her Majesty's Government.

As an illustration of the necessity of Government interference in the matter, it may be stated, on the very first authority, that, after a campaign, perhaps one of the most arduous and successful on record, and when the smallness of the British force, and the season of the year required every sanitary precaution to be taken for the preservation of the force, a certain earnest, energetic Officer appointed a Sanitary Inspector to attend to the cleansing of a captured city, and to the burial of some thousand dead bodies of men, horses, asses, bullocks, camels and elephants, which were poisoning the air. The Bombay Government, to which the appointment was referred, "would not sanction it," "*because there was no precedent for it.*"

In future, it ought to be the duty of the Indian Government to require no "precedents" for such procedure. The observance of sanitary laws should be as much part of

the future régime of India as the holding of Military positions or as Civil government itself. It would be a noble beginning of the new order of things to use hygiene as the handmaid of civilization.

BIBLIOTHÈQUE
PALAIS-COMPIÈGNE

NOTES ON
THE HEALTH &c.
OF THE
BRITISH ARMY

N°
329