

## **Manual for the Medical Staff Corps**

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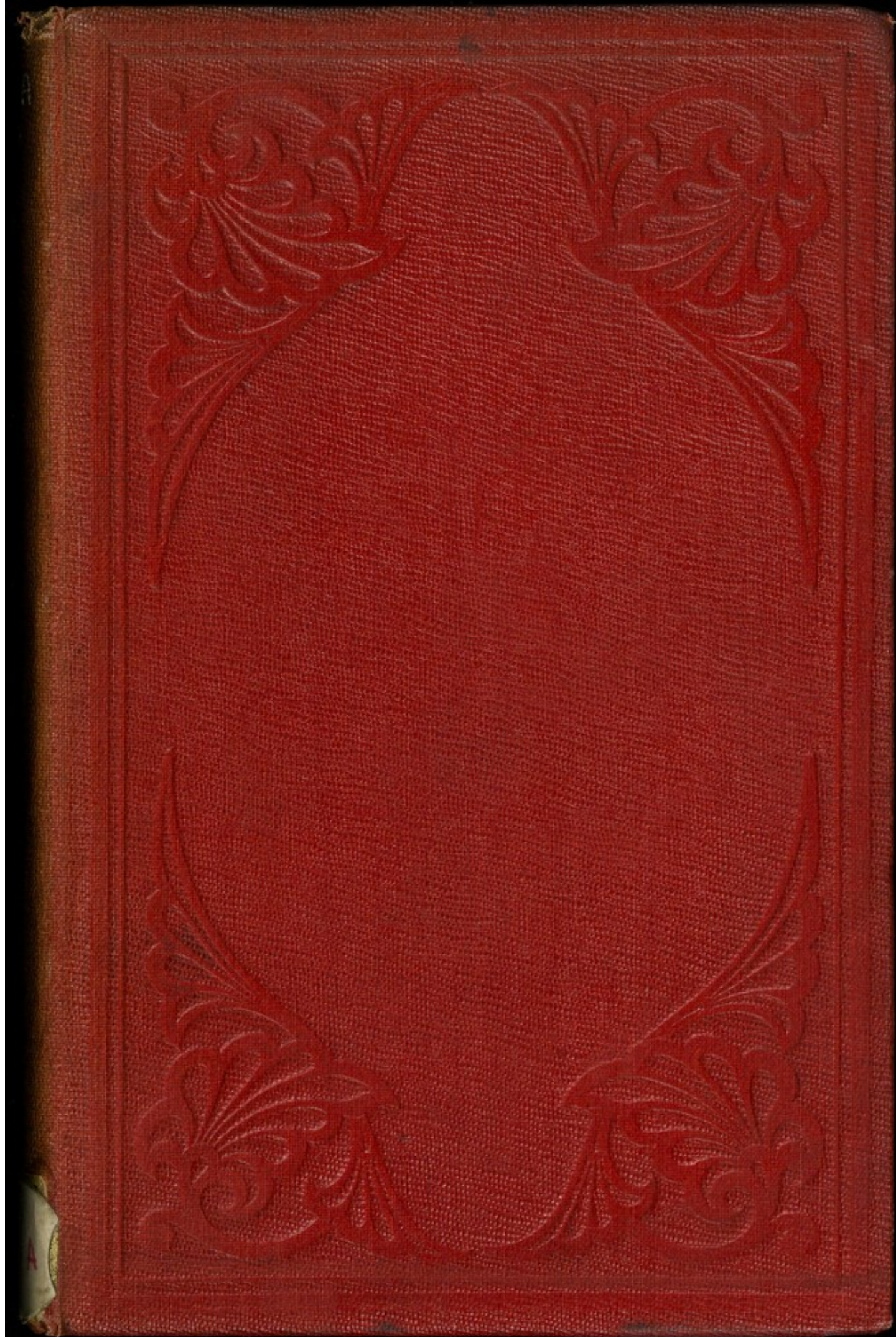
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MEDICAL STAFF CORPS.

WAR OFFICE, 1885.



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# MANUAL FOR THE MEDICAL STAFF CORPS.

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## PART I.

### REGULATIONS FOR THE MEDICAL STAFF CORPS.

*[The following (pages 1 to 33) is reprinted from Part I, Section IV, and from Appendix III, "Regulations for the Medical Department, 1885," Army Regulations, Vol. VI, as specially applying to the Medical Staff Corps.]*

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## THE MEDICAL STAFF CORPS.

- I.—General Regulations.
- II.—Staff Officer.
- III.—Paymaster.
- IV.—Depot and Training School.
- V.—Serjeants-Major.
- VI.—Duties of Wardmasters and Assistant Wardmasters.
- VII.—Duties of Stewards.
- VIII.— „ Compounders of Medicines.
- IX.— „ Pack Storekeepers.
- X.— „ Cooks.
- XI.— „ Orderlies.

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### I.—GENERAL REGULATIONS.

1. (260.) The Medical Staff Corps is organized for duties in connection with the hospital service of the army, and is an integral part of the Medical Department.

2. (261.) In accordance with Art. 307a of the Royal Warrant relating to Pay, &c., as amended in Clause 182,

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N.B.—The cross references in this Part to paragraphs and appendices are to the Medical Regulations.



## Part I.

## The Medical Staff Corps.

Army Circulars 1884, "The officers of the Medical Staff shall be the officers of, and shall command the Medical Staff Corps, as well as all patients in military hospitals, and such officers, non-commissioned officers, and men as may be attached for duty to the Medical Staff Corps, but they shall not hold any military command outside the corps."

3. (262.) The corps is divided for administrative purposes at home into divisions corresponding with the districts held by Principal Medical Officers; men of the corps on foreign service are treated as in detachments.

4. (263.) The Principal Medical Officer, subject to the General Officer Commanding the district or command, has supreme authority in matters of discipline affecting the Medical Staff Corps in his district.

5. (264.) The ranks of the corps are filled by recruits enlisted direct for the corps, or by non-commissioned officers and soldiers who volunteer from the ranks of the army; such volunteers undergo a period of three months' probation.

6. (265.) All appointments to the rank of Quartermaster Medical Staff are made by selection from the warrant officers of the corps, except under special circumstances.

7. (266.) Before a first-class staff-serjeant can be promoted to warrant rank, an examination in the following subjects must have been satisfactorily undergone, viz. :—

- (a) The duties of quartermasters in districts and in general, station, and field hospitals.
- (b) Duties in connection with bearer companies and ambulances.
- (c) Drill, written and practical, including bearer-company and stretcher drill.
- (d) Interior economy—clothing, equipment, and payment of the men.
- (e) Conduct of general medical stores, and charge of medicines and instruments in possession.

8. (267.) All recommendations for promotion of privates to the rank of non-commissioned officer, or of non-commissioned officers to a higher grade, will be submitted to the Director-General through the Principal Medical Officer of the district in which the men are serving. Such recommendations will be made on the prescribed form in the Monthly State (Army Form B 95), and all first recommendations will be accompanied by a letter stating fully the reasons for considering a man fit for and deserving of promotion. A private to be eligible for promotion, or a non-commissioned officer for further advancement



must have been 12 months clear of an entry in the regimental, and 6 months clear of an entry in the company defaulter book. No private will be eligible for promotion unless 2 years have elapsed from date of conviction, or expiration of sentence awarded by Court-Martial.

9. (268.) The following general rules will govern promotion in the corps :—

(1.) A private is not eligible for promotion to any non-commissioned grade unless—

- (a) He is in possession of a second-class certificate of education.
- (b) He has passed through a class of instruction in the training school at the depôt of the corps.
- (c) He is certified by the medical officer to be able to instruct a squad in stretcher drill.
- (d) He has passed a satisfactory written examination on the following subjects :—

The human body, including the names, positions, &c., of the principal arteries, and the mode of arresting hæmorrhage.

The mode of carrying wounded men off the field, especially with reference to the nature and position of wounds or injuries from which the men may be suffering.

The application of fomentations, poultices, plasters, blisters, leeches, injections, liniments, &c.

The mode of making and applying bandages, minor dressings, trusses, and lining splints.

The management of helpless patients with reference to moving, changing, cleaning, feeding, and administration of medicines.

The names, uses, and appearances of the various surgical instruments and appliances in general use.

The mode of resuscitating a person rescued from drowning.

The best mode of cleaning windows, ward floors, hospital furniture, and utensils.

The use and mode of observing and noting the range of meteorological instruments, but more particularly the thermometer, as used for testing the temperature of baths, wards, &c.

The method of regulating the ventilation of wards and the object of such ventilation.

The observation of the sick as regards appetite, intelligence, breathing, sleep, secretions, ex-



## Part I.

## The Medical Staff Corps.

pectoration, pulse, skin, state of wounds, eruptions, &c., with a view of testing his ability to give an intelligible account of a patient's condition between the visits of the medical officer.

The use, when practicable, of ambulances, and of medical field equipments.

His knowledge of cooking and of the preparation of the various forms of drinks commonly used in military hospitals will also be ascertained and reported upon.

(2.) A corporal is not eligible for any higher promotion until he has passed as a compounder of medicines.

(3.) In special and exceptional circumstances the above rules may be departed from in the case of non-commissioned officers or men who specially distinguish themselves, or who display exceptional proficiency as cooks, clerks, or drill instructors, provided no promotion they receive be above the rank of serjeant.

(4.) A non-commissioned officer is not eligible for promotion to warrant rank until he has passed the examination laid down in paragraph 266 of these Regulations, which examination will not take place before he has attained the rank of first-class staff-serjeant.

(5.) Medical officers will be careful to avoid recommending non-commissioned officers or privates for promotion who have not complied with the above Regulations.

10. (269.) All recommendations for the advancement of privates to the 1st and 2nd Class will be made by the medical officer under whom they are serving to the Principal Medical Officer of a district or command, who, if he concurs in the advancement, will submit the names to the Director-General for his sanction for the issue of the higher rate of departmental pay.

## II.—STAFF OFFICER, MEDICAL STAFF CORPS.

11. (270.) The Headquarters of the Corps will be at the office of the Director-General of the Medical Staff.

12. (271.) In accordance with Article 307*b* of the Royal Warrant relating to Pay, &c., as amended in Clause 182, Army Circulars, 1884, "An Officer of the Medical Staff, selected by the Director-General and approved by Our Commander-in-Chief, shall be appointed Staff Officer of the Medical Staff Corps;" he will be stationed at the office of the Director-General.

13. (272.) He will carry out the arrangement, distribution of and promotion in the corps under the orders of



## The Medical Staff Corps.

## Part I.

the Director-General, and will perform all such duties in connection with the corps as are necessarily required at headquarters.

14. (273.) Quartermasters of the Medical Staff, and warrant officers, non-commissioned officers, and privates of the Medical Staff Corps, will be detailed by him for districts and stations under orders from the Director-General.

15. (274.) The records of the entire corps, including those of the Reserve, will be kept by him at the office of the Director-General.

16. (275.) He will be furnished with certified extracts on Army Form A 10 of the proceedings of general and district courts-martial held on men of the corps at the several stations, also of field, general, and summary courts-martial on active service; and with the originals (Army Form B 297) of regimental courts-martial. The officer in command of the detachment will be held responsible for the transmission of these documents to the headquarters of the corps.

17. (276.) He will have command of the 1st Class Army Reserve of the Medical Staff Corps, as regards absence, discharge, and for all purposes of medical inspection, training, and mobilization.

18. (277.) In accordance with Section XXII, paragraph 1, Queen's Regulations and Orders for the Army, 1883, the following books will be kept by him at headquarters of the corps :—

- Permanent order book (A.B. 82).
- Record of quartermaster's services (A.B. 83).
- Portfolios of original attestations (A.B. 234).
- Casualty book (A.B. 156).
- Register of furloughs (A.B. 86).
- Register of marriages and baptisms (A.B. 91).
- Register of certificates of education (A.B. 13).
- Seniority rolls of warrant and non-commissioned officers, and of privates qualified for promotion.
- Register of Privates classified as 1st and 2nd class orderlies.
- Nominal and descriptive list of men transferred to Army Reserve (A.B. 249).
- General defaulters' books (special).

### III.—PAYMASTER.

19. (278.) The Paymaster of the corps is an officer of the Army Pay Department; all advances of cash to quarter-



## Part I.

## The Medical Staff Corps.

masters charged with the payment of the divisions in districts at home are made by him ; and all accounts connected with the payment of the corps serving at home pass through his hands.

20. (279.) The quartermasters charged with the payment of divisions in districts at home are sub-accountants to him.

21. (280.) He also pays men of the corps who have been passed into the Army Reserve, and he will be responsible for the payment of the 1st Class Army Reserve of the Medical Staff Corps irrespective of the district in which they may be residing.

## IV.—DEPOT AND TRAINING SCHOOL.

22. (281.) The Depot and Training School of the corps is at Aldershot, and is under the immediate command of a Medical Officer, appointed specially by the Director-General. The medical officers performing the duties of Instructor and Assistant-Instructor, as well as the warrant and non-commissioned officers and men employed in the training school, form part of the depot.

23. (282.) Attached to the depot there are also three Quartermasters, one to act as adjutant, one to act as quartermaster, and one for pay duties.

24. (283.) For the purposes of discipline, the depot and training school is divided into two companies, each under the command of a medical officer.

25. (284.) All recruits posted to the corps will, in the first instance, join the depot, and be put through a course of recruit drill. Transfers to the corps from other regiments will not be put through a course of recruit drill.

26. (285.) Recruits on being dismissed from drill, and transfers on joining, will be placed at the disposal of the medical officer performing the duties of Instructor, for the purpose of going through a course of professional instruction, and of stretcher and bearer-column drill. They will not be removed from the depot, or employed in any hospital duty during this course of training. Before being detailed as hospital orderlies, recruits and transfers will be sent to a station hospital for instruction in attendance on the sick, and in general ward duties.

27. (286.) When a class of instruction is dismissed, the officer commanding will be responsible that an entry is made in the pocket ledger of each man who has passed a satisfactory examination, to the effect that he has gone



through a course of instruction in "stretcher and ambulance drill, and field dressing;" and will also similarly record in the copy attestation, "Passed class of Instruction, Training School, Medical Staff Corps, Aldershot." He will certify to the headquarters of the corps that this has been done.

28. (287.) The officer commanding will render to headquarters, through the Principal Medical Officer, Aldershot, a "Weekly Return of Arrivals and Departures," as well as a nominal roll of trained non-commissioned officers and men present with, and supernumerary to, the fixed establishment of the depôt.

29. (288.) Warrant officers, non-commissioned officers, and men required for service abroad will, under orders from headquarters in all practicable cases, be assembled at the depôt, at Aldershot, from out-stations prior to embarkation, in order that they may be clothed, equipped, and settled with according to regulation. They will be supplied with sea kits, and, if proceeding on Indian troop-ing service, will also receive the duck clothing issued under paragraph 396 of the Clothing Regulations.

30. (289.) When details of the corps are ordered to proceed from out-stations to Aldershot, to prepare for foreign service, they will be medically inspected as to their fitness for such service, and men found unfit will be detained at their stations, and a report of the circumstance immediately forwarded to headquarters.

31. (290.) The non-commissioned officers and men on the establishment of the depôt and training school will not be transferred to other stations, or for duty in the station hospitals of the Aldershot division, without the special sanction of the Director-General.

32. (291.) The Principal Medical Officer at Aldershot will frequently visit, and make a minute half-yearly inspection and report on the depôt and training school.

33. (292.) The officer in command will be the Accounting Officer for all clothing and equipment of the Medical Staff Corps of the 1st division at Aldershot, as well as of the men of the depôt; and also for all stores and equipment held for instructional and other purposes connected with the depôt and training school; the former will be accounted for in the Equipment Ledger (Army Book 239), and the latter in the Ledger, Army Book 248, which will be rendered for examination to the Surveyor-General of the Ordnance, War Office.



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34. (293.) Serjeants-Major are Warrant Officers promoted by selection from the ranks of the duly qualified staff serjeants of the corps.

35. (294.) They will act when required to do so as quartermasters, and will be guided in such duties by the regulations laid down for these officers.

36. (295.) They will act in the capacity of chief wardmasters in general, station, and field hospitals, and in hospital ships.

37. (296.) They will also perform such duties as may be required of them at headquarters of the corps, in districts and commands, and when attached to bearer companies and hospitals in the field.

**VI.—DUTIES OF WARDMASTERS AND ASSISTANT WARDMASTERS.**

38. (297.) The warrant or non-commissioned officer performing the duties of Wardmaster or Assistant Wardmaster will be responsible to, and act under the orders of the medical officer in charge; he will also carry out the instructions of the prescribing medical officers, relative to the sick in the wards, and will in the performance of his duty exercise patience, gentleness, and at the same time firmness, in dealing with patients, and see that the orderlies act in a similar manner.

39. (298.) In large hospitals the chief wardmaster will invariably be the senior warrant or non-commissioned officer employed in the hospital, and in the absence of a quartermaster will be responsible to the medical officer for the order and discipline of the whole hospital establishment, including both patients and attendants, and will exercise supervision over the duties of the steward, cook, pack-storekeeper, and compounder.

40. (299.) The assistant wardmaster will be responsible under the chief wardmaster for the maintenance of discipline among the patients and orderlies of the Medical Staff Corps, or of other corps doing duty in the wards under his charge.

41. (300.) In hospitals where a lady superintendent or acting superintendent and nursing sisters are employed, he will in no way be relieved of full responsibility for discipline, but will be careful not to interfere with the duties assigned to the superintendent, or with the orders she may give to the nurses; he will see that the orderlies



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give ready and efficient assistance to the nursing sisters in all matters connected with the attendance on the sick and the carrying out of ward duties.

42. (301.) The duties of the Wardmaster will be performed with the utmost punctuality, and in accordance with the following instructions:—

- (a) He will see that the passages and wards are swept and dry rubbed, and that the furniture and utensils are thoroughly cleaned every day, that ventilation, as directed by the medical officer, is properly maintained, and that the lighting and warming of the wards are attended to. The floors of wards will never be washed while occupied, except under orders from the medical officer.
- (b) He will be responsible for the cleanliness and proper use of all waterclosets, bath and ablution rooms.
- (c) He will see that all duties in the hospital are performed with the least possible noise, especially at night.
- (d) He will see that every patient who is allowed to be up rises at the regulated hour, is properly washed, shaved, and dressed, and that the bedding is freely exposed to the air at least for one hour before the bed is re-made.
- (e) He will go round the wards at breakfast, dinner, and tea, and see that the meals are served with regularity, that the patients conduct themselves in an orderly manner, and that the utensils are washed and put away after each meal.
- (f) He will see that the orderlies are careful and regular in the discharge of their duties, that they are cleanly in their persons, punctual in attendance, kind and gentle to the sick, and especially so to those seriously ill.
- (g) He will see that every patient is in his proper place previous to the morning visit of the medical officers.
- (h) He will accompany the medical officer in his visits round the wards, and carefully note his instructions and orders.
- (i) He will, when ordered to do so, perform all clerical duties required by the medical officer; in the larger hospitals the assistant wardmaster, or a specially appointed clerk, will perform such duties.
- (j) When men are admitted to hospital he will see



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that they are washed, that their kits are handed over to the pack storekeeper, and that they are supplied with hospital clothing and necessaries to be obtained from the steward's store on requisition (Army Book 42). A list of these articles will be found in the Appendix, No. 11.

(k) He will be responsible that all moneys, medals, or trinkets which may be in the possession of a patient on admission, or which may be at any time afterwards received for the use of a patient in hospital, are handed over in the presence of the patient to the quartermaster, or (in his absence) to the steward, who will give a receipt in duplicate for the articles so delivered; one copy of the receipt will be handed to the patient, and the other forwarded to the man's immediate commanding officer.

(l) He will receive from the steward the wines, spirits, or malt liquor ordered for the patients, and be responsible for the correct distribution of these extras in accordance with the orders of the medical officers.

(m) He will be responsible for the administration at the proper intervals of the medicines ordered, and will carry out the instructions of the medical officers with regard to such minor dressings as may be delegated to him.

(n) He will accompany through the wards any military officer authorized to visit the hospital.

(o) He will be careful to note the religious persuasion of every patient on the diet sheet.

(p) When men are discharged from hospital he will parade them at the proper hour, and see that their kits, moneys, medals, &c., are correctly delivered over to them; he will then hand the men over to the non-commissioned officer whose duty it is to march them to barracks.

(q) He will see that every patient is supplied with a clean shirt and a clean pair of socks twice a week, or oftener if necessary, and with clean sheets once a week or more frequently if necessary; also that non-commissioned officers while patients in hospital wear chevrons denoting their rank; when confined to bed the chevrons will be placed over the bed head ticket of the patient.

(r) He will see that every patient is in bed by 9 o'clock



p.m. in winter and 10 o'clock p.m. in summer, and that no conversation is permitted after these hours. He will see that lights are put out, or gas lowered at the proper time; and will make his report according to instructions received to the quartermaster (if living within the hospital) or to the orderly or other medical officer.

(s) When any case of a serious nature, requiring urgent attendance, is in hospital, he will be careful to visit such patient at intervals, to see that he is being properly cared for, and that nourishment and medicine are administered according to the instructions of the medical officer.

(t) When a death takes place he will report it to the medical officer in charge as soon as possible, take the necessary steps for the removal of the body to the dead-house, and be responsible for its being placed there with the utmost decorum and propriety.

(v) He will not leave the hospital without formally placing some one in charge of his duties.

43. (302.) When men are admitted into hospital he will under instructions from the medical officer in charge, at once enter their names and particulars from the company sick reports into the admission and discharge book (Army Book 27), and at the same time will fill in the headings of the diet sheets (Army Form I 1202). In large hospitals the assistant wardmaster will perform this duty.

44. (303.) He will immediately after the daily diets and extras are entered on the diet sheets by the medical officer transmit them to the steward, who will return them to him along with a copy of the provision ticket (Army Form I 1218); from the latter he will enter an abstract of the diets and extras on Army Form F 739, and submit it for the daily signature of the medical officer; this is the only dieting form prepared by the wardmaster, and is forwarded to the Commissariat along with Army Form F 738.

45. (304.) He will prepare, initial, and submit for the signature of the medical officer in charge, the monthly account of stoppages (Army Form O 1643) for each corps in hospital, according to instructions laid down in paragraphs 516 to 521 of these regulations.

46. (305.) He will when there is no quartermaster attached to the hospital make out the monthly return of detachment, Medical Staff Corps (Army Form B 62), and monthly state of detachment (Army Form B 95).



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47. (306.) He will be responsible for the proper care of the hospital equipment and books of the wards in his charge, and will, by daily inspection, ascertain that no damage is done thereto.

48. (307.) He will immediately report to the quartermaster, or in his absence to the steward, all damages and deficiencies in wards chargeable against patients, orderlies, or others, in order that the same may be entered and recovered by means of the personal charge book (Army Book 51) according to instructions contained in paragraphs 197 and 198 of these regulations. (See Appendix No. 70.)

49. (308.) He will have charge of books issued to patients from hospital or garrison libraries, and will prevent any improper use of them; all damages to them he will at once notify to the quartermaster, or to the steward, in order that the amount may be assessed and recovered by means of the personal charge book, as laid down in paragraphs 222 to 226 of these regulations.

50. (309.) He will submit all applications from patients for stamps and writing material to the medical officer in charge of the ward, who will exercise his discretion in authorising the issue of the same; requisitions for these articles will be made on Army Book 30.

51. (310.) He will be responsible that no money, articles of diets or extras, books, tracts, pictures, or unauthorised articles of equipment are introduced into the wards without the previous sanction of the medical officer in charge.

## VII.—DUTIES OF STEWARDS.

52. (311.) The Steward in every general, station, and other hospital will perform his duties under the orders of, and be responsible to, the medical officer in charge; and when a quartermaster is attached will act immediately under that officer.

53. (312.) He will, in hospitals where no quartermaster is attached, be responsible to the medical officer in charge for the custody and care of the hospital buildings, out-offices, libraries, and enclosures; and for the furniture, equipment, and stores of all kinds received over from the Commissariat, as laid down in paragraphs 479 to 486 of these regulations.

54. (313.) He will, in hospitals where no quartermaster is attached, carry out all duties belonging to the steward's branch as laid down for quartermasters in Part I, Section III, of these regulations, and will prepare and initial requisitions and returns, submitting them for the approval and signature of the medical officer in charge.



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55. (314.) He will prepare and sign requisitions for current hospital supplies on the Commissariat or on contractors.

56. (315.) He will be responsible for, and have charge of provision, wine, and beer stores of the hospital, and of all hospital bedding, clothing, and other stores not actually in use in the wards or other parts of the hospital under charge of the wardmaster, or compounder.

57. (316.) He will be responsible that the provision store is kept well supplied with everything required for the sick, and he will, with this end in view, prepare in proper time requisitions upon the contractors for such supplies; but he will be careful to prevent undue accumulation of any articles in store.

58. (317.) When supplies of any kind are delivered, he will sign on the back of the requisition in acknowledgment of their receipt. Without such acknowledgment the requisition will not be accepted as a voucher in support of the contractor's account. Full signature, with rank and designation, will invariably be attached to requisitions, receipts, and counterfoils.

59. (318.) He will examine, upon receipt into store, all articles of diet and extras, and should he find anything deficient or not equal to contract sample, will at once bring it to the notice of the quartermaster if present, or to the medical officer in charge. In no case will the quality of supplies be dealt with otherwise than by the medical officer.

60. (319.) He will keep the provision store account on Army Form F 735, in which the number and description of all diets, extras, and all issues made, must be carefully entered from day to day, to enable the state of the provision account to be inspected, and its correctness ascertained at any moment; on this form he will also keep a daily record of the number and description of diets and extras issued to each ward. The form will be filed in the hospital as an office record, to be produced at inspections.

61. (320.) On the last day of each month, or more frequently if required, he will in the absence of a quartermaster prepare and sign the statement on Army Form F 738, of all provisions received, issued, and remaining during the period, for countersignature of and transmission along with Army Form F 739, through the medical officer, to the Commissariat.

62. (321.) He will prepare Army Form I 1218 in duplicate from the daily diet sheets (Army Form I 1202) sent to him by the wardmaster, and will give one copy to the



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cook, to enable him to regulate the diets for the respective wards, and the other copy to the wardmaster, to enable the latter to prepare Army Form F 739.

63. (322.) He will issue daily to the cook all articles of diet for the hospital, at such times as may be fixed by the medical officer in charge; and will issue the extras, without delay, to the wardmasters on receipt of the diet sheets.

64. (323.) He will be present in the kitchen at the issuing of the meals, and will see that they are properly prepared, and punctually and correctly served, and distributed to the various wards at the prescribed time.

65. (324.) He will see that the cooking utensils are kept clean and used only for the purposes for which they are provided; that no waste or slovenliness is permitted, and that the fires are extinguished every evening at 9 o'clock, unless specially required after that hour.

66. (325.) He will keep an account of all issues to wards and offices of soap, soda, &c., for cleaning purposes, and will bring to notice any large or unusual demand for such articles, the issues of which will be made in accordance with the authorised scale.

67. (326.) He will be guided wholly by the orders of the medical officer in charge as to the arrangement and issue of stores; and it will be his duty to treat all persons delivering or drawing stores with civility and courtesy.

68. (327.) It will be his duty to see that the provisions and medical comforts and other articles in the store are carefully kept; that the supplies first received are all expended before any subsequent supplies are issued; that no loss takes place from neglect or carelessness on the part of the issuers employed in the store, and that the store and its appurtenances are kept clean and in good order; also that all weights and measures are correct in every respect.

69. (328.) He will not allow smoking in the store, or any slovenliness or irregularity on the part of issuers or others.

70. (329.) He will prepare the return of fuel and light (Army Form F 725) and be responsible for the custody and correct issue of the same; he will also keep an account of the receipt and distribution of such supplies.

71. (330.) He will frequently inspect the hospital out-buildings, grounds, &c., taking care that any defect or damage discovered is brought at once to the notice of the quartermaster if present, otherwise to the medical officer in charge.



72. (331.) He will have charge of the bedding and linen store, and will carefully inspect all bedding and clothing brought for exchange. If any article be found injured or stained apparently in consequence of neglect he will draw the attention of the person delivering the same to the fact, and will thereupon mark and lay it aside for the inspection of the quartermaster if present, or of the medical officer in charge, with a view to the amount of damage being assessed; but if the article forms part of a personal equipment, steps will at once be taken to investigate the case for the purpose of preferring a personal charge if necessary. He will also be careful that personal linen is properly aired before it is issued to patients.

73. (332.) He will retain the personal charge book (Army Book 51) and be responsible that it is correctly kept, and that charges for damages and deficiencies are properly assessed and recovered agreeable to instructions laid down in these regulations. (See Appendix No. 70.)

74. (333.) He will be responsible in hospitals where no quartermaster is attached, that the messing book (Army Book 48) is kept up daily, and that all the messing accounts of detachments of the corps are duly settled as laid down in paragraph 217 of these regulations.

75. (334.) All transfers of custody of buildings, equipment, supplies, and stores between stewards will be witnessed either by a quartermaster or a medical officer.

#### VIII.—DUTIES OF COMPOUNDERS OF MEDICINES.

76. (335.) The Compounder of Medicines will be responsible to and perform his duties directly under the medical officer in charge of the hospital in which he is employed, but will also act under the instructions of the quartermaster when present.

77. (336.) Every facility will be given for the systematic training of eligible non-commissioned officers and men in the duty of compounding medicines, and full particulars regarding the progress made by those under instruction will be given in the monthly return of detachment (Army Form B 62).

78. (337.) No private will be eligible for examination as a compounder of medicines until he has obtained a second class certificate of education, and has passed the examination for the non-commissioned grade in the corps laid down in paragraph 268 of these regulations.

79. (338.) Non-commissioned officers or privates desirous



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of qualifying will undergo a course of training and instruction under the personal superintendence of the medical officer in charge, or of a medical officer deputed by him, and under a duly qualified compounder in the surgery of a hospital for at least six months in the following subjects:—

- (a) Familiarity with Latin names and words used in prescriptions, as well as of the printed labels used in a dispensary.
- (b) *Pharmacy*.—A knowledge of the various articles of *Materia Medica*, and preparations in the British Pharmacopœia.
- (c) *Drugs and pharmaceutical remedies*.—Appearances, taste, odour.
- (d) *Medicines containing active ingredients*.—Their composition, and exact quantities of the important ingredients.
- (e) *Poisons*.—Names, characters, dangerous doses, antidotes, and remedial measures to be adopted in cases of overdose.
- (f) *Infusions and decoctions*.—Preparation and preservation.
- (g) *Fomentations*.—Preparation and application.
- (h) *Extracts*.—Preservation and characters, when altered by age, climate, or neglect.
- (i) *Tinctures and liniments*.—Strengths, preparations, and compositions.
- (k) *Lotions and washes*.—Preparation and mode of application.
- (l) *Prescriptions*.—Reading, making up, labelling, and mode of administration of the remedies ordered.
- (m) *Chemical cabinet* (when available).—Contents, uses, and preservation. (Appendix No. 37.)
- (n) *Instruments, surgical and other appliances*.—Knowledge as to the names and proper care.
- (o) *Returns*.—The preparation of all returns, requisitions, and other documents required for the receipt, expenditure, and supply of surgical instruments, medical stores, medicines, &c.

80. (339.) When eligible and reported competent by the medical officer in charge of the hospital where they are serving, or where they have undergone training, the authority of the Director-General will be obtained for their examination by a board of medical officers.

81. (340.) The board will conduct the examination as follows:—

- (a) They will submit at least three questions to the candidate under each head, *seriatim*, as laid down



in paragraph 338 ; the questions will be in the handwriting of a member of the board, on one side of a folded sheet of paper, and the answers on the opposite side in the handwriting of the candidate, who will further sign his name at the bottom of each page.

- (b) They will frame the questions so as to test the candidate's knowledge of the uses and doses of medicines, and the composition and modes of preparation of the principal formulæ of the British Pharmacopœia.
- (c) They will practically test his acquaintance with the various drugs by his ability to recognise them, and by statements as to their peculiarities and the best modes of preserving them.
- (d) They will be particularly careful as to his thorough knowledge of the appearance and doses of all poisons, their actions and antidotes.
- (e) They will satisfy themselves of his aptitude in pharmacy and compounding, by making him read prescriptions and actually dispense them in their presence.
- (f) They will test practically his knowledge of the names, uses, and means of preservation of surgical instruments and appliances, of the contents and uses of the chemical cabinet, and also his capabilities in framing all returns and requisitions connected with medical and surgical stores.

82. (341.) The board will certify in their proceedings (Army Form A 2) that the examination has been fully conducted according to the foregoing instructions, and will state their opinion of the candidate's fitness for the duties of a compounder of medicines. The proceedings will then be forwarded through the Principal Medical Officer, who will signify whether he concurs in the opinion of the board, to the Director-General, whose approval must be recorded before any non-commissioned officer is considered qualified.

83. (342.) Candidates who fail in any particular branch of the examination may be remanded for further study and re-examination in that branch only ; but candidates who fail generally will not be eligible for re-examination under three months.

84. (343.) The compounder will, when duly qualified and appointed, be responsible to the medical officer in charge for all medical stores, surgical instruments, and other appliances entrusted to his custody.

85. (344.) He will be charged with the care of the surgery



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and its contents, the methodical arrangement of all drugs and their economical use, the safe and proper custody of the poisons (always under lock and key, see paragraph 900 of these regulations), the cleanliness of the surgery and all utensils, and the regularity and punctuality of all details in the issue of medicines.

86. (345.) He will himself dispense all prescriptions, and under no pretence will any delegation to another of such an important duty be tolerated; if at any time he is in doubt as to the nature of prescriptions, he will before dispensing them immediately refer for instructions to the nearest medical officer; he will copy into a book (Army Book 39) all prescriptions received from outside the hospital, and will keep the originals filed ready for inspection.

87. (346.) He will, under the personal supervision of the medical officer in charge, keep and prepare all returns and forms required for the receipt, expenditure, supply of medical stores, surgical instruments, appliances, and medicines, initialed by himself, or by the quartermaster if present, for the signature of the medical officer in charge.

88. (347.) The foregoing regulations, from paragraphs 338 to 342, also apply to non-commissioned officers and privates of other corps and departments desirous of qualifying as compounders of medicine.

**IX.—THE DUTIES OF PACK STOREKEEPERS.**

89. (348.) In hospitals where a Pack Storekeeper is sanctioned the non-commissioned officer or private in charge of the pack store will perform his duties under the orders of and be responsible to the medical officer in charge, and will act under instructions from the quartermaster or steward of the hospital.

90. (349.) He will be present on all occasions when admissions into hospital take place; to receive over the patient's effects, to examine them, and to enter a list of the articles in both foil and counterfoil of the pack store check book (Army Book 182).

91. (350.) After completing the inventory of a kit, he will tear out the duplicate list, and hand the same, duly signed by himself, and endorsed by the patient (if able), or (if unable) by the orderly of the ward, to the wardmaster; after which the pack storekeeper will be responsible for the custody and preservation of the property committed to his charge.

92. (351.) He will hand over to the care of the quartermaster, if attached to the hospital, otherwise to the ward-



master, all moneys or other valuables which he may find in the kit or clothing belonging to the sick, noting in the check book the property thus transferred.

93. (352.) The conditions of a man's effects when received will be indicated in the face of the list thus : *N* for new, *G* for good, *B* for bad, and *W* for worn. Great care will be observed in registering the articles correctly, so that no dispute may arise on the discharge of a man from hospital.

94. (353.) The pages of the check book will be numbered consecutively ; the man's name and regimental number, and regiment or corps will be entered, and the number of the page in the check book will be attached to his kit.

95. (354.) On the discharge of a patient, he will receive his kit again from the store, on the production by the ward-master of the duplicate list (mentioned in paragraph 350) the patient will endorse the counterfoil on taking over his kit.

96. (355.) The kits or other effects will be carefully put up and arranged on the shelves of the store, in numerical order, each pack having attached to it the check book number. The packs will not be placed too closely together on the racks ; and the stores will be kept dry and well aired.

97. (356.) The pack storekeeper, on the receipt of the patient's kit into the pack store, will brush and clean the clothing belonging thereto.

98. (357.) He will separate all soiled linen from the kits, and attach to each article a number, on cloth, corresponding to that on the pack to which it belongs.

99. (358.) He will enter in a book kept for the purpose, the regiment, number, and name, of each man admitted, and a list of the soiled articles belonging to him, and the number of the pack to which they belong.

100. (359.) The soiled articles will be immediately sent to the laundry, or washing contractor (the expense of the washing being borne by the public), and on their being sent back they will be replaced in their respective packs.

101. (360.) The pack storekeeper will frequently inspect and air the contents of the kits to preserve the clothing from damp and moth, and will keep the stores at all times clean and in good order.

102. (361.) He will not allow access to the packs, nor deliver any articles to patients except on the sanction of the medical officer in charge.

103. (362.) He will not allow smoking in the pack store.

104. (363.) The non-commissioned officer or private in charge of the pack store may be required to give assist-



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ance in other stores, or to perform any duty that may be allotted to him.

105. (364.) The duties of a pack storekeeper connected with hospitals in the field are laid down in Part 2, Section IX, of these regulations.

**X.—DUTIES OF SERJEANT OR CORPORAL  
COOKS, AND ASSISTANT COOKS.**

106. (365.) The non-commissioned officer or private performing the duties of Cook or Assistant Cook will act under the orders of and be directly responsible to the medical officer in charge, and will receive instructions from the quartermaster, if present, or in his absence from the steward.

107. (366.) The cook will attend at the provision store, at such hours as may be ordered, to receive the articles required for the preparation of the diets and extras prescribed, as shown by the provision ticket (Army Form I 1218); he will likewise attend at the meat store to see that the issues of beef, mutton, &c., are correct.

108. (367.) He will be responsible that all the food is well cooked, and ready to be issued at the appointed times, and he will be most careful that the meals sent to the patients are quite hot, and in a condition as nice-looking as possible.

109. (368.) He will be held responsible that the cook-house, scullery, pantry, and all cooking utensils are kept scrupulously clean, and are arranged in an orderly manner.

110. (369.) He will give all the assistance in his power in training the assistant cooks, as well as those orderlies who may be sent to the kitchen for instruction, and he will report immediately to the steward any irregularity or neglect of duty on their part.

111. (370.) He will be responsible that a sufficient supply of hot water is at all times ready for baths or other purposes.

112. (371.) The assistant cook, when employed in the separate charge of a hospital kitchen, will perform his duties in accordance with the instruction for cooks.

113. (372.) The general instructions for cooks in military hospitals are laid down in Appendix to Part I, page 26, and are to be regularly observed.

**XI.—DUTIES OF ORDERLIES.**

114. (373.) The Privates of the Medical Staff Corps are, in accordance with Articles 622 of the Royal Warrant relating to Pay, as amended by Clause 182, Army Circulars,



1884, classified according to length of service, conduct, ability, and efficiency as Orderlies of the 1st, 2nd, and 3rd Class.

115. (374.) They will be advanced from one class to another on the recommendation of the medical officer under whom they may be serving, and on the authority of the Principal Medical Officer of the district, according to qualifications displayed, and will, for misconduct, negligence, or inefficiency, be liable to summary reduction from a higher to a lower class by him, subject likewise to confirmation by the Principal Medical Officer.

116. (375.) The chief duty of orderlies is direct personal attendance on and care of the sick in their charge; and their advancement to a higher class will mainly depend upon their efficiency as nursing attendants, ability in preparing and administering food and extras in serious cases, and general attention to ward duties; together with which qualifications their general good conduct and length of service will be duly weighed.

117. (376.) The orderlies of the 1st Class doing duty in hospitals will only be employed in nursing duties in wards, or as cooks.

118. (377.) Hospital orderlies will act under the immediate orders of the wardmaster or assistant wardmaster. They will be responsible under them for the care, cleanliness, and nursing of the sick, and for the cleanliness and good order of the wards, passages, ablution and bath rooms, waterclosets, &c., placed under their charge.

119. (378.) They will be particularly cleanly in their persons, preserve good order in their wards, be attentive to the wants of the sick, and punctual and exact in obeying the orders they receive.

120. (379.) They will when so directed sleep in the wards, and will rise at reveillé, clean and air the wards, and see that the patients who are allowed to be up rise at the proper hour; that every patient is shaved, washed, and dressed before breakfast; that all urinals are emptied and cleaned; and that every species of dirt is removed from the wards.

121. (380.) They will convey the diets from the kitchen at the proper hours and distribute them to the patients according to the orders on the diet sheets, and will see that each patient consumes only his own diet, and neither gives nor receives diet or extras to or from other patients. After every meal they will see that all utensils which have been used are washed and put away clean in their proper places.

122. (381.) They will report immediately to the ward-



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master or assistant wardmaster any irregularity which may occur in the wards under their charge, and also all loss or damage to articles of hospital or personal equipment of patients.

123. (382.) They will perform such minor dressings as the medical officer may delegate to them.

124. (383.) They will, in hospitals where a superintendent and nursing sisters are employed, carry out the instructions of these ladies relative to the nursing of the sick and management of the wards.

125. (384.) Privates of the Medical Staff Corps, when employed otherwise than in hospitals on district or other departmental duties, will act under the immediate orders of the officers or non-commissioned officers under whom they may be placed.

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**APPENDIX TO PART I.**

(See paragraph 113.)

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**INSTRUCTIONS FOR COOKS IN MILITARY HOSPITALS.**

The following simple rules will be strictly observed by every Military Hospital Cook :—

- (1) The kitchen should be always clean and tidy, everything being, as far as possible, in its right place. The tables should be scrubbed with soap and water daily, the floor washed frequently, and the chopping-block scraped.
- (2) The day's work will not be considered finished until the cook has emptied and cleaned thoroughly, and carefully wiped, every pot, saucepan, or other cooking vessel in his charge. Damp will soon rust tin vessels ; and vegetables, if kept in a metal saucepan, will turn sour and corrode the metal.
- (3) Saucepans, stewpans, and other cooking vessels must not remain on the fire without a sufficient quantity of water or other liquid in them to prevent burning. When a pan is injured in this way it becomes quite unfit for cooking purposes. The *bain marie*, or hot-water pan, is to be placed on the hot plate or hob of the stove, or over gas, filled with water, into which will be placed the block tin saucepans: these saucepans must never be



placed by themselves directly on the fire or gas ; the hot-water pan, after the work of the day is over, must be emptied and dried.

(4) The copper boilers in use should at all times be kept well tinned, otherwise they may become very hurtful and even poisonous for cooking purposes.

(5) On no account must anything acid, or liable (as vegetables for instance) to turn sour be retained in vessels of glazed ironware, as the glazing being of a metallic nature may mix with and injure such food.

(6) A different strainer must be employed for beef-tea, and all greasy liquids, from that used for lemonade, barley-water, and similar drinks. For the former, wire strainers may be used, but not for the latter.

(7) In preparing diets or drinks, the cook will be attentive to the quantities directed in existing regulations, and in apportioning the quantities must, on all occasions, use the weights and measures at his disposal. He will also be strictly guided by the time given.

(8) Great care must be observed in sending the meals to the wards hot ; for however well in every other respect the cook may succeed in his task, if the diets are received by patients in a cold or lukewarm condition, one-half the benefit of good cookery will be lost to them.

(9) On receipt of the articles of diet for the day the cook should weigh them in the presence of the issuer, and also of one or two patients, to satisfy himself and them that the proper quantities have been issued. These quantities should be entered on the slate furnished to him for that purpose.

(10) The bread and tea in the tea diet are to be apportioned according to the instructions of the medical officer.

(11) The meat on low diet is to be used so as to make three-fourths of a pint of good beef-tea for each patient on such diet.

(12) The meat on half and entire diets is to be boiled with the vegetables, barley, and flour, so as to allow to each patient the quantity of soup specified in the diet table ; and in accordance with the Allowance Regulations a quarter of an ounce of sugar for each diet may be charged in addition to that on the dietary, also pepper for seasoning will be allowed, at the rate of 2 oz. for every 100 diets of all kinds, excepting tea and milk. The meat



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on varied diet is roasted, baked, or stewed, and 2 oz. of extra bread is given in lieu of the barley and flour; 1 oz. of mustard may be issued for every 20 beef diets.

(13) In the diets, when soup is given, the vegetables are to be cooked in bulk, and served up to each patient in the proportion specified.

(14) When potatoes cannot be procured of a sufficiently good quality, 3 oz. of rice, or 3 oz. of flour, or 8 oz. of bread may be substituted in lieu of 16 oz. of potatoes.

(15) Preserved potatoes, when issued, will be in proportion of an ounce of the preserved to 5 oz. of fresh, and an ounce of mixed preserved vegetables in lieu of 10 oz. of fresh. When egg-powder is used instead of eggs, two large teaspoonfuls will be found equal to a fresh egg, or an ounce of powder to three eggs; the powder should be gradually mixed with cold water, well beaten, and allowed to stand a little time before it is used for cooking.

(16) Milk is to be calculated at 20 oz. to the imperial pint.

(17) When meat is issued with bone, an additional quantity, equal to 4 oz. per lb., will be allowed. A fowl to produce 1 lb. of meat (or two diets) should weigh not less than  $1\frac{1}{4}$  lb.

(18) When small quantities of flour, sugar, butter, &c., are required by the cook to prepare the diets in accordance with any of the directions, he should apply to the medical officer to sanction the issue.

The cook will be further guided by the following additional rules:—

(19) Roast mutton.—In carving a leg of mutton, the cook should hold the knuckle or shank bone in the left hand, the inside of the leg turned upwards. The first slice should be cut slantways, close to the knuckle; and continue cutting in slices down to the thigh bone, passing the knife round it. The fat from the broad end should be cut away in the first instance, and distributed as required.

(20) In a shoulder of mutton, the meat, before being cut up into diet portions, should be cut from the bone in the following way:—Cut the meat off in one piece from the under part of the bladebone by running the knife close to the bone; then turn it over, and cut down off each side of the ridge bone; then run the knife up under the meat,



close to the bladebone, there will only remain a few pieces round the shank bone, which should be cut up and distributed among the diet portions. The meat should be cut in slices across the grain.

(21) If a neck of mutton is roasted, it should be trimmed, and a great part of the fat removed. The *scrag end* should be boned, rolled, and tied round, the bones being put into the soup. For broth, the neck of mutton should be divided into chops; for half or entire diets, they should be skewered and tied up, and boiled in the broth.

(22) Chops should be always trimmed before they are cooked.

(23) Roast beef.—In small hospitals the parts sent for roasting are generally the middle and chuck ribs (the middle has four, and the chuck three, ribs), or part of them. In all cases this description of joint should be *boned*, that is, the bones should be broken and placed in the soup, and the meat then rolled, skewered, and tied with a strong string. If baked, the meat should have a piece of greased paper placed over it. In carving for distribution the meat should be cut in slices; if, however, the joint is roasted with the bone, the meat should be removed in one piece from the bone, by inserting the knife under it, close to the bone; the bones should be used for soup.

(24) The shoulder (or leg of mutton piece) should be cut from the bone after it has been cooked.

(25) When the buttock and mouse buttock is supplied for roasting, the meat should be cut when raw from the bone and then cut across in pieces of two inches thick. The French make a hole in the meat half an inch square, with a skewer, and fill it with fat. The pieces should then be cooked very slowly, and carved for distribution in slices of half an inch thick across the grain. The same plan should be adopted when the meat is stewed or boiled in soup.

(26) Fowls should be roasted whole, and afterwards divided. But if one portion of a fowl is required, a quarter should be cut from the raw fowl, covered with paper, and either baked or roasted. If a fowl has been once cooked, to make it hot again it should be placed on a plate in a basin, with very little water under the plate; it should then be covered over with another plate, placed in the oven, and kept there for 20 minutes.



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(27) Fish diets.—The fish should, if possible, be filleted from the bone; a plain sauce may be made of the skins, bones, and cuttings, boiled in a little water, with a sprig of parsley and salt, and strained. A sole is filleted by removing both skins, cutting off the head, making a cut down on each side of the backbone, and inserting the knife under the flesh close to the bone. Each sole will make four fillets, which should be placed in a baking dish, slightly greased, with a piece of paper over it, and kept in the oven from 10 to 15 minutes.

(28) When cod, haddock, ling, &c., are to be boiled, they should be cut in slices when raw, and each slice tied round with string, to be removed when the fish is dished up. Small haddocks and large whiting are best filleted and done as soles.

(29) As very great difference exists in the quality of beef, mutton, fowl, and fish, it is essential that the cook should be able to form a correct opinion as to the quality of these articles, and at once, when the quality is inferior, report the same to the steward.

(30) Four-year-old beef is the best for hospital use. Ox beef will make the highest flavoured beef-tea. Younger meat may be more tender, and make apparently stronger soup, but, like veal broth, it is merely more gelatinous. The lean of ox beef is of a bright red colour, cow beef of a pale red; a very dark beef indicates bull beef, which requires longer cooking. The colour of the fat, if yellow, indicates that the animal has been fed upon oil-cake, the meat of which is not so good for hospital use as that of cattle fed on roots or pasture.

(31) The mutton for broth should be, if possible, four years old; 30 per cent. more of two-year-old mutton is required to make the same quantity and quality of broth as four-year-old. Ram mutton, if lean, can be used. As mutton differs in quality and flavour in almost every county of the United Kingdom, it is impossible to describe that which distinguishes the best in each variety, but fine white fat, flesh close grained and of a bright red colour, the inside of the leg well formed and plump, indicates good mutton.

In cooking old fowls for chicken soup or tea, place



bones and all, with very little water, in a wide-mouthed bottle, and then put in a stewpan of boiling water. After boiling for two hours, strain off, and serve; the broth being diluted if deemed too strong; chicken only, should, if possible be used for chicken broth.

(33) In roasting fowls in ovens the same directions should be observed as for roasting fowls before the fire, but the oven must be made much hotter for fowls than for meat.

(34) The cook should be fully acquainted with the different qualities of flour, arrowroot, rice, &c., in order to know how to use them judiciously; for instance; some samples of flour will never thicken soup; and to ascertain whether it is suitable for that purpose, a teaspoonful should be tried to see whether it can be made into tough paste. Rice also varies much; it is not always the finest and whitest that is the most nourishing or makes the best puddings; the common Bengal cargo rice is in such respects in general superior even to the best Carolina. Potatoes in damp weather, or those grown in a damp locality, are better steamed or baked in their skins; they are liable to fall to pieces if boiled.

(35) When chops or steaks cannot be broiled in frying-pans they should be cooked in a very hot oven. With frying-pans the following mode should be adopted: Place the frying-pan on the fire, clean it well, rub some salt on it to make it quite dry and clean; then place in the chop or steak, inclining one side of the pan downwards, so that none of the melted fat touches the meat; turn it often to retain the gravy in it.

(36) Fish to be broiled should, in the first place, be thoroughly dried; the frying-pan should then be made ready with the bottom well covered with fat, not too hot, which may be ascertained by throwing in a few bread crumbs or a drop of water; immerse the fish in it and cook gently; when taken out it should be placed on a clean napkin.

(37) Milk, rice-milk, &c., are best boiled in one saucepan within another, as in the *bain marie*; milk, &c., should also always be kept hot in this way.

(38) Great care is necessary in the management of the stove or fireplace, so as not to exceed the allow-



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ance of coals. The old open grate is now mostly replaced by either a kitchen range with oven and boiler, or a Flavell's kitchener, or a Captain Marsh's range. Those with the oven and boiler, which are generally of the B.O. or W.D. pattern, require the back part of the grate to be kept free from dust or soot that the oven may get properly heated.

(39) Flavell's kitchener also requires the flues to be kept clean, without which no oven will bake well; this, as well as all close fireplaces, stoves, and boilers, should have the ashpit made to hold water, so that the cinders may drop into the water and thus keep the bars from burning out; it also adds to the heat of the fire. Captain Marsh's stove, when fitted with hot-water cistern for baths, must never be left without water. When a fire is lighted in the hot-water grate, a warm bath may be had within 30 minutes, if the flues are kept clean.

(40) When doing duty on board ship the cook will often have to use preserved provisions, as essence of beef, mutton broth, boiled chicken, mutton and beef; such meats are as a rule too much done, and never make food as good as that which the cook prepares from the raw materials. Invalids, although they partake of the broth, or gravy, from preserved meat, will seldom eat the meat itself. In cooking in most cases it is necessary only to remove the lid of the tin, and to place it in a stewpan of boiling water; the pan should be kept on the fire, or in the oven, until the contents are warmed through; the fat on the top then removed, and the food sent up to the patient. The contents may also be emptied out of the tin into a stewpan, with a little water, and boiled; then seasoned or flavoured according to taste or direction; and the broth strained from the meat and served; the meat will make an excellent panada. Essence of beef added to this broth makes it stronger. Preserved vegetables, as carrots, parsnips, onions, potatoes, &c., as well as dried parsley and other herbs, can all be introduced into these broths or soups, at discretion.

(41) For stews, the tins of beef and mutton (fresh or corned) may be used in any form; an Irish stew



may be made either with fresh or preserved onions and potatoes ; if fresh, the onions should be sliced thin, placed in a stewpan with a little fat, and allowed to get warm through, not browned ; then add the potatoes with a very little water ; when the potatoes are nearly done, add the seasoning, and empty the contents of the tin carefully on the top ; when the potatoes are done, the meat will be sufficiently warmed through, and may then be served. Soup and bouilli in tins will always admit of more water being added, and if raw vegetables are added they should be first boiled and mixed with the contents of the tin, five minutes before serving.

- (42) Salt beef or pork, used at any time, should be soaked for at least thirty-six hours in water, changing the water three or four times. When being cooked, the water should also be changed the moment it begins to boil, and cold water added ; in this way, salted meat may be used almost like fresh ; but in making soup from salted meat a large amount of vegetables should be added. Salt beef will also make an excellent panada, adding herbs and spice, and weight for weight of bread and eggs ; and formed into balls and baked ; it may also be served plain, or with any kind of sauce ; or it may be put into pudding paste and made into dumplings.
- (43) In stewing salt meat a little sugar should always be added, and in frying, a little vinegar, or lime juice, or sour wine.
- (44) In the case of frozen meat or vegetables, they should be placed in cold water in a warm room until thawed. Bread should be treated in the same way, and then dried or re-baked, which makes it eat like new bread.
- (45) It may sometimes occur that porridge of Indian meal or maize flour is ordered ; if so the meal or flour should first be soaked in cold water *in a cold place* for twelve hours, and whatever floats on the top removed ; it should then be boiled slowly for five or six hours.



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## Part II.            Instructions for the Professional

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### PART II.

#### INSTRUCTIONS FOR THE PROFESSIONAL TRAINING OF ORDERLIES.

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Section	I.—Anatomical and Physiological Outlines.
„	II.—Bandages and Bandaging.
„	III.—Fractures and the Apparatus for their Treatment.
„	IV.—Dressings and their Application.
„	V.—Medicines and External Remedies.
„	VI.—Surgical Instruments and Appliances.
„	VII.—Cases of Emergency and their Immediate Treatment.
„	VIII.—Nursing.

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#### SECTION I.—ANATOMICAL AND PHYSIOLOGICAL OUTLINES.

126. The human body may be said to consist of two parts, (1) the bony framework or skeleton, and (2) the soft parts supported thereby. It may be divided into the head, the trunk, and the upper and lower limbs.

127. The head includes the face and skull (*cranium*), in the cavity of which the brain is lodged.

128. The bony parts of the trunk are the spinal column, the chest, and the hip-bones. The spinal column is composed of twenty-four segments (*vertebræ*)—seven in the neck, twelve in the back, and five in the loins—together with the *sacrum* and *coccyx* in which it terminates below: above the spine supports the skull; below, it rests on the hip-bones (*ilia*) and also forms in its whole length a bony canal for the protection of the spinal marrow. The breast-bone (*sternum*) in front, and the twelve *vertebræ* in the back, with the twelve pairs of ribs (*costæ*) at the sides, are united together, and form the chest (*thorax*). The shoulder-blade (*scapula*) is situated at the back of the

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\* The Instructor in this part of the course will obtain material assistance by employing Marshall's Physiological diagrams to illustrate his subject.



chest, and from it is suspended the upper limb. The sacrum and hip-bones are joined together, and form an irregularly basin-shaped cavity called the *pelvis*.

129. There are two upper and two lower limbs. The upper are joined to the trunk at the shoulders. The shoulder itself is formed by the shoulder-blade and collar-bone (*clavicle*), which latter can be seen and felt distinctly on the front of the chest. The upper limbs consist of three parts, viz.: the arm, the forearm, and the hand. The arm has one bone (*humerus*) only, the forearm two (*radius* and *ulna*) lying together; between the arm and the forearm is the elbow-joint. The hand, formed by numerous bones (*carpal*, *metacarpal*, and *phalanges*), is joined to the lower end of the forearm at the wrist joint. The bones of the lower limb—considerably stronger than those of the upper—are connected to the hip-bones at the hip-joints. The three parts of the lower limb are the thigh, the leg, and the foot. In the thigh there is one bone (*femur*) only; there are two in the leg (*tibia* and *fibula*), the same number as in the forearm. The thigh and leg are connected to each other at the knee-joint, which is covered in front by the knee-cap (*patella*). The foot, formed by numerous bones (*tarsal*, *metatarsal*, and *phalanges*) joins the leg at the ankle-joint. (See fig. 1 for the skeleton of the human body.)

130. The soft parts are the brain and nerves, the muscles, the blood-vessels, and the important organs contained within the chest and belly (*abdomen*), the whole being covered externally by the skin.

The brain and spinal marrow give off the nerves which divide into branches for the different parts of the body, and together form the nervous system, upon which, taken as a whole, depend sensation, perception, and the will.

The muscles, under the influence of the will, exert a power of contraction by means of which the limbs and different parts of the body are made to move.

131. The blood-vessels and the heart comprise the organs of the circulation. The circulation of the blood depends upon the contractile power of the heart, which may be compared to a hollow muscular pump, about the size of a closed fist, and situated in the left side of the chest, where, under the nipple, it can be felt distinctly beating seventy or eighty times a minute during life. It is divided into two parts, spoken of as right and left sides, each side again into two chambers—a thin receiving chamber (*auricle*) leading to a thick pumping chamber (*ventricle*), but in such a manner that the chambers of the



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one side do not communicate with those of the opposite side ; the left side of the heart contains pure, red blood, which it receives from the lungs, and then immediately propels to the various parts of the body as a supply of nourishment ; the tubes, or blood-vessels by which it is conveyed to the tissues, are called "arteries" (see fig. 2 for the principal arteries). Pressure on one of these tubes

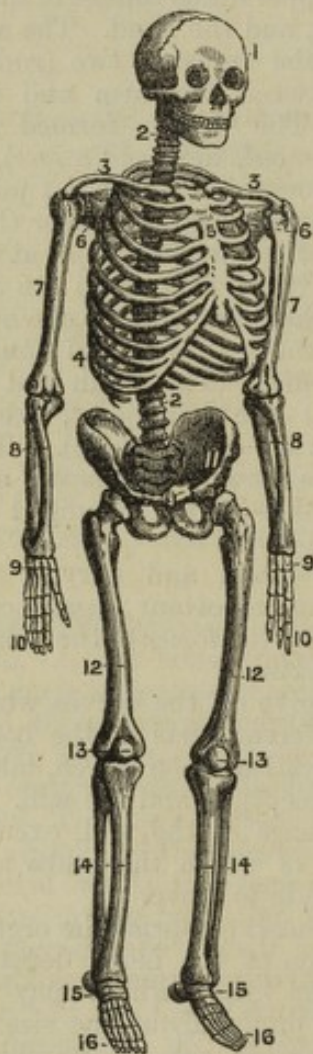


FIG. 1.

## SKELETON OF HUMAN BODY.

1. Cranium, or skull.
2. Spine formed of vertebræ.
3. Clavicle, or collar-bone.
4. Costæ, or ribs.
5. Sternum, or breast-bone.
6. Scapula, or shoulder-blade.
7. Humerus, or arm-bone.
8. Radius and ulna.
9. Carpal bones.
10. Phalanges, or finger-bones.
11. Ilium, or hip-bone.
12. Femur, or thigh-bone.
13. Patella, or knee-cap.
14. Tibia and fibula.
15. Tarsal bones.
16. Metatarsal bones and phalanges.

causes a throbbing sensation to be communicated to the finger placed on the vessel,—due to the wave sent along the blood by each beat of the heart. This throbbing is called the pulse. The arteries are largest in the trunk and upper parts of the limbs ; as they pass outwards they keep dividing like a tree, always into smaller branches,

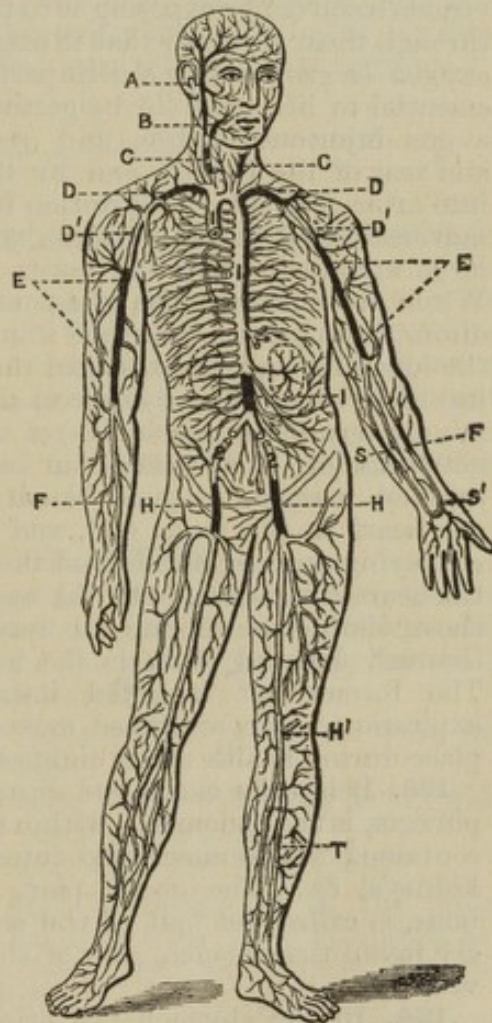


and finally end in the tissues in minute networks called "capillaries." In the capillaries the blood moves most slowly and parts with its nutritive elements, and at the same time takes up the waste materials produced by the wear and tear of the body, which has the effect of rendering it impure and darker in colour. On leaving the capillaries the blood enters another set of tubes called

FIG 2.

## ARTERIES OF THE BODY

1. Thoracic aorta.
2. Iliac arteries.
- A. External carotid.
- B. Internal carotid.
- C. Common carotid.
- D. Subclavian artery.
- D'. Axillary artery.
- E. Brachial artery.
- F. Radial artery.
- H. Femoral artery.
- H'. Popliteal artery.
- I. Abdominal aorta.
- S. Ulnar artery.
- S'. Palmar arch.
- T. Tibial artery.



"veins," and in a gentle stream is conveyed by them to the right side of the heart, by which it is then forced to the lungs to be purified, and then when purified transmitted to the left side of the heart for distribution to every part of the body:

In this manner a continuous current of blood is established, a throbbing, arterial current, under high pressure



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moving from the heart to the capillaries of the various tissues and organs of the body, and a non-pulsating, venous, low-pressure current slowly flowing from the capillaries towards the heart.

132. The lungs, two in number, are contained in the chest, one on either side of the heart. They form the organs of respiration, or breathing. Their use is to purify the venous blood (*a*) by exposing it to the air during its passage through them in order that it may obtain a due supply of oxygen—a gas forming a fifth part of the atmosphere, and essential to life—and (*b*) by getting rid of carbonic acid, a gas injurious to life, and resulting from the wear and tear of the tissues, and by this means converting it into arterial blood. Respiration is effected by the natural movements of the chest walls and of the diaphragm, a large muscle forming the lower boundary of the chest. While it continues, the chest alternately enlarges and diminishes in size; each time it enlarges air is drawn into the lungs through the nose and the windpipe (*trachea*) and its subdivisions (*bronchial tubes*) and branches, around the minute terminations (*air cells*) of which are spread out fine networks of blood-vessels in which those (*pulmonary arteries*) carrying impure blood from the right side of the heart to the lungs end, and those (*pulmonary veins*) conveying purified blood from the lungs to the left side of the heart commence. On the other hand, each time the chest diminishes in size air returns through the same channel, carrying with it the impurities of respiration. The former act is called inspiration, and the latter expiration. The combined movement (*respiration*) takes place during health about eighteen times a minute.

133. Below the chest, and separated from it by the diaphragm, is the abdomen; within the abdominal cavity are contained the stomach and intestines, the liver, spleen, kidneys, &c. The upper part, underlying the breast-bone, is called the “pit of the stomach”; in this region are found the stomach, part of the liver, and great blood-vessels.

134. In the stomach the principal change of food in digestion takes place. The tube leading from the mouth to the stomach is called the gullet (*oesophagus*); from the stomach the altered food passes along the intestines; in the upper four-fifths of the intestinal canal—that is to say, in the small intestine—the food is acted upon by the secretions from the liver, sweetbread, &c.; the nutritive materials thus prepared are slowly absorbed by vessels in the walls of the small intestine, and from these are conveyed into



the current of the blood, while the rejected portions of the food find their way out through the continuation of the canal (the large intestine), and are passed from the bowel by the *anus*, as the outlet is called.

135. On the right side of the abdomen, just underneath the ribs, is the liver, and, in a corresponding position on the left side, the spleen; behind, and on both sides of the spinal column, are the loins with the kidneys, from each of which a tube (*ureter*) conveys the urine to the bladder; finally the urine is voided by a tube called the *urethra*.\*

## SECTION II.—BANDAGES AND BANDAGING.†

136. Bandages are usually made from either calico, linen, or flannel; they are employed for a great variety of purposes, the chief of which, however, are to fix dressings and splints in position, to apply pressure, and to support the circulation.

They may be divided into two classes, roller bandages and triangular bandages.

### ROLLER BANDAGES.

137. Roller bandages are made from either torn, or specially woven strips of material, the size of the strip varying in each case with the part of the body for which the bandage is required, as follows:—

For the head and upper limb:  $2\frac{1}{2}$  inches wide, and 3 to 6 yards long.

For the trunk and lower limb: 3 or more inches wide, and 6 to 8, or more, yards long.

For the fingers:  $\frac{3}{4}$  inch wide, and 1 yard long.

The orderlies will first be instructed in the proper methods of rolling a bandage with what is known as a *single head* and with a *double head*, and then in the mode of applying it to the different parts of the body.

\* The Instructor will also carefully explain the course and position of each of the principal arteries and veins, and the situations where they can be most effectively compressed, as well as give brief descriptions of the structure of the eye, ear, nose, and larynx, and point out such specially named regions as the *popliteal*, *inguinal*, *perineal*, *umbilical*, *axillary*, &c.

† Great economy of time and labour will be effected in imparting instruction in bandaging, by practising one-half of the members of the class at a time in bandaging the other half; this can be probably best carried out by forming up the men in single rank, and then causing, say first, the odd numbers to bandage the even numbers, and *vice versa*.



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## MODE OF APPLYING A ROLLER BANDAGE.

*To the Head.*

138. *The CIRCULAR Bandage.*—Carry a single-headed roller round the head several times immediately above the ears, fasten at one side over the temple, bring down under the chin, and fasten off over the temple on the opposite side. *Use*—to retain a dressing on the front, side, or back of the head.

139. *The KNOTTED Bandage.*—Place the outer surface of the part between the two heads of a double-headed roller on the side of the head, carry the ends horizontally round the head, cross at the opposite side, carry one under the chin, and the other over the top of the head to the point of starting. Continue to pass as before, and repeat as often as may be required. *Used* when it is necessary to make pressure for the purpose of arresting bleeding on side of the head.

140. *The CAPELINE Bandage.*—Place the outer surface of the part between the two heads of a double-headed roller on the forehead, and carry the ends horizontally to the back of the head, here cross them and continue one horizontally round the head; the other, the undermost one, bring straight over the top of the head to the forehead, again cross, and bind down by a horizontal turn. Repeat the crossings until the head is quite covered, when secure the ends by a pin. *Use*—to retain dressings or a blister on the top of head.

*To the Chest.*

141. *The THORACIC Bandage.*—Lay the outer surface of the end of a single-headed roller on the breast-bone, and fix it there with one hand; carry the bandage then with the other hand from left to right round the chest as close up under the armpits as possible; continue the partially overlapping turns to the lower margin of the ribs, and fasten off with a stitch, then take the end over the opposite shoulder to the lowermost turn of the bandage, and again fasten off. *Use*—to fix the chest walls in cases of fracture of the ribs.

142. *The OBLIQUE Bandage.*—Lay the end of the bandage on the breast-bone; carry the bandage under the armpit, across the back and over the opposite shoulder to the point of starting; fasten off. *Use*—to retain dressings in the axilla



*To the Groin and Perineum*

143. *The SPICA Bandage.*—Lay the end of a single-headed roller on the affected groin; carry the bandage across the lower part of the abdomen to the opposite hip, round the back, down along the groin, then between the thighs, and lastly round the affected thigh to the point of starting, repeating the turns as often as may be necessary, and then fasten off with a pin. *Use*—to retain dressings on the groin.

144. *The T Bandage.*—Pass a single-headed roller twice round the body above the hips and fasten in front by a knot or stitch, then carry the bandage down between the thighs and up to meet the circular turns behind, under which pass the head of the roller, then carry the bandage again to the front between the thighs, and fasten off to the circular turns in front. *Use*—to retain dressings on the perineum.

*To the Limbs.*

145. *Bandages for the Limbs.*—In bandaging a limb, owing to its irregular form, a variety of *turns* must be made with a roller bandage in order to avoid bagging and unequal pressure. Where the limb is of uniform thickness, a *simple spiral* is employed, *i.e.*, the bandage is passed regularly and spirally round the part, each turn overlapping the preceding one to the extent of from one-half to two-thirds of the width of the bandage. Where the limb increases in circumference, as in the calf of the leg, the thigh, or forearm, the *reverse spiral* is employed. This

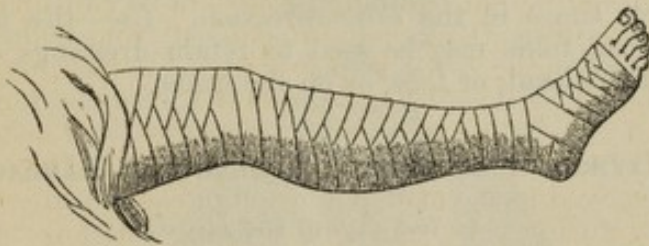


FIG. 3.—BANDAGE FOR LOWER LIMB.

resembles the simple spiral, except that the bandage is turned back upon itself each time as it is carried round the limb; at the joints the *figure of eight* turn is employed: it is formed by crossing the turns of the bandage one over the other so as to represent the figure eight. The rules in bandaging a limb are as follows:—Attach the free end to either the wrist or ankle, as the case may be,



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to keep it from slipping; bandage from below upwards, passing the bandage from within outwards by the front of the limb, taking care to make the reverse spirals on the fleshy aspect of the limb; when the whole has been applied, double the end in on itself, and secure by a pin or stitch (see fig. 3).

### TRIANGULAR BANDAGES.

146. Triangular bandages, intended to be used chiefly as a temporary dressing for field service, are made by cutting pieces of calico or linen, of a certain size, 34 or 36 inches square, diagonally into two halves; each half then forms a triangular bandage; of the three borders of the bandage, the longer is called the lower border, the two others the side borders; of the three corners, the upper one, opposite the lower border, is called the point, and the side corners, the ends.

The orderlies will first be instructed how to fold the bandage for stowage, also to make the narrow and broad folds, and then to apply it.

147. To fold the bandage for stowage, it should be folded perpendicularly down the centre, placing the two ends together; then the ends and the point should be brought to the centre of the lower border, thus forming a square; this should be folded in half, and till it assumes the form of a small packet 6 inches by 3 inches.

148. The broad and narrow folds are made by first spreading out the bandage, then carrying the point to the centre of the lower border, and then folding it over twice or three times in the same direction. *Use*—the narrow and broad folds may be used to retain dressings on the side of the head, or face, or on the limbs.

### METHOD OF APPLYING A TRIANGULAR BANDAGE.

#### *To the Top of the Head.*

149. Lay the middle of the opened-out bandage on the top of the head so that the lower border may lie crossways before the forehead, point to hang down over the back of the neck; now taking up the ends, one in each hand, carry them backwards, cross them at the back of the head, bring them forwards again, and tie off with a sailor's knot on the forehead; finally, stretch the point downwards, turn it up neatly over the back of the head, and fasten off with a pin.



*To the Chest.*

150. Place the middle of an opened-out bandage on the chest, point over one shoulder; carry the ends under the arms, round the chest, and knot at the opposite side, leaving one end longer than the other; draw the point over the shoulder, and tie it to the longer of the two ends.

*To the Shoulder.*

151. Lay the centre of a bandage on the point of the shoulder, point spread out on the side of the neck, and lower border across the middle of the arm; now carry the ends round the arm, cross them, and tie off on the outer surface of the arm. With a second bandage apply the smaller arm sling (see next paragraph); having done so draw the point of the first bandage under the arm sling, fold it back on itself, and fasten off with a pin.

152. *To make the Smaller Arm Sling.*—Take a broad-folded bandage, throw one end over the shoulder at sound side, carry it round the back of the neck so as to be visible at the opposite side, then bend the arm carefully, and carry the wrist across the middle of the bandage as it hangs down in front of the chest. This done, bring up the hanging down end and knot the two ends together at the side of the neck (see fig. 4).



FIG. 4.—ARM BANDAGE AND SMALLER ARM SLING.



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153. *To make the Greater Arm Sling.*—Take an opened-out bandage, throw one end over the shoulder at the sound side, carry it round the back of the neck so as to be visible at opposite side, place the point behind the elbow of the injured arm, and draw down the other end in front of the patient. Next bend the arm carefully and place it across the chest on the middle of the bandage, bring up the hanging down end and knot the two ends together. This done, draw the point forwards round the elbow and fasten off with a pin.

### *To the Hip.*

154. Make a waist-belt of a narrow-folded bandage, pass it round the waist, and knot off in front. Lay an opened-out bandage on the injured hip, point in the direction of the waist-belt, pass the ends round the upper part of the thigh, and knot off in front, then pass the point under the waist-belt, and pin off.

### *To the Foot.*

155. Open out a bandage, place the injured foot in the centre of it, toes directed towards the point ; now draw the point upwards over the instep, carry the ends forwards round the ankle, cross them over the instep, pass them downwards, and knot off on the sole of the foot.

### *To the Hand.*

156. Open out a bandage, lay the injured hand in the centre of it, fingers directed towards the point ; now draw the point over the fingers, and lay it on the wrist. This done, carry the ends round the wrist, repeat the turns a few times, and knot off.

*Special Bandages.*—A few of these remain to be mentioned.

### *Many-Tailed Bandage for the Limbs.*

157. *How to make a Many-Tailed Bandage.*—Lay a strip of bandage, same length as the limb, on a board ; lay other strips, each 6 inches longer than the circumference of the limb, across it at right angles ; let each succeeding strip be made to overlap the preceding one by two-thirds of its width ; stitch these cross strips at their centres to the first strip.

*To apply it.*—Raise the limb, pass the board and spread out bandage under it, the cross pieces being so arranged



that the last one laid on is the furthest from the patient's body; lower the limb and lay it on the bandage; now carry the strips one after the other over the limb, beginning with the bottom one, the succeeding overlapping and fixing the preceding, and the last one being secured with a few stitches. *Used* where there is a wound which requires dressing, and where movement of the limb is undesirable.

*The Four-Tailed Bandage for the Jaws.*

158. *To make it.*—Take a yard long of a 3-inch roller, make a slit in its centre about 3 inches long, and then slit up the ends to the extent of about 10 inches.

*To apply it.*—Place the central slit on the point of the chin, carry two of the ends to the back of the neck, and two to the top of the head, and tie off. *Use*—Employed in the treatment of injuries of the jaws.

### SECTION III.—FRACTURES AND THE APPARATUS FOR THEIR TREATMENT.

159. Fractures of the bones are generally the result of external violence. They may be divided into two great classes according as they are accompanied or not by an open wound. Where the bone is merely broken across the fracture is called simple, but where the fracture communicates with the air by a wound through the skin it is called compound. Either class of fracture may be complicated with a wound of an important internal organ, or with a wound of one of the principal arteries, &c., of the part, the complication constituting often the most serious part of the injury.

Compound fractures are not only far more tedious in their cure, but infinitely more dangerous than simple fractures, on account of the injurious effects produced by the entry of air into the wound.

A simple fracture may be converted into a compound one by rough handling; if the attendant be not careful in moving a broken limb, the sharp ends of the broken bone may be pushed through the skin, and a compound fracture be the result.

160. The signs of fracture are (1) an alteration in the shape of the limb, (2) loss of power, (3) grating together of the broken ends of the bone, (4) increased mobility.



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161. The treatment of a fracture consists in replacing the broken ends of the bone in their natural position, and in preventing the return of displacement until firm union has taken place, the latter part of the treatment being effected by the use of various forms of well-padded splints.

162. To prepare a pad, fold a piece of old linen sheeting double, and cut it to the shape required, then open it out again, and lay some soft material, such as cotton wool, tow, &c., evenly over one half, turn the remaining half over on the tow and sew the edges neatly together. Pads should be a little larger than the splints with which they are intended to be used.

163. Gunshot fractures will be treated on the field of battle with whatever extemporary appliances may happen to be at hand, such as rifles, swords, bayonets, &c.; for example, for an injury of the lower limb, a rifle splint made by placing a rifle along the outer aspect of the limb, extending from the axilla (butt in the axilla) to the foot, and securing it then to the limb and body in the manner represented in fig. 5.



Fig. 5.—RIFLE SPLINT.

The more permanent kinds of apparatus for the treatment of fracture will be found in the "Box of Apparatus for Fractures and Dislocations."

The contents of this box will first be shown to the orderlies, and then the manner of applying each form of apparatus will be carefully explained by the instructor.

### APPARATUS USUALLY REQUIRED.

#### *For Fracture of the Lower Jaw.*

164. The apparatus required for making a gutta-percha splint, viz.: A sheet of gutta-percha, lint, a knife, cold water, and boiling water in a wide basin; also a four-tailed bandage.



## Training of Orderlies.

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*For Fracture of the Ribs.*

165. Adhesive plaster, scissors, a can of hot water, and a roller bandage (8 yards  $\times$  6").

*For Fracture of the Collar-Bone.*

166. An axillary wedge-shaped pad (6"  $\times$  4"  $\times$  2") with two tapes attached (2 feet long), and two 8-yard bandages.

*For Fracture of the Arm.*

167. Either four wire splints, or four of Duncan's ratan cane splints, or the jointed elbow splint, together with suitable pads, roller bandages for fingers, forearm, and arm, and an arm sling.

*For Fracture of the Forearm*

168. A pair of forearm splints (wire), or a pair of cane splints, with suitable pads, an interosseous pad (6"  $\times$  1"  $\times$   $\frac{1}{2}$ "), roller bandage, and arm sling.

*For Fracture of the Radius.*

169. A radius splint (wire) and pad, roller bandage, and arm sling.

*For Fracture of the Thigh.*

170. The jointed wooden thigh splint, and pad. Three short cane, or wire splints and straps; cotton wool; a perineal bandage (made by folding a triangular bandage narrow, padding it along the centre with cotton wool, and covering it with oil silk) roller bandages, and a wire cradle.

*For Fracture of the Leg.*

171. Either McIntyre's double inclined plane (see fig. 6), or a pair of japanned leg splints, or a pair of wire leg splints, with suitable pads and straps.

Roller bandages, and a cradle (Salter's).

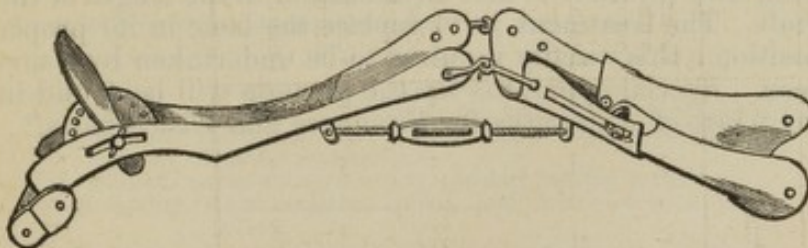


FIG. 6.—McINTYRE'S SP 1117.



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## Part II. Instructions for the Professional

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### *For Fracture of the Fibula.*

172. Either Dupuytren's splint and wedge-shaped pad (2" at thick end), or Pott's wood or wire splint and pad, two roller bandages (one, 3 yards  $\times$  3", the other, 4 yards  $\times$  2").

### *For a Plaster of Paris Splint.*

173. A supply of plaster of Paris that will set firmly in a few minutes. Loose woven bandages, or flannel sufficient to envelop the limb loosely twice over. Large pins (3" long), cold water, basin and spoon; gypsum bandage instruments.

### *For Starch-Bandage Splint.*

174. A supply of starch, roller bandages, cotton wool pasteboard in sheets, boiling water, Seutin's scissors, and a wooden splint.

*Method of applying the splint.*—A supply of strong starch solution is first made in which the roller bandages are first saturated and then loosely re-rolled; pasteboard torn into strips is also to be softened in boiling water; these being ready the limb is enveloped in cotton wool and encased in a starched roller bandage, pasteboard strips being laid along it in positions where additional strength is required, and another layer of starched bandage is then laid over the whole. A wooden splint may also be used as a temporary measure with a view to prevent displacement during the drying of the starch, which takes from thirty to fifty hours.

175. A *Dislocation* is the displacement of the bones entering into the formation of a joint. The signs of dislocation are—(1) an alteration in the shape of the joint, (2) the end of the displaced bone can be felt through the skin, and (3) there is also an alteration in the length of the limb. The treatment is to replace the bone in its proper position: this usually requires to be undertaken by a surgeon. Special apparatus for the purpose will be found in the "Box of Apparatus for Fractures and Dislocations."

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#### SECTION IV.—DRESSINGS AND THEIR APPLICATION.

176. Dressings are local applications used in the treatment of wounds\* and sores.†

The following list comprises nearly everything that is likely to be required for dressing purposes:—lint; plaster, adhesive and soap; hot water in a can for heating the plaster; oiled silk; gutta-percha tissue; cotton wool; tow; materials for making poultices, as linseed meal, bread, charcoal; ointment; bandages; dressing case, containing dressing forceps, director, scissors, &c.; a dressing tray, and a basin, irrigator, and waterproof sheet.

The Instructor will first familiarise the members of his class with the appearance of these materials, and then carefully explain their uses and mode of application.

\* Wounds are classified as follows:—

- (1) *Incised*: characterised by pain, bleeding, and separation of their sides. *Treatment*: clean the parts, remove foreign bodies, arrest bleeding, adjust the cut surfaces, and apply a dressing.
- (2) *Lacerated*, or *Contused*: characterised by more or less bruising about the edges and sides of the wound, as, for example, gunshot wounds, bites of animals, &c. The treatment after the parts have been cleaned, usually consists in the application of water dressing. Bleeding of course must be arrested, and the patient placed in an easy position, as, for instance, in the case of a gunshot wound of the chest, the patient should be laid on the injured side; with a wound of the abdomen, if lateral, on the injured side, if central, on his back with his knees bent, and if the intestines protrude they should be washed and quickly returned.
- (3) *Punctured*, made by narrow, sharp instruments. *Treatment*: arrest bleeding and apply a dressing.
- (4) *Poisoned*, such as stings of insects, bites of snakes, &c. The treatment for insect stings is to allay irritation by application of cold lotions, and for the bites of snakes it is both local and constitutional; the local is, if a limb be affected, to tie a ligature round the injured limb a little above the injured part, so as to arrest all circulation of the poison; and the constitutional, early and free administration of stimulants—brandy, wine, ammonia, ether—with a view to combating depression. Artificial respiration may have to be resorted to.

Sores (ulcers) assume various forms, viz.:—

*Treatment usually adopted.*

- (1) *Healthy*. Water dressing and pressure of a bandage.
- (2) *Weak*. Astringent applications, the part elevated, and bandaged.
- (4) *Indolent*. Strapping, followed by astringent lotions, and bandaging.
- (4) *Irritable*. Sedative applications.
- (5) *Inflamed*. Evaporating dressing, elevated position of the part.
- (6) *Sloughing*. Warm sedative lotions, rest, subsequently astringent lotion.
- (7) *Varicose*. A complication of varicose veins of the leg. Bandaging.  
N.B.—Be on the look-out for bleeding from a ruptured vein upon its surface.
- (8) Besides ulcers from special causes—cancer, syphilis, &c.



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177. When dressings are about to be applied, the following general rules should be observed :—(1) Never begin to change a dressing until everything that is likely to be required for the new dressing is ready close at hand. (2) Never attempt to remove by force a dressing which has become adherent, this must first be loosened by bathing with warm water. (3) Never employ a sponge for washing a wound or sore, for this purpose fresh clean pieces of tow or lint should only be used, and then subsequently thrown away. (4) The greatest care should be taken by dressers to work with clean hands, and to avoid touching their eyes or nose with any portion of the discharges.

*To Prepare a Part before the Application of a Dressing.*

(For the sake of illustration the method of changing a dressing is here referred to.)

178. The materials for the new dressing having been collected close at hand, the different parts of the old dressing [will, one by one, be very gently and carefully removed—those that are adherent first softened and loosened by the aid of warm water—and stains due to plaster softened by means of olive oil or turpentine, the parts will then be well washed. If the patient happens to be confined to bed means will first be taken to protect the bed-clothes from damp by covering them over with a waterproof sheet, and by arranging an empty vessel under the wound or ulcer so as to catch the waste water. A vessel containing warm water—a basin or irrigator, as the case may be—is next held on a higher level than the patient, and the parts bathed with a piece of fresh tow, or flushed by a stream from the irrigator to the requisite extent. This having been accomplished, the parts will then be thoroughly dried with a soft piece of old sheeting or with a clean towel, the new dressing of whatever description applied, and the old dressings removed promptly from the ward.

THE DIFFERENT KINDS OF DRESSINGS.

*Dry Dressing.*

179. Dry dressing is generally used as the first application to incised wounds. It consists of adhesive plaster and dry lint, and is thus applied :—narrow strips of plaster are cut in the direction of the length of the web (not cross-ways) of plaster, and warmed by holding the non-adhesive side against a hot water can ; with these the edges of the wound are brought into proper contact ; over these are



then placed a couple of folds of dry lint, kept in position by a few more slips of plaster, and, if the situation admit of it, by a few turns of a bandage. Dry dressing is generally allowed to remain on for two or three days before it is removed. When removing the strips of plaster immediately overlying the wound, one end should first be raised as far as the wound, and then the other in a similar manner, so as to avoid the risk of tearing open the wound.

*Water Dressing.*

180. Water dressing is used for the purpose of keeping warmth and moisture continually applied to a part. It consists of a double fold of lint saturated with water and wrung out, then applied to the part and covered over with some waterproof material, as oiled silk or gutta-percha tissue, to prevent evaporation. The lint should be cut according to the size of the wound or ulcer, and the waterproof material so as to be a little larger in every direction than the lint. Should any of the lint be allowed to project beyond the edge of the waterproof covering, the moisture will escape and the lint become dry and adherent. Dry dressing usually should be renewed at least twice in the course of the twenty-four hours, or oftener if there be much discharge.

*Evaporating Dressing.*

181. Evaporating dressing is used to keep cold continuously applied to a part, advantage being taken of the reduction of temperature which takes place on evaporation. It consists of a single fold of lint, saturated with water, or with a lotion, and placed over the part, freely exposed to the atmosphere so as to favour evaporation.

The lint should be of considerable size, and kept constantly wet. This may be effected either by re-dipping the lint in the water or lotion from time to time, and as it begins to dry, or, as must be done where the wound is extensive and inflammation runs high, by keeping it moistened by irrigation, *i.e.*, by conducting a trickling stream of water over it. The simplest plan of conducting irrigation is by placing a basin or bottle containing water near the patient's bed, but on a little higher level than his body; from this a skein of worsted, one end in the water and the other laid on the piece of wet lint covering the part to be irrigated, conducts the water to it in a trickling stream, and in this manner keeps it constantly wet. A waterproof sheet must, of course, at the same time be



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spread over the bed-clothes to protect them from damp, so arranged that the excess of water may be conducted along a channel into an empty vessel placed by the side of the bed to receive it.

*Ointment Dressing.*

182. Ointment dressing consists of lint upon one side of which a thin layer of ointment has been spread by means of a spatula; the edges of the lint having been trimmed to the required shape, it is then applied to the part, being maintained in position by cross strips of adhesive plaster, and, if necessary, by a few turns of a bandage. As a rule it is not renewed oftener than once a day.

"Simple dressing" is lint upon which "simple ointment" is spread, and it is used to heal up an ulcer; on the other hand, "blue ointment" (mercurial), or "savin ointment," is used for the purpose of keeping a blistered surface open.

*Antiseptic Dressing.*

183. *Object in employing the so-called Antiseptic Dressing.*—The main cause of the irritation of wounds is now known to be due to the presence of exceedingly minute living bodies or germs, which are constantly floating about in the air, and so readily find their way into wounds open to the air. The object of the antiseptic treatment is to destroy these bodies, and its success depends upon the completeness with which not only those inhabiting the air in the vicinity of the patient are destroyed, but also those which have deposited on the dresser's hands, the dressings, and in point of fact everything which may be brought in contact with the wound, and which may give rise to the infection of the wound. This we endeavour to accomplish by the use of chemical substances called antiseptics, the chief of which are carbolic acid and corrosive sublimate.

In the application of this form of dressing the following special materials will be required:—(1) A steam, or hand spray producer (see fig. 7), by means of which a cloud of antiseptic spray may be directed on the part to be dressed all the time the old dressings are being removed and the new applied; (2) an antiseptic solution in which the dresser's hands and instruments are to be washed; (3) a "guard" of lint kept saturated with antiseptic solution for use in the event of the spray producer suddenly failing; (4) a pad of antiseptic gauze folded eight times, and large enough to project 6 or 8 inches beyond the



wound in every direction, with a thin piece of specially prepared mackintosh placed between the seventh and eighth folds; (5) an oiled silk "protective"; and (6) a gauze roller bandage, oakum, &c.

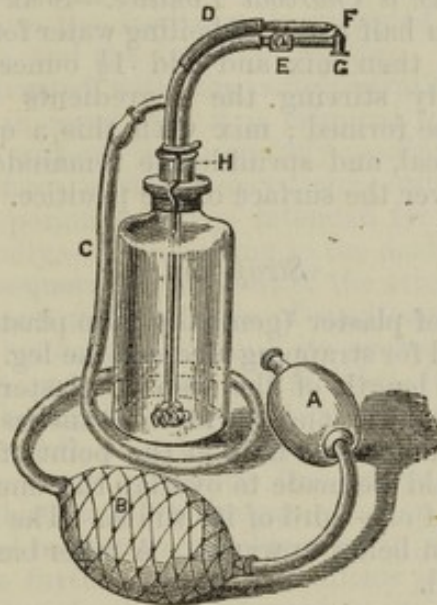


FIG. 7.—LISTER'S ANTISEPTIC SPRAY PRODUCER.

The dressing, which, as a rule, will be applied by the medical officer himself, requires to be changed as soon as the least trace of discharge reaches the surface.

#### *Poultices.*

184. Poultices are used as dressings, either with a view to produce a soothing effect, or as deodorants: of the former kind are linseed meal and bread poultices; of the latter, charcoal poultice.

185. *To make a Linseed Meal Poultice.*—Mix 4 ounces of linseed meal gradually with half a pint of boiling water, then add half an ounce of olive oil with constant stirring. Some tow, neatly teased out, of the required size, is placed on a table, the poultice is turned out upon this and spread out with a spatula in a layer three-quarters of an inch thick, leaving a margin of tow uncovered about an inch in width. A poultice should be considerably larger than the sore or swelling to which it is applied, and it should be renewed frequently. Care should be taken not to apply it too hot to a tender surface.



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186. *To make a Bread Poultice.*—Pour boiling water on bread crumb; let the vessel stand by the fireside for five minutes, then strain off the water and beat the whole up into a pulp, and treat in the same manner as linseed meal poultice just described.

187. *To make a Charcoal Poultice.*—Soak 2 ounces of bread crumb in half a pint of boiling water for ten minutes near the fire, then mix and add  $1\frac{1}{2}$  ounces of linseed meal, gradually stirring the ingredients that a soft poultice may be formed; mix with this a quarter of an ounce of charcoal, and sprinkle the remainder (a quarter of an ounce) over the surface of the poultice.

*Strapping.*

188. Strips of plaster (generally soap plaster) are sometimes employed for strapping ulcers of the leg. They should be cut in the length of the web of plaster, to measure  $1\frac{1}{2}$  inches in width, and at least 6 inches longer than the circumference of the limb at the point of application; each strip should be made to overlap the one preceding it to the extent of one-third of its width. The strips should be applied from below upwards. A roller bandage is then applied over all.

*The First Field Dressing.*

189. Many authorities are of the opinion that before a wounded man is removed from the field of battle some sort of temporary dressing should, if possible, be applied to his wounds. A dressing of this description is usually called the "first field dressing."

The "first field dressing" packet adopted for use in the British service, and which has been prepared after Surgeon-General Longmore's recommendation, contains two pads of carbolized tow, designed to cover the wound of entrance, and of exit; a carbolized gauze bandage to secure the pads in position; a triangular bandage to form a sling, &c., the whole being encased in a tinfoil wrapper and parchment cover, which serve a double purpose, viz., prevent evaporation of carbolic acid, and protect the contents from grit, dust, and damp. The packet, which it is intended should be carried in the soldier's breast pocket on service, weighs 4 ounces, and, measures  $4\cdot5'' \times 3\cdot25'' \times 87''$ . (For further particulars, see List of Changes in War Matériel, 4584, 1st December, 1884.)



SECTION V.—MEDICINES AND EXTERNAL  
REMEDIES.

190. Medicines, when being dispensed at the surgery, should be carefully labelled with the name of the patient for whose use the medicine is intended, the nature of the medicine, and the directions for use.

Those entrusted with the administration of medicine should bear in mind that it is criminal to give medicine to a patient without first carefully reading the label. If this be not done, mistakes may occur,—either an overdose be given, or poisonous drugs intended for external use be given internally,—often leading to the death of the patient, and the consequent punishment of the attendant.

As a general rule, a bottle of medicine should always be shaken before pouring out its contents, and, with a view to the preservation of the label, it should at the same time be held with the labelled side upwards; it should not be left uncorked any longer than is absolutely necessary, as very frequently the active principle, being volatile, is thus lost; for the same reason the dose should be swallowed as soon as possible after it is poured out.

When the further use of a medicine is “stopped,” the unused portion should be returned to the surgery at once. It may be taken as a general rule, except when express orders are given to the contrary, that a patient should not be roused from sleep for the purpose of taking medicine.

No small display of tact on the part of the orderly will be necessary sometimes in order to induce refractory patients to consent to swallow their medicine; on these occasions, however, the orderly must not fail to remember that great tenderness of manner as well as great firmness are required of him, and on no account whatever must he treat the patient roughly.

The following are some of the more usual forms in which medicines are prescribed:—

191. *Mixtures*.—These are medicines in a liquid form, intended for internal use by the mouth; they vary in quantity from one to sixteen ounces, and are given in doses varying from drops to wineglassfuls. The exact dose should be measured in a graduated glass measure. The subjoined table will assist in the use of these measures:—

1 drachm = 1 teaspoonful.

2 drachms = 1 dessertspoonful.



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4 drachms	...	...	= 1 tablespoonful.
2 ounces	...	...	= 1 wineglassful.
60 minims, or drops			= 1 drachm.
8 drachms	...	...	= 1 fl. ounce.
20 ounces	...	...	= 1 fl. pint.

192. *Draughts*.—These vary in quantity from half an ounce to two or more ounces, and the whole is generally directed to be taken at once. Draughts of castor oil are usually administered floating in peppermint water.

193. *Pills*; the small round masses of medicine known by this name are best administered by directing them to be placed one at a time on the tongue and then a mouthful of water to be swallowed, which generally carries the pill down along with it; when any further difficulty arises the pill may be enclosed in a crumb of bread, and then washed down with a mouthful of water. Care should be taken that the lids of pill boxes do not get transferred from one to the other.

194. *Powders* may vary in quantity from a grain to a drachm or more; when small, the contents of the paper is to be placed on the back of the tongue and washed down with water; when large, the powder should be mixed with water in a mug or tumbler, stirred up with a spoon, and given without delay to the patient to drink.

195. *A Seidlitz Powder* is a powder consisting of two parts, a large and a small powder; the contents of the larger package are to be placed in a tumbler with 6 ounces of water and stirred; the contents of the smaller are then to be added, and the whole again stirred and drunk off while effervescing.

196. *A Bolus* is a soft mass of medicine generally dispensed on paper; it should be scraped off the paper, placed on the patient's tongue, and washed down with a mouthful of some fluid.

197. *An Electuary*.—This is a form of medicine generally made up with molasses or honey, and is sent up in a thick state in a mug or pot; dose, usually a teaspoonful.

198. *An Emetic* is a medicine given to produce vomiting. The most useful, and at the same time safest, forms of emetics are—(1) Mustard, and (2) Ipecacuanha. The emetic dose for an adult of (1) is a tablespoonful of the powdered mustard, and of (2) twenty grains of powdered Ipecacuanha. Either when mixed with a small tumblerful of lukewarm water is given to the patient to drink; a vessel at the same time should be placed in readiness by the patient's side as vomiting may come on rather suddenly; the action of



the emetic should be encouraged by draughts of lukewarm water after each act of vomiting.

199. *A Gargle*.—This is a wash for the mouth and throat. A tablespoonful is to be taken into the mouth, the head then thrown slightly back, and the fluid set in motion by breathing through it, at the same time taking care not to swallow any; this is to be repeated at least twice on each occasion.

200. *An Inhalation*.—When a patient is directed to inhale the vapour of a medicine it is to be put into a vessel called an inhaler, which is then to be filled up with hot water: the patient will now inhale the vapour arising from the vessel through the tube placed at the top of the inhaler.

201. *An Enema*.—When either medicine or nourishment in a fluid state is administered by the anus this is called an enema. It varies in quantity from one to twenty, or more ounces, according to the purpose for which the enema is intended; nourishing enemata (beef tea, brandy, &c.), or those prescribed to allay pain, are usually small in amount, while on the other hand those intended to clear out the contents of the bowel are larger. The instrument by which the fluid is driven into the bowel likewise varies in size, a small indiarubber bag for small enemata, a large metal syringe, or the enema apparatus for those large in amount. As a precautionary measure it would be well to try if these instruments are in good order before attempting to give an enema.

To give an enema, the patient should be placed on his left side in bed, his hips brought out nearly to the edge of the bed, and with a waterproof sheet or folded cloth placed under him, in this position the pipe or nozzle of the apparatus (well oiled) should be carefully introduced into the anus to the extent of about 2 inches. This done, the fluid, previously heated to a temperature of 98° Fahr. by standing the vessel in a basin of hot water, is to be forced slowly up the bowel, and the patient directed to resist the inclination to strain which immediately follows the introduction of the fluid (by keeping a folded towel pressed against the anus); otherwise the fluid, if large in quantity, will come away without the object in view having been effected. Uncovering the patient, more than is absolutely necessary, during the operation should be avoided, nor should the bed-clothes be wetted; otherwise much discomfort may be caused to the patient. A night-stool should be placed conveniently in readiness.

202. *A Suppository*.—This is a medicine mixed up with lard and wax, and made to assume a conical form to facilitate



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its introduction by the anus. The patient is to be directed to oil the forefinger of the right hand and pass it up the anus, or if from any reason unable to do so, then the orderly must do so himself. The patient should be placed in bed in the position already described under "*Enema*," the orderly then having oiled the forefinger of his right hand will push the suppository very gently point foremost up to the extent of about 2 inches into the bowel, and subsequently slowly withdraw his finger.

**203. Injections.**—These are medicines in a fluid state meant to be used as a wash for the urethra. They are introduced by an instrument called a syringe. The patient as a rule injects himself. He is to be directed first to make water so as to clear away all discharge out of the urethra, then to place a chamber utensil before him on a chair, or if obliged to remain in bed, between his thighs. He is then to fill the syringe from a gallipot, or other convenient vessel, and to place the forefinger of the right hand in the ring on the head of the piston, and to hold the barrel firmly with the thumb and remaining fingers of the right hand. Next grasping the penis with the fingers and thumb of the left hand, he is to insert the pipe of the syringe into the urethra, where it is held by the fingers of the left hand, and slowly press down the piston so that the injection is forced into the urethra. The syringe should now be withdrawn and the injection, after having been retained for a few seconds by keeping up pressure with the fingers and thumb on the urethra, is to be allowed to escape into the chamber utensil.

**204. Lotions.**—Medicines in a fluid state, used externally, as in the application of evaporating dressing, are called lotions. They should be labelled "For external use only." The quantity required for use should be poured into a gallipot in order that the lint required for the dressing may be properly saturated. "Black wash" is a form of lotion used in the treatment of syphilitic sores.

**205. A Collyrium** is an eye lotion. It is employed to bathe the eye either with a sponge, or by means of a vessel called the eye bath, or an apparatus, the eye douche, or lint may be wetted with it, and then laid over the eye as an evaporating dressing.

**NOTE.**—As regards collyria, every patient should have his own appliances, and retain them exclusively for his own use.

**206. Eye-drops.**—A quill must be used by the orderly for dropping these into the patient's eye. It should be cut the shape of a penholder, and a small hole made at the



upper part of the barrel. To charge the quill: the quill is introduced into the bottle of eye-drops, and the forefinger placed over the small hole; it is then withdrawn and a portion of fluid with it. To introduce the drops into the patient's eye. Throw the patient's head slightly back, draw the lower lid downwards with the fingers of the left hand; now holding the end of the charged quill over the eye, the orderly will allow air to enter (by the small hole) the barrel, when the required number of drops will deposit on the inner surface of the lower lid, and the lids then be allowed to close.

207. *Liniments*.—When a remedy in a fluid state is applied to a part by rubbing, it is called a liniment. The bottle (to prevent mistakes) should be labelled "For external use only." To apply a liniment: pour out a small quantity in the palm of the hand, then rub it over the part affected until the liniment is absorbed; a small quantity more will then be taken, and the rubbing repeated for the required length of time. Many liniments contain irritating substances which, though not sufficiently powerful to irritate the skin over the ordinary parts of the body, yet when brought in contact with parts where the skin is thin, such as the perineum, eyes, &c., cause much smarting and irritation; a safe rule, therefore, is to wash the hands thoroughly after using a liniment, and to caution the patient against the possibility of such an occurrence.

Some liniments, as for example iodine, must be painted on the part with a camel hair brush, and not rubbed.

Croton oil liniment should be rubbed in until a crop of pustules appears; one application usually suffices.

208. *Inunction*.—When ointments are applied to a part by rubbing, it is called inunction. One of the ways of introducing mercury into the system is by inunction of mercurial ointment. The parts selected for the purpose are the inside of the thighs and the armpits. A piece the size of a bean is to be rubbed into the skin once or twice daily with the palm of the hand, gentle and steady friction being continued until the ointment is exhausted, a few turns of a flannel bandage may then be passed round the part so as to protect the bed-linen and favour absorption. During the treatment symptoms, such as foetid breath, swollen gums, dribbling of spittle from the mouth, may arise, these should be reported without delay to the medical officer.

Sulphur ointment is rubbed in during the treatment of itch (*Scabies*).

Tartar Emetic ointment is rubbed in, as a counter-irritant, once or twice daily until a crop of pustules appears.



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209. *Caustics* are frequently used by the medical officer for touching ulcers, and producing eschars; those most commonly in use are nitrate of silver, nitric acid, potassa fusa, and sulphate of copper.

Nitrate of silver is in sticks, and is kept for use in a quill or caustic-holder. It should be washed, and dried with a piece of lint or paper after being used, and should not be placed in contact with any metal, as such decomposes it, nor should it be allowed to touch linen, or the hands, as it produces a dark stain. It is occasionally necessary to point a piece of caustic. To effect this, it should be rubbed on wet lint until it is ground to a point. It should never be attempted to cut or scrape it.

Nitric acid is generally applied by means of a piece of wood, one end of which is pared off thin and flat, the surrounding parts being protected by oil or wax.

Sulphate of copper is used in crystals. The crystal should be ground on a fine stone to a chisel point, and tied in a cleft cut in the end of a piece of wood.

210. *A mustard plaster* is used as a counter-irritant. To make a mustard plaster, mix some fresh mustard powder into a paste with cold water, and spread the paste in an even layer on stiff brown paper of the required size. This is then to be applied to the part, smoothed over, and pressed to the skin with the hand. It is allowed to remain on for a quarter of an hour, and, if the mustard is good, a burning sensation is produced, and the skin is reddened. After the plaster is removed, any mustard adhering to the skin must be washed off; this inconvenience may be obviated by laying a piece of thin tissue paper, or of fine muslin over the mustard plaster when prepared, so as to intervene between the mustard and the skin.

211. *A mustard poultice* is frequently employed when the severe action of mustard plaster is not required. To make a mustard poultice: Mix  $2\frac{1}{2}$  ounces of linseed meal gradually with half a pint of boiling water, then add  $2\frac{1}{2}$  ounces of mustard with constant stirring; the pulp is then spread out on tow in the same manner as a linseed meal poultice. It is allowed to remain on for from four to twelve hours.

212. *A blister* is made by spreading blistering plaster upon stiff brown paper, or adhesive plaster of the size ordered. It is applied to the part in order to produce vesication or watery blebs, and so to act as a counter-irritant. To apply it, the plaster is held for a moment before the fire, if in cold weather, and then being laid on the skin, a few strips of adhesive plaster are laid over it to retain it in position and



prevent it slipping. A bandage may be loosely applied over the whole for greater security, but should not be so tight as to prevent the plaster being raised by the accumulation of fluid in the blebs underneath it.

Unless directions be given to the contrary, the blister should be removed and the part dressed after a lapse of twelve hours.

The bandage and strips of plaster being loosened, the blister is gently raised from one side and removed. Several openings are then made in the blebs with a pair of scissors, and a vessel placed in a position to receive the fluid which escapes.

This done, a dressing of simple ointment spread upon lint is applied, and renewed twice or three times daily until the surface is healed.

Occasionally, when the blister is removed and the blebs have not risen well, a soft linseed-meal poultice is applied, which has the effect of making them rise.

Moreover it is sometimes necessary to increase the effect of a blister by not allowing it to heal up at once ; in other words to keep it open. In this case it will be dressed in a similar manner, except that the old skin should be completely removed, and in place of simple ointment, such other ointment will be spread upon the lint as may be ordered. This will be continued until orders are given to allow the sore to heal, when simple ointment is to be applied as first described.

Blistering fluid is also employed sometimes for producing vesication. It must be painted on the part with a camel hair brush.

#### *Application of Leeches.*

**213.** *Leeches* are employed to draw blood locally.

Some little skill is necessary in their application, otherwise they will not bite.

The part to which they are to be applied should first be washed thoroughly clean with warm water and soap, then with clean cold water, and lastly well dried.

The leeches before being applied should be well cleaned and dried between the folds of a soft cloth ; and when they are to be applied to the mouth, or where the temperature is high, it is recommended to put them into tepid water for a few minutes.

To apply them, the box containing them may be inverted over the part, and the leeches, thus confined, readily bite if the part has been properly prepared.

Another very ready method of applying them is first to



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place the number intended to be used in a hollow in a towel folded like a napkin, then to turn the towel, with the leeches in the hollow, upon the part prepared for their reception, and thus with the towel over them confine them with the hand until they bite, when the towel may be removed. Each leech may also be taken in the fingers and its head directed towards the spot where it is wished to bite, and in this way it will often take hold when all other methods have failed.

If either of these methods cannot be pursued, as when it is necessary to apply them in the mouth, or to confine them to a very small space, then a glass tube, into which each leech is put separately with its head towards the small end, should be brought in contact with the part, and there retained until the leech bites.

Leeches, when full, drop off spontaneously. They should never be pulled off, as their teeth are apt to be left in the wound and cause inflammation.

The part should now be well bathed with warm water to favour the bleeding from the bites, and after this, if more blood still is required to be withdrawn, a soft poultice may be applied. It occasionally happens that leech bites bleed profusely and exhaust the patient, consequently it should be seen that all bleeding has ceased before leaving the patient for the night. Should bleeding continue longer than is desirable, pressure upon the leech bites with the fingers, or a small compress tied firmly on them will, usually arrest it. Should these means fail, the medical officer should be at once informed of the circumstances.

It is undesirable to use leeches more than once.

**214. Application of Ice.**—When it is to be applied, it should be broken into small pieces and put into a bag, either of oiled silk or vegetable parchment, or a bladder, and laid over the part; the bag should not be more than half filled; it should be carefully tied, and it should be removed as soon as the ice is all melted.

**215. Application of Heat. Hot water Jars.**—Jars containing hot water are frequently applied to the feet and legs to restore temperature. They should be carefully corked, wrapped in a roll of flannel or fold of a blanket, and then applied; great care is necessary lest the heat be too great and the parts be burnt, especially if there is any want of feeling in the part, or insensibility of the patient.

Hot bricks are occasionally used for the same purpose.

**216. Fomentations** are applications of hot water to a part. To apply a fomentation: two pieces of flannel, each a couple of yards in length, or two pieces of spongio-piline, are



immersed in a bucket of hot water placed by the side of the patient's bed; one piece is taken out, and, by means of a towel, wrung out nearly dry, and it is placed as quickly as possible on the part to be fomented, and covered by a piece of waterproof sheeting; the second piece is wrung out, and prepared to replace the first as soon as it cools. The process will be continued for the space of at least twenty minutes, unless otherwise ordered. Oil of turpentine is sometimes directed to be sprinkled over the flannel or spongio-piline each time after being wrung out.

217. *Sponging* is employed in febrile diseases to reduce the temperature of the body by means of evaporation. Either cold or tepid water may be used.

A waterproof sheet is placed over the bed, the patient undressed and laid upon it; a large wet sponge is then rapidly passed over the different parts of the body until the temperature is sufficiently lowered by the evaporation, when the patient is put to bed and covered up.

#### Baths.

218. Baths, when employed for the treatment of disease, may be classified into—(a) Water Baths, (b) Vapour Baths, and (c) Hot Air Baths; each of these again may be divided into (a) simple, and (b) medicated, when some drug is added; and the Water Baths, as well as being simple or medicated, may be (1) local or (2) general, according as a part of the body, or the whole body is immersed.

219. The temperature of the different kinds of baths, and the time that patients should be allowed to remain in them, is shown by the accompanying table.

		Description.	Temperature.	Time allowed for remaining in.
			degrees.	minutes.
Water	{ simple (water alone) ... }	Hot	98-105	10
		Warm	92-98	20
		Tepid	85-92	20
		Cold {	temp. of the air	a few minutes
	{ medicated (water with mustard, acids, alkalis, iodine or sulphur). }	Warm	92-98	20
Vapour	{ simple (steam alone) ... }	...	...	} 15-30
	{ medicated (steam first, then either calomel, iodine, or sulphur). }	...	...	
Hot air	{ simple (hot air alone) ... }	...	...	} 15-30
	{ medicated (hot air first, then chlorine) }	...	...	



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220. *Water Baths.*—The bath-thermometer must always be used to determine the temperature of a water bath. (N.B.—The use of the thermometer should be carefully explained by the Instructor.)

It may be regarded as an invariable rule that the original temperature of a bath is to be maintained the whole time the patient remains in it, if necessary by additions of hot water, care being taken in so doing not to scald the patient.

To give a bath.—In preparing a bath, other than a cold bath, hot water should be poured into the vessel first, and cold water then gradually added until the proper temperature is reached, as shown by the thermometer. The patient is then placed in the bath, which to avoid spilling should not be more than two-thirds full, the whole body with the exception of the head and face, or a part of the body, as the case may be, being immersed.

At the end of the appointed time, when taken out of the bath, the patient should be rubbed quickly dry with a towel, and with as little exposure to draughts as possible.

Exhaustion and faintness may sometimes be produced by a hot bath; it will therefore be necessary to watch weakly patients, and not allow them to remain in sufficiently long to produce these effects, but to remove them immediately they appear faint.

The temperature of a cold bath will vary of course with the temperature of the air; the body and head should be immediately submerged on entering the bath, and as much movement as possible be maintained during the whole time the patient remains in it.

The baths used in military hospitals are the long bath,—either fixed in a bath room, or movable so that it can be wheeled to the bedside,—the hip, the slipper, the foot, and the arm bath; these latter are used when certain reasons prevent the immersion of the whole body: the hip bath, for example, when it is intended to influence the organs in, or the parts about the pelvis. In preparing a hip bath, the vessel must not be more than one-third full, otherwise when the patient sits down in it there will not be room, and the water will overflow.

The foot bath is one in which only the feet and legs are immersed; it can be given at a higher temperature than any other bath,  $92^{\circ}$  to  $115^{\circ}$ . The vessel should be so full as to permit the water to reach nearly as high as the knees.

A blanket, or a folded sheet, may be thrown over the patient as he sits with his feet and legs in the bath.

Medicated baths, as a rule, should be given in wooden vessels. Thirty gallons of water will be required for the



immersion of the whole body, in which the ingredients sent up from the surgery for the Medicated Bath will be dissolved.

*Vapour and Hot Air Baths.*

221. These may be given by means of Wyatt's Portable Vapour and Hot Air Bath. The apparatus is contained in a small tin case, and consists of the following parts: a lamp, a bent tube enlarged at its base to take the lamp, vessels of different kinds (a tin basin for water, an enamelled dish for chemicals, a stone generator for chlorine), a diaphragm, and a portable cradle. By means of this apparatus a vapour or hot air bath may be given either in the recumbent posture, or in the sitting posture by placing the base of the apparatus under a cane bottom chair, and enveloping the patient in a mackintosh cloak as in fig. 9.

222. *The following are the directions for using Wyatt's Portable Bath in the Recumbent Position:*—Remove the clothes from the bed, leaving a blanket only to lie upon. Put the cradle together on the bed, cover it with one or two sheets of paper, previously to placing the remainder of the clothes upon it; this will be found as efficient as a water-proof covering, and quite free from unpleasant smell.

Trim the lamp with methylated spirit; the wick should be well spread out, so as to give a good-sized flame; when lighted, place the end of the tube (see fig. 8) beneath the

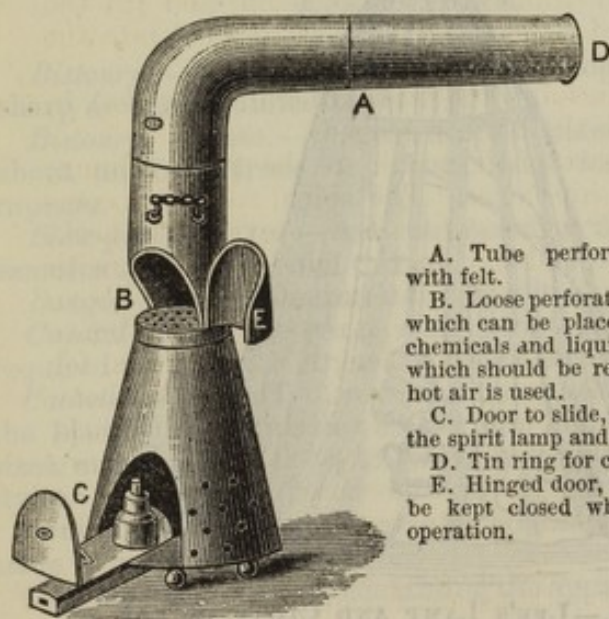


FIG. 8.

A. Tube perforated, and covered with felt.

B. Loose perforated diaphragm, upon which can be placed vessels to contain chemicals and liquids for evaporation, which should be removed when simple hot air is used.

C. Door to slide, to which is attached the spirit lamp and extinguisher.

D. Tin ring for chlorine generator.

E. Hinged door, which should always be kept closed while the bath is in operation.

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cradle, at about its transverse centre, tucking the bed-clothes well down, so as to entirely exclude cold air. For a *simple vapour bath* place the tin basin three parts full of warm water over the lamp.

After a free perspiration has been produced all over the body, and the skin subsequently become tolerably cool, the body should be rapidly rubbed over with a coarse towel.

If iodine, sulphur, or mercurial vapours are required, the ingredients are to be placed in the enamelled dish upon the diaphragm and volatilized, after perspiration has been produced.

223. When *hot air* only is required, remove the diaphragm. If chlorine gas is required, withdraw the apparatus after a free perspiration has been produced by the hot air. Mix the ingredients (15 grains of oxide of manganese, and a teaspoonful of muriatic acid) in the stone generator, gently shake it, and place it in the tin ring just within the extremity of the projecting arm, care being taken to keep the thumb over the orifice of the generator until the apparatus has been replaced under the cradle.

224. Lee's apparatus is sometimes used for giving a calomel vapour bath (see fig. 9), and Evans & Stevens's for

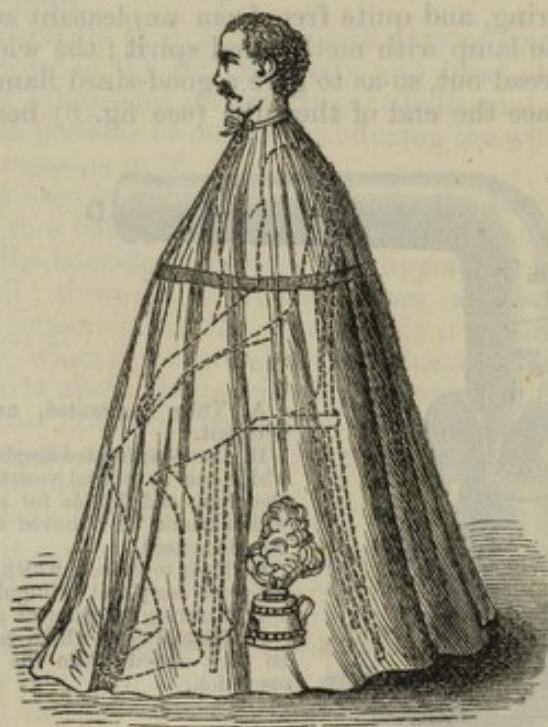


FIG. 9.—LEE'S LAMP AND CLOAK IN USE.



giving a simple vapour bath (see fig. 10). The drawings require no explanation.

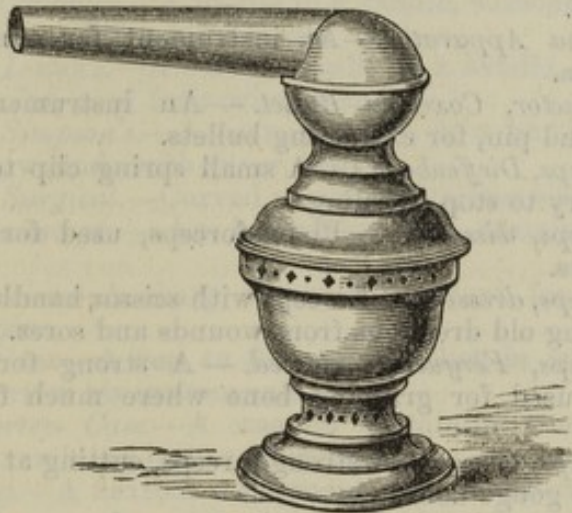


FIG. 10.—EVANS & STEVENS'S APPARATUS FOR SIMPLE VAPOUR BATH.

#### SECTION VI.—SURGICAL INSTRUMENTS AND APPLIANCES.

*Bistoury*.—A long narrow knife, straight or curved, sharp or blunt-pointed.

*Bistoury, Hernia*.—A long narrow knife, blunt except about an inch from the point, used for operating on rupture.

*Blow-pipe*.—A tube used for inflation in post-mortem examinations.

*Bougie*.—An instrument used for dilating stricture.

*Capital Case*.—A case containing the instruments required for performing capital operations.

*Catheter*.—A tube for passing through the urethra into the bladder, made of silver or gum elastic, of various sizes, numbered from 1 to 12; each contains a wire called a stylet.

*Caustic-Holder*.—A little case for holding caustic, usually made of gutta-percha or silver.

*Cupping Case*.—A case containing the apparatus required for performing cupping.



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*Director*.—An instrument with a groove in which to slide a knife.

*Elevator*.—An instrument for raising depressed pieces of bone.

*Enema Apparatus*.—An instrument for administering enemata.

*Extractor, Coxeter's Bullet*.—An instrument, with a scoop and pin, for extracting bullets.

*Forceps, Dieffenbach's*.—A small spring clip to fasten on an artery to stop bleeding.

*Forceps, dissecting*.—Plain forceps, used for dissecting purposes.

*Forceps, dressing*.—Forceps with scissor handles, used for removing old dressings from wounds and sores.

*Forceps, Ferguson's clawed*.—A strong forceps, with claws, used for gripping bone where much force is required.

*Forceps, Gouge*.—A strong forceps, cutting at the points, so as to gouge bone.

*Forceps, Liston's Bone*.—A strong forceps for cutting bone in operations.

*Forceps, Liston's Spring Artery*.—Forceps for taking up arteries, fixed by a spring catch with hooked points.

*Forceps, Necrosis*.—A strong forceps for pulling away dead bone.

*Forceps, Savigny's Bullet*.—An instrument with separate blades, used for extracting bullets.

*Forceps, Syme's Spring Artery*.—Forceps for taking up arteries, fixed by a spring with straight points.

*Gouge*.—A grooved chisel for gouging bone.

*Hare-lip Pins*.—Long steel pins for bringing the edges of wounds together.

*Hernia Director*.—A steel instrument, with a groove, used in the operation for rupture.

*Knives, Amputating*.—Large knives for cutting off limbs, generally of three sizes; large for amputation of the thigh, medium for the leg, small for the arm.

*Knife, Tenotomy*.—A small narrow knife for cutting tendons under the skin.

*Lachrymal Probes*.—Small silver probes for introducing into the tube or duct leading from the eye to the nose.

*Lachrymal Styles*.—A button-headed silver instrument for passing into the duct leading from the eye to the nose.

*Lancet*.—An instrument used for bleeding, vaccinating, and opening abscesses.

*Lancet, Gum*.—An instrument, sharp at the point, used for lancing the gums.



*Laryngoscope.*—An instrument for examining the throat and larynx.

*Needle, Aneurism.*—A curved instrument, with an eye near the point, used for passing a ligature round an artery.

*Needle, Cataract.*—A needle in a handle, without an eye, used in the operation for cataract.

*Needle, Liston's.*—A curved needle in a handle, the eye near the point, used for sewing wounds.

*Needle, Simpson's.*—A curved needle in a handle, used for sewing wounds with silver wire.

*Needle, Surgical.*—Curved needles of various sizes.

*Ophthalmoscope.*—An instrument for examining the eyes.

*Pliers, wire.*—A sharp strong instrument for cutting wire and pins.

*Pocket Case.*—A case to fit in the pocket, in which the surgeon carries his instruments.

*Post-mortem Case.*—A case for containing instruments used for examining bodies after death.

*Probang.*—A flexible instrument for passing down the gullet.

*Probe.*—A silver wire instrument for probing wounds.

*Saw, Amputating.*—A saw used for sawing the bone in amputations of a limb.

*Saw, Butcher's.*—A framed saw, the invention of Surgeon Butcher, used for the same purposes as the amputating, but more especially for excision of joints.

*Saw, Hey's.*—A small saw for cutting a piece out of a bone, used in operations on the skull.

*Scalpel.*—A short knife, of different sizes, with a curved edge, used for cutting and dissecting.

*Scarificator.*—An instrument with a number of lances, used for scarifying the skin in the operation of cupping.

*Scissors, Bowel.*—A pair of scissors, with a hook, used for slitting up the intestines in *post-mortem* examinations.

*Spatula.*—A blunt knife for spreading ointments.

*Staff.*—An instrument for introducing through the urethra into the bladder in performing the operation for stone.

*Stethoscope.*—An instrument for examining the chest.

*Stomach Pump.*—An apparatus used for pumping into and out of the stomach.

*Syringe, Hydrocele.*—A glass syringe, made to fit on the canula, so as to inject the sack of a hydrocele when it has been tapped.

*Syringe, Hypodermic.*—A glass syringe fitted with a sharp point for the purpose of piercing the skin; it is



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employed in the subcutaneous administration of morphia and other medicines.

*Tenaculum*.—A sharp hook for taking up arteries or anything which may require hooking up.

*Tourniquet*.—An instrument for making pressure to stop bleeding.

*Tracheotomy Tubes*.—Two curved silver tubes, one fitting inside the other, used for putting into the windpipe when an opening has to be made in it.

*Trephine*.—A circular saw, used in operations on the skull.

*Trocar and Canula*.—A sharp-pointed instrument and sheath for tapping collections of water. Large for tapping the belly or chest, small for tapping hydrocele.

*Trocar and Canula, exploring*.—A very fine instrument for searching for fluid in swellings.

*Truss*.—This is an appliance used in the treatment of rupture.\*

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### SECTION VII.—CASES OF EMERGENCY AND THEIR IMMEDIATE TREATMENT.

#### BLEEDING.

225. Bleeding may take place when any portion of the system of blood-vessels gives way, or is opened into. In bleeding from an artery, or arterial hæmorrhage as it is called, the blood that escapes is of a bright red colour, and spouts out forcibly in quick jerking jets, coming from the side of the wound nearest the heart, and in large or small quantity, according to the size of the vessel injured; in the case of a large artery, such as the femoral or carotid, a few minutes are sufficient for life to be destroyed if the bleeding is not arrested. When a vein is opened, the escaping blood is of a darker colour, and flows in a slow uniform trickling stream, and from the side of the opening remote from the heart. Arterial hæmorrhage is more

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\* It consists of a solid chamois-lined pad, and a hollow leather strap attached thereto, made to carry a steel spring. After the return of the protruded knuckle of intestine into the abdominal cavity, the truss is passed round the patient's hips with the pad over the opening in the abdominal walls, where it is secured in position by buttoning the end of the circular strap to one of the small studs on the pad, and attaching the perineal tape to the other; the elasticity of the spring presses the pad against the opening, and prevents the re-escape of the intestine. A patient should be made to lie on his back in bed with his knees drawn up when a truss is about to be applied.



dangerous than venous, and more difficult to stop by reason of the greater force of the current; capillary bleeding is less dangerous than either. In capillary bleeding, the blood oozes from the entire surface, and not from any one point as when an artery or vein is injured.

*Measures for the Temporary Arrest of Bleeding.*

226. The means for arresting *arterial hæmorrhage* may be divided into two heads:—(a) direct compression of the wound by (1) the fingers, or (2) a graduated compress; and (b) compression of the artery between the wound and the heart by means of (1) the fingers, (2) forcible flexion, or (3) tourniquets.

227. (a) *Direct Compression of the Wound*.—No time should be lost in making firm pressure with the fingers on the bleeding point, aided by the fingers of the other hand if necessary. This pressure should be maintained until some of the other more permanent means can be employed, or medical assistance be procured.

228. *To apply a Graduated Compress*.—A piece of lint must be folded so as to form a small hard pad about the size of the point of the finger, this is slipped under the finger on the bleeding point and pressed there until another piece, a little larger, is placed on the top of it, and so on until the pile so formed rises above the surface or edges of the wound—cone shaped with its apex on the wounded vessel and its base rising above the surface; over this then a bandage should be tightly applied.

229. (b) *The Direct Compression of the Artery*.—(1) Digital compression can only be successfully carried out in those places where a fixed point of resistance is afforded by a bone, *e.g.*, compression of the common carotid, on the side of the neck, alongside the windpipe, where the artery can be pressed against the vertebræ; of the subclavian, at centre of collar-bone, draw forward the shoulder and clavicle, and the artery will then be more easily reached by the fingers and pressed against the first rib; axillary, raise the arm, the artery can be pressed against head of humerus; brachial, against centre of humerus; abdominal aorta, flex the thighs on abdomen, the artery can then be pressed against the vertebræ; femoral, in the centre of the groin against the bones forming the pelvis, and in the upper half of the thigh against the thigh bone, the thick parts in the latter position, however, offer some difficulty; the radial and ulnar, just above the wrist, in case of a wound of the palmar arch.



## Part II.

## Instructions for the Professional

As it is not always possible to carry out digital compression for any length of time, its place must be supplied by other contrivances : (2) Forcible flexion of a limb upon itself is sometimes resorted to, and so also is the use of (3) Tourniquets. There are three kinds of tourniquets used in the military service—the field, the screw, and Esmarch's web.

230. The field tourniquet consists of a pad, strap, and buckle. To apply it, the pad is placed on the main artery, the strap brought round the limb and passed through the buckle, then steadying the pad in its place with one hand the strap is tightened with the other until the flow of blood is stopped, and then it is buckled. The screw tourniquet consists of two plates, a thumbscrew, and a pad and strap. To apply it, the plates are first brought together, the pad placed on the artery, strap carried round the limb and buckled, without being so tight, however, as to constrict the limb ; the screw is then to be quickly twisted, which has the effect of separating the plates, and so making the requisite pressure by tightening the strap round the limb. Esmarch's web tourniquet consists of a strip of elastic webbing ; several turns of the webbing are firmly made in the same line round the limb above the seat of the wound, and the end then fastened off with a safety pin.

231. In the absence of any of these tourniquets, a tourniquet may be improvised as follows :—take a handkerchief, a smooth stone, and a stick, wrap up the stone in the centre of the handkerchief and place it over the artery, pass the ends of the handkerchief then round the limb and tie them securely, leaving sufficient space for the stick to be admitted ; pass the stick then between the handkerchief and skin, and carefully twist it until by tightening the handkerchief the stone is pressed upon the artery with sufficient force to arrest the flow of blood.

It should be remembered that these means are after all only temporary means of arresting arterial hæmorrhage, and more permanent means (ligature) should be resorted to with the least possible delay by the medical officer.

232. *Means of Arresting Venous Hæmorrhage.*—Attend particularly to the position of the patient, place him lying down, and, if the bleeding be from a limb, elevate the limb. If the bleeding still continue, moderate pressure should be applied by means of a pad and bandage.

233. *Means of Arresting Capillary Bleeding.*—Bathe the part with cold water, and if this be insufficient apply moderate pressure with a pad and bandage.

234. *Bleeding from the Nose.*—Direct the patient to hold



his head back, and his arms up by the side of his head for a few minutes ; apply cold to back of neck.

235. *Bleeding from Lungs or Stomach.*—The patient will be directed to lie down with his head raised, and to keep perfectly quiet, not to move if possible. Ice, if at hand, should then be applied to the chest or abdomen, as the case may be ; at the same time he may be given small pieces in the mouth to suck, and iced drinks to drink, but only small quantities at a time.

#### BURNS.

236. The damage to the body occasioned by burns varies with the degree of heat applied to the part burnt, the more intense the degree of heat, the more severe the burn. As regards immediate treatment, it should be remembered that severe burns, more particularly those situated on the head, neck, and trunk, and which occupy a great extent of surface, are likely to be attended from the outset by serious constitutional disturbance, from which alone the patient may sink unless properly supported, viz., the patient becomes cold, he becomes almost voiceless and pulseless, and seized with fits of shivering which may continue for a considerable time. The immediate treatment must have reference to these constitutional symptoms as well as the local injury. Reaction must be promptly brought about by placing the patient in bed, restoring the warmth of the body by warm blankets, hot water jars to the feet, and by administering hot drinks, as well as small quantities of stimulant in extreme cases. The points to be aimed at in all cases, so far as the local treatment is concerned, are protection of the injured surfaces from the air, and relief of pain. This will be best accomplished by removing burnt clothing (cutting the clothes, not pulling them off), and then covering the surface either with a thick uniform layer of finest wheaten flour, or enveloping the part in lint steeped in olive oil, castor oil, or carron oil (equal parts of lime-water and linseed oil), or in cotton wool.

237. A scald is occasioned by the application of some hot fluid to the body, and may be treated in precisely the same manner as a burn.

#### DISLOCATION.

(See page 48.)



## Part II.

## Instructions for the Professional

## DROWNING.

238. *Restoration of the Apparently Drowned.*—Send immediately for medical assistance, blankets, and dry clothing, but proceed to treat the patient instantly on the spot, in the open air, whether ashore or afloat. The points to be aimed at are, first and immediately, the restoration of the breathing, and secondly, after breathing is restored, the promotion of warmth and the circulation. The efforts to restore life must be persevered in for one or two hours, or until a medical man has pronounced life to be extinct. Efforts to promote warmth and circulation beyond removing the wet clothes and drying the skin, must not be made until the first appearance of natural breathing, for if the circulation of the blood be induced before breathing has recommenced, the restoration of life will be endangered.

There are two methods of restoring the breathing, Dr. Sylvester's method and Dr. Marshall Hall's.

239. *Dr. Sylvester's Method.*—Place the patient on his back on a flat surface, inclined a little upwards from the feet; raise and support the head and shoulders on a small firm cushion, or folded article of dress, placed under the shoulder-blades. Draw forward the patient's tongue and keep it projecting beyond the lips; an elastic band over the tongue and under the chin will answer the purpose, or a piece of string or tape may be tied round them, or by raising the lower jaw the teeth may be made to retain the tongue in that position. Remove all tight clothing from about the neck and chest, especially the braces. Standing at the patient's head grasp the arms just above the elbows, and draw the arms gently and steadily upwards above the head and keep them stretched upwards for two seconds. (By this means air is drawn into the lungs.) (See fig. 11.)

Then turn down the patient's arms and press them gently and firmly for two seconds against the sides of the chest. (By this means air is pressed out of the lungs.)

Repeat these measures alternately, deliberately, and perseveringly about fifteen times a minute until a spontaneous effort to respire is perceived, immediately upon which cease to initiate the movements of breathing and proceed to induce warmth and circulation.

240. *Dr. Marshall Hall's Method.*—Place the patient on the ground with the face downwards, and one of the arms under the forehead, in which position all fluids will more readily escape by the mouth, and the tongue itself will fall forward,



leaving the entrance into the windpipe free. Assist this operation by wiping and clearing the mouth. If satisfactory breathing commences, proceed to induce warmth and circulation. If there be no breathing, or only very slight breathing, or if the breathing fail, then raise and

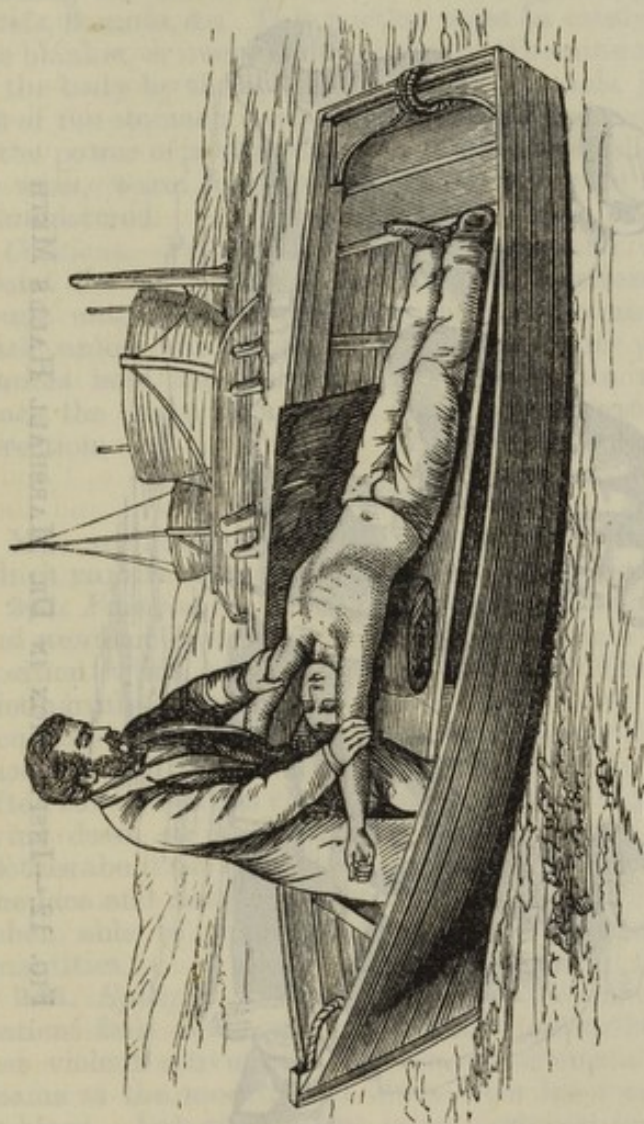


FIG. 11.—INSPIRATION IN DR. SYLVESTER'S METHOD.

support the chest well on a folded coat, or other article of dress. Turn the body very gently on one side and a little beyond, and then briskly on the face back again, repeating these measures cautiously and perseveringly about fifteen times a minute, or once every four or five seconds, occasionally varying the side (see fig. 12).



## Part II.

## Instructions for the Professional

On each occasion that the body is replaced on the face, make uniform but efficient pressure with brisk movement on the back between and below the shoulder blades on each side, removing the pressure immediately before turning the body on the side. During the whole of the operation



FIG. 12.—INSPIRATION IN DR. MARSHALL HALL'S METH

let one person attend solely to the movements of the head and of the arm placed under it. The result is respiration and, if not too late, life.

Whilst the above operations are being proceeded with, dry the hands and feet; and as soon as dry clothing or



blankets can be procured, strip the body, and cover or gradually reclothe, but taking care not to interfere with the efforts to restore breathing.

241. *To promote Warmth and Circulation.*—Commence rubbing the limbs upwards with energy, using handkerchiefs, flannels, &c. This friction must be continued under the blanket, or over the dry clothing. Promote the warmth of the body by the application of hot flannels, jars, to the pit of the stomach, arm-pits, and to the soles of the feet; if the power of swallowing has returned, small quantities of wine, warm brandy and water, or coffee should be administered.

*Cautions.*—Prevent unnecessary crowding of persons round the body, especially if in an apartment. Avoid rough usage, and do not allow the body to remain on the back unless the tongue is secured. Under no circumstances hold the body up by the feet. On no account place the body in a warm bath unless under medical direction.

#### FITS.

Men are liable to be seized with fits of various kinds, which require somewhat different kinds of treatment.

242. *Fainting fits* are generally caused by over-exertion in hot weather, heated rooms, or by getting into the upright position when weak from disease. A fainting fit is distinguished by the patient sinking down prostrated, generally insensible, remaining without convulsions. The face and lips are pale, and the surface of the body cold, often covered with a clammy perspiration. Lay the patient lying down on his back with his head low; loosen the clothes about the neck and chest. Sprinkle cold water about the face and neck. Apply smelling salts to the nose, and when able to swallow, administer stimulants in small quantities.

243. *Epileptic fits* are due to constitutional causes. The patient falls down with a scream, is insensible, generally has violent convulsions, throws his arms and legs about, foams at the mouth, and often bites his tongue making it bleed. Lay the patient lying down on his back with his head slightly raised; loosen the clothes about the neck and chest. Employ sufficient restraint to prevent him injuring himself, without pressing on the chest; the best method of holding him is for one attendant to hold the head firmly, two others to grasp the lower limbs above the knees and above the ankles, and two others to grasp the hands and the shoulders.



## Part II. Instructions for the Professional

244. *Apoplectic fits* occur mostly in elderly and stout persons. The patient falls suddenly, generally insensible. The face is red, and the breathing loud and snorting. An apoplectic fit is very often mistaken for drunkenness.

Raise and support the head and upper part of the chest. Loosen clothes about the neck. Apply cold water to the head. Give *no* stimulants.

245. *Sunstroke* occurs in hot climates, or summer weather. The patient falls suddenly, generally insensible, the face red, sometimes in convulsions.

Raise the head and upper part of body. Carry at once into the shade. Remove the clothes from the neck and upper part of the body. Douche the head, neck, and chest with cold water. Avoid crowding round the patient. Give *no* stimulants.

246. *Drunken fits*.—The symptoms are generally well known. The odour of liquor in the breath is well marked. Place the patient on *his side* with head slightly raised. Do not allow him to lie on his back, or on his face. Remove all constrictions from about the neck and upper part of the chest. Induce vomiting by tickling the throat with a feather. It may be necessary to have recourse to the stomach pump in serious cases. If able to swallow, give lukewarm water to drink.

FRACTURE. (See page 45.)

### POISONING.

247. A case of poisoning is recognised by (1) a sudden appearance of the symptoms in a person otherwise healthy, by (2) the symptoms coming on soon after food or drink has been taken, and, if after a meal of which many have eaten, the symptoms will then be complained of by several, or all who have partaken of it. As the symptoms will be found to vary in character, so also must the treatment. The general principles, however, that should guide the treatment are as follows:—(a) get rid of the poison as soon as possible by inducing vomiting by the use of emetics; (b) neutralise what remains by use of antidotes; (c) give copious demulcent drinks, gruel, milk, &c., so as to help to dilute what remains, and assist in its elimination; (d) combat any dangerous symptoms, such as collapse, by stimulants (see Table of Poisons).

*Emetics*.—Mustard and water, in the proportion of a teaspoonful of mustard to a tablespoonful of water, repeated every quarter of an hour, or, where very rapid action is required, a dose of twenty grains of sulphate of



TABLE OF POISONS, &amp;c.

Note.—The antidote, &c., for each poison is placed in the line directly opposite to the name of the poison.

Poison.	Symptoms.	Emetics, &c.	Antidotes, &c.
Strong mineral acids			
Caustic alkalis ...	Immediate burning pain in mouth, throat, and stomach, rapidly extending to abdomen. Vomiting occurs early, followed by purging. Speedy death from shock, exhaustion, or suffocation.	None required	Magnesia (calc. or carb.), 2 to 4 oz. to a pint of water, and 2 oz. for a dose at a time; or soap and water, or chalk, whiting, or wall plaster in water. Lemon juice and vinegar. Chalk and water; magnesia or whiting in water. Raw eggs abundantly; flour made into a paste; milk. Soluta of soda bi-carb., immediately followed by raw eggs. Tannic acid in any form; tea, nutgalls, bark, or other astringent solutions or tinctures.
Oxalic acid ...			
Corrosive sublimate ...			
Chloride of zinc ...			
Chloride of antimony ...			
Arsenic ...	Here the symptoms vary considerably; usually there is considerable delay in their appearance. After a time pain and great dryness of the throat, great thirst, nausea and vomiting; hiccup, loss of voice, cold sweats. Death will occur from shock or exhaustion.	Stomach pump may be required, and emetics to induce vomiting	Recently prepared iron peroxide, formed by mixing 2 or 3 oz. of solution of iron perchloride with 1 oz. of the crystals of soda carb.; or by precipitating tinct. ferri. perchl. by caustic ammonia $\frac{1}{2}$ oz. of the precip. for a dose; raw eggs and milk; oil and lime-water. Carb. ammonium in solution, or white of egg. Magnesia or soda sulphate. Raw eggs and milk. Magnesia or chalk mixed in gruel. Starchy fluids, gruel, &c. Thick warm liquids, linseed tea, &c. Cold affusion; artificial respiration; fresh air.
Tin ...			
Lead ...			
Copper ...			
Phosphorus ...			
Iodine ...			
Cantharides ...			
Irritant gases ...			
Opium (morphia) ...	Headache and drowsiness ...	None required	Keep the patient roused, walking him about in the open air quickly; strong coffee; tannic acid; cold affusion to head and chest.
Belladonna ...	Giddiness, headache, dim sight, contraction of pupils, drowsiness passing into insensibility.	Stomach pump may be required.	Animal charcoal. Tannic acid. Strong coffee. Do.
Hyoscyanus ...	Delirium, illusion of the senses, thirst; dilated pupils.	Sulphate of zinc.	Do.



## Part II.

## Instructions for the Professional

TABLE OF POISONS, &c.—*continued*.

Poison.	Symptoms.	Emetics, &c.	Antidotes, &c.
Strychnia .. ..	Violent paroxysms of rigid convulsions, with great suffering; lockjaw. Mind not much affected.	Stomach pump usually required.	Copious draughts of olive oil if seen early; keep all quiet round the patient; support strength with beef tea and brandy.
Prussic acid .. ..	Death by shock, and the action so rapid as not to allow of any special symptoms.	Stomach pump or sulphate of zinc if the jaws can be opened.	Seldom time. Restore animation by repeated cold affusions over head and neck; smelling salts to nostrils; brandy. Give magnesia, or soda bi-carb.; or a mixture of proto-sulphate and persulphate of iron, with a little caustic alkali, if the case is seen at once.
Carbolic acid .. ..	Breath smells strongly of the acid; intense burning pain from mouth to stomach. Immediate giddiness.	Mustard or zinc sulphate.	A mixture of olive and castor oils, with magnesia in suspension; raw eggs beaten up with sugar, <i>ad lib.</i>
Aconite .. ..	Numbness and tingling; feeling of constriction, and burning in the throat.	Sulphate of zinc.	Friction to limbs and spine with hot towels; stimulants.
Lunar caustic .. ..	Immediate vomiting usually .. ..	None required.	Solution of common salt, or sal ammoniac, or sea water.



zinc. Emetics should not be given in poisoning by mineral acids, caustic alkalis, oxalic acid, or other corrosives. The stomach pump may be required in arsenic, opium, strychnia, or alcoholic poisoning, and will then be used by the medical officer.

#### SHOCK.

248. The constitutional disturbance referred to under "Burns" is called Shock, or Collapse. This state may be induced by the sudden occurrence of any severe injury. In all such cases, reaction will be brought about by the means already indicated.

#### SPRAIN.

249. A twist of a joint is called a sprain; it most usually occurs to the ankle or wrist. The immediate treatment consists in applying cold lotion and in keeping the joint perfectly quiet until seen by a medical officer.

### SECTION VIII.—NURSING.

#### MANAGEMENT OF WARDS.

250. *Arrangement.*—Every attendant in charge of a ward is responsible for its proper management. The furniture should be neatly and systematically arranged, and the utensils and other articles kept each in its appointed place.\* By this being done, not only will the ward present a neat and tidy appearance, but from the attendant knowing where each article is placed, much confusion will be avoided, and time saved, in looking for it when required.

251. *Cleaning Floor.*—Each morning the floor of a ward will require to be well dry-rubbed and afterwards swept, and it is often advisable to sweep it previous to using the dry-rubber. Much depends upon the manner in which this

\* The bedstead should be drawn out from the walls at least 6 inches in every direction, the towel spread out on the head to dry, and the chamber utensil and boots arranged as shown on fig. 13. On the wall over the head of the bed there should be a nail, from which the Diet-sheet board should be suspended.

*Bedside Table.*—On the top of the bedside table will be arranged the medicine mug, spitting cup, &c., and knife and fork; on the centre shelf the comb and brush, and books (if any); and on the lower shelf articles of clothing, neatly folded, and cap. Should the bedside table be provided with only one shelf, then all these articles must be arranged to the best advantage on it; in this case, also, the cap will be hung on a nail at the back of the bedside table to make more room. Medicine bottles, &c., as a rule, will not be kept in the wards.



## Part II. Instructions for the Professional

is done. If a floor be well dry-rubbed every day it will smooth and polish the surface of the boards and prevent the dust from adhering to them, thus obviating the necessity of washing them so often as would otherwise be the case, which in itself is a matter of great importance to the welfare of the sick.

In using the long scrubber the following are the main points to be attended to,—that the scrubber be forced firmly and evenly along the floor in the direction of the grain of the wood, that the stroke be not too long, and that each successive stroke of the scrubber partly covers the previous one. After the floor has been thoroughly rubbed over it will require to be swept clean, and in doing this there are a few points to be attended to, viz., that the brush is not jerked but pushed smoothly so as to raise the dust as little as possible, and in place of sweeping the dust over the floor from the one end of the ward to the other, it should be collected in small heaps, each being put into the dust-pan, until the whole of the floor is swept, when it can be put into the dust-box for entire removal from the ward.

When the floor of a ward requires washing, the attendant should never do so without the medical officer being first consulted, lest the moist exhalation from the damp floor should be injurious to some of its occupants. A dry day should be chosen for the purpose, and the washing ought to be done as early as possible in the day. Before commencing, the floor should be swept clean, and the attendant should have a hand scrubber, two pieces of old blanket or flannel (one to put the clean water on the floor and the other to mop up the dirty), two buckets of hot water, in one of which some soap and soda is placed for applying to the floor, and the other is to be kept to wring the flannel in after it has mopped up the dirty water. Leaving dirty water marks on the floor should be avoided, and the whole should be wiped as dry as possible. Where the floors are polished they require to be first swept and then polished with beeswax and a long scrubber. To apply the beeswax it should be lightly rubbed on the scrubber or on a piece of flannel bound over the scrubber, and thus applied to the floor. When anything is spilt upon the floor it should be carefully wiped up and the surface cleaned with a little hot water and soda, and dried and brushed.

*Cleaning Windows.*—The woodwork of windows should be cleaned by washing it with warm water and soap. The glass itself is cleaned by rubbing over it a mixture of whitening and water, about the consistence of cream, and



when dry, polishing it with a clean thoroughly dry duster. This mode of cleaning is not always necessary. If the glass be wiped over daily with a duster it will generally suffice to keep it in good order. The cloths used should be free from nap or fluff.

**252. *Cleaning Walls.***—The walls of wards should be frequently dusted, and cobwebs removed, where they have accumulated. This may be done by tying a duster over the top of a long hair broom and with it sweeping them down.

Cement walls will, in addition to dusting, require to be occasionally washed with hot water and carefully dried.

**253. *Cleaning Stoves.***—In cleaning a stove care is required that in cleaning one thing another is not dirtied. A useful thing to prevent this is a thin strip of wood held in the one hand against the surrounding wall, while the brush is used with the other. The blacklead should be made into a thin paste and applied with the small round brush over every part that is to be blacked. When the blacklead is dry on the stove, the polishing brush is to be used briskly until it shines in every part. The ends of the fire-irons are cleaned in the same way as the stove. The bright parts are rubbed with bath brick and a piece of leather or coarse cloth.

The best time for cleaning a fire-place is before the fire has been lighted, but as this can seldom be done, it should be cleaned immediately afterwards before it gets hot. When a stove is pretty clean and only wants a little more polishing, a little of the dry lead dusted on and brushed with the polishing brush will serve the purpose.

**254. *Cleaning Paint-work.***—The paint-work of a ward will require to be occasionally scrubbed with hot water and soap. Soda should not be used as it soon destroys the paint.

**255. *Cleaning Ward Furniture, &c.***—Tables and forms should be scrubbed with hot water and soap. Tumblers and such articles are best washed in cold water, it gives them a better polish and does not crack them. Mugs, basins, and such like must be washed in hot water. Vessels of tin and white metal are best cleaned by washing them with hot water to remove the grease, and then polishing them with whitening. In washing knives and forks the blades only should be placed in hot water. Coal-scuttles and brasses should be polished with a paste made of finely powdered bath brick and water, and rubbed with a piece of leather or coarse cloth. When the brasses are very dirty they should be washed with hot water before being polished.



## Part II.

## Instructions for the Professional

256. *Dusting.*—Every ward should be dusted at least once in the day. In doing this great care is necessary, for if a dry duster be flipped about, as is usually done, it merely raises the dust into the air to be again deposited in the same place or elsewhere. The duster should be slightly damp, and every article requiring to be dusted should be wiped over with it. By this means the cloth will take up the dust and not drive it from one place to another.

257. *Emptying Slops.*—Slops should not be allowed to remain in the wards longer than is absolutely necessary. All ward slops, such as the contents of chamber pots, bed urinals, bed pans, expectoration cups, washings of sores and wounds, and water used for washing bedridden patients, should be thrown down the ward sink, where such is provided,\* but where this does not exist they must be thrown down the W.C., care being taken in doing so not to soil the seat. Old dressings, such as lint, poultices, tow, plasters, &c., should not on any account be thrown down the sink or watercloset as the pipes are liable to become stopped up. Such articles should be removed to the dust cart or dust heap and either buried or burnt. The utensils from which slops have been emptied must be well washed by running water freely into them from the tap, using disinfecting fluid when necessary, and afterwards dried. Cloths used for this purpose must receive special attention and be employed for this use alone.

258. *Heating.*—The stoves in use in military hospitals are either set in the wall similarly to ordinary stoves, or made to stand in the centre of the room. The fires should be properly built up before lighting, and afterwards so replenished with fuel as at all times to be bright and cheerful, and not allowed, as is too often the case, from their having been too long neglected and then heaped up with a large quantity of coal, to become a mere spark, half smothered in cinders and coals. The temperature of the ward should be kept as near 60° F. as possible, and sudden alterations of heat and cold should be avoided as far as practicable.

259. *Lighting.*—Where gas is burned in wards it should not be kept higher than is necessary to give sufficient light, as the combustion of the gas renders the air impure, and the greater the quantity burned, the more impure will the air become. Besides, too bright a light is often distressing to patients.

\* By ward sink is meant, not the flat slate sink with the two taps over it at which mugs, glasses, &c., are washed, but a sink having a pan somewhat similar to a W.C. pan, with a tap over it, specially provided for the purpose of receiving ward slops.



260. *Ventilation*.—By this is meant keeping the air of an apartment pure. If the air of a ward be not constantly changing, it becomes loaded with impurities given off from the lungs, from the skin, and from the excretions of the occupants, and from combustion.

The effect of an atmosphere thus rendered impure is to favour the development of fevers, the spread of gangrene, erysipelas, &c., to retard the healing of sores and wounds, and to lower generally the health of patients.

The principle to be kept in view is, that the air within the ward shall be, as nearly as possible, as pure as that on the outside of the building, without the temperature being lowered below the proper standard. To effect this the air of the ward must be constantly changing, fresh air entering as impure air escapes; so there must be both inlets and outlets. In hospitals the inlets are so arranged that the amount of air entering by them can be regulated by opening or closing them. They are also placed that the air as it enters is diffused over the apartment, and currents of air with a high degree of velocity, *i.e.*, draughts, are not poured upon the occupants. Sheringham's ventilators placed in the walls, and Moore's louver ventilators in the windows, are the inlets most generally employed. Galton's stoves also have a channel communicating with the outer air, and opening into the wards, by which air, heated in its passage, is admitted into the ward. In Sheringham's and Moore's ventilators the amount of air entering may be regulated by opening or closing them. The current is directed upwards, so that it is diffused and does not come directly on to the occupants, and in the Sheringham ventilator this diffusion is still more effectually secured by the top being covered by perforated zinc.

The outlets are generally placed in the ceiling, and lead into a shaft, the greater the length of which the greater will be draught. The chimney also acts most efficiently as an outlet.

By means of these several openings, an interchange of air is constantly carried on. The air within, as it becomes heated, rarefied, and impure, ascends and passes away through the outlets, while the pure air from without, being colder and consequently heavier, rushes in through the inlets to supply its place. Thus a continuous current is established irrespective of the movements of the external air. Where these means of ventilation are insufficient, they may be supplemented by drawing the window sashes down from the top, but not raising them from the bottom.

261. *Making Beds*.—The comfort of a patient depends



## Part II.

## Instructions for the Professional

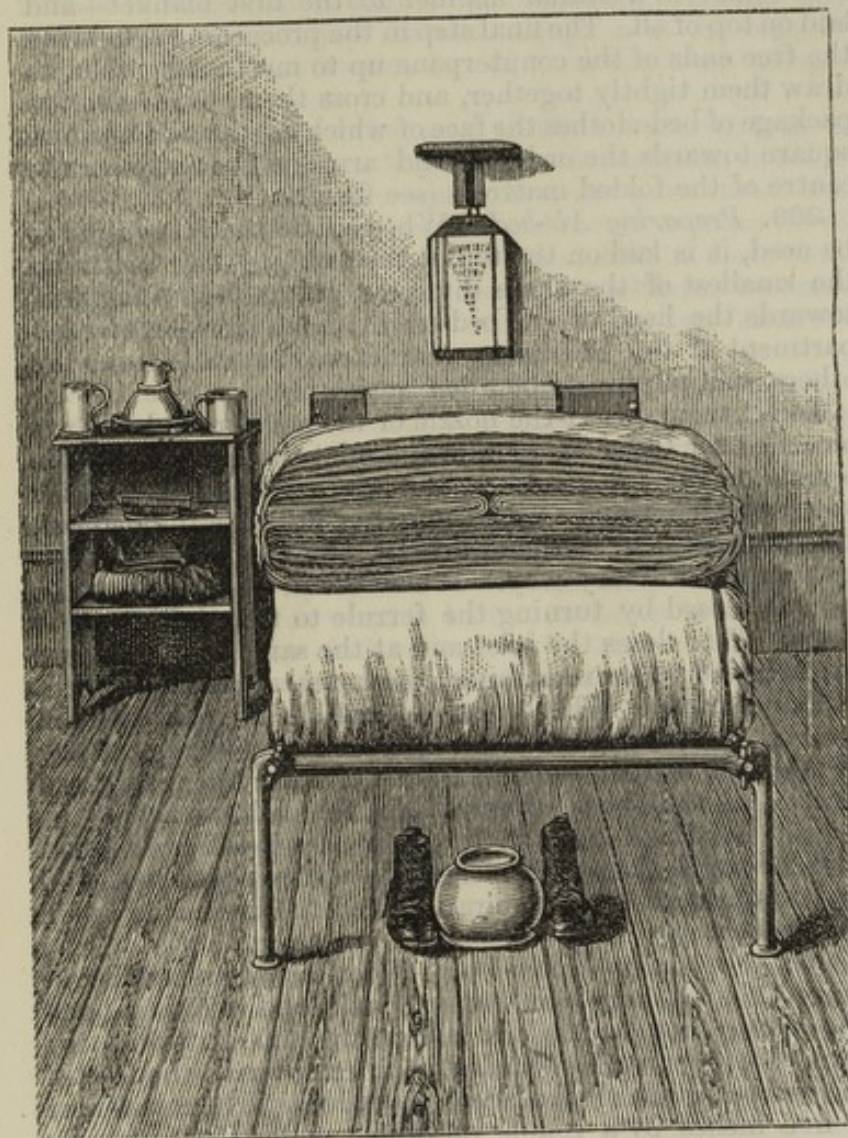
much upon the manner in which his bed is made. Care should therefore be taken to keep it as comfortable as possible. Before making up the bed, the whole of the bedding should be thoroughly aired, and afterwards well beaten, particular care being taken to remove all lumps and irregularities from the mattress. A bed is very apt to become sunken and hollow in the centre. This is generally caused by the lacing of the sacking getting slack. The defect should be at once remedied by tightening the cord.

These preliminaries being attended to, the mattress is laid on the sacking, a blanket laid evenly over the mattress, and the bolster placed on the blanket at the head of the bed. The sheet is next laid over the blanket and bolster, and neatly tucked under the latter. Both blanket and sheet being smoothed and without folds or wrinkles, should then be tucked firmly and neatly under the edges of the mattress. This tends to keep them smooth, and prevent them getting into folds. The pillow should be placed on the bolster, having first been well shaken, beaten, and made soft. The over sheet should now be laid on, also the blankets and counterpane, and after they have been tucked in round the sides and at the foot of the mattress they should be neatly folded down at the head.

262. *Folding up Beds.*—The bedding of patients will be folded up in the following manner:—the bed-clothes, pillow, and bolster having been removed from the bed, and placed on a form or chair close by, the pillow will be laid across the mattress at the foot of the bed, and on top of it the bolster; the orderly, now placing himself at the foot of the bed, will draw down the mattress towards him, rolling it and the pillow and bolster twice over into as compact and even a roll as possible, and will then arrange the roll in a line with the end of the bedstead. The next step will be to fold and arrange the bed-clothes neatly on top of the roll formed by the mattress. The counterpane, is first taken and spread out lengthwise across the bedstead, and with the "right" side downwards; the side border next the foot of the bed is then turned over upon itself to the extent of about six inches, and the fold so formed then drawn down, and laid across the centre of the roll of mattress. A blanket is next taken, doubled upon itself lengthwise and placed on the bedstead; this the orderly now takes hold of, draws a fold of it towards him (the fold should be about 10 inches wide), and lays it on the counterpane fold, and, on top of this then the remainder of the blanket in three other similar folds, so that four doubles of the blanket overlies each other facing him. A fold of the counterpane is next lifted up, and laid



FIG. 13.



on the blanket folds. A second blanket is taken, doubled upon itself lengthwise, placed on the bedstead, and two folds lifted and laid on the counterpane fold; on this then the pair of folded sheets are laid (a sheet is folded by doubling it lengthwise, then folding it again in the same direction until the width equals the width of the mattress roll, then folding it crosswise in four folds and lastly doubling these folds over once); on top of these, two more blanket folds, and on top of the blanket folds a counterpane



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fold. The third\* blanket will then be taken, arranged in four folds—in a similar manner to the first blanket—and laid on top of all. The final step in the proceeding is to bring the free ends of the counterpane up to meet each other, to draw them tightly together, and cross them, to reverse the package of bed-clothes the face of which now should be quite square towards the orderly, and arrange it neatly on the centre of the folded mattress (see fig. 13).

**263. *Preparing Air-bed.***—When an air-bed is required to be used, it is laid on the top of the ordinary hair mattress, the smallest of the three divisions of the bed being laid towards the head of the bedstead. Each division or compartment of the bed being distinct and separate from the others, will require to be filled separately.

To fill them, insert the nozzle of the small round bellows provided for the purpose into the inlet tube, and turn the ferrule on the inlet tube to the left until it stops. This opens the inlet, and at the same time attaches the bellows. The compartment is then filled by pumping with the bellows in the ordinary way. When the division is filled the inlet is closed by turning the ferrule to the right until it stops. This closes the inlet and at the same time detaches the bellows. The remaining compartments are filled in a similar manner. The compartments should not be filled too full, or the bed will be hard and unyielding. They should just contain sufficient air to render them soft and elastic. As air-beds usually leak, the bellows should be kept at hand and fresh air forced in occasionally to replace that lost by leakage. At least two under-blankets should be laid on to absorb perspiration, and the bed made up in the usual way.

**264. *Preparing Water-bed.***—When a water-bed is required, the ordinary hair mattress is allowed to remain, and the waterproof bed-tick is laid on the top of it, with the funnel or opening by which it is filled towards the foot of the bedstead. The foot of the bedstead should be raised four or five inches by a couple of bricks under the feet. By this the water when poured in will run towards the head of the bed. One person taking charge of the inlet, and having placed in it a large tin funnel, holds it firmly in an upright position. The water being now got ready in sufficient quantity, and with a temperature about 70° F., should be poured from a jug or can with a lip or pipe, until the bed

\* In case there should be only two blankets to deal with, the package of bed-clothes will be so arranged as to have the blankets in four folds with the folded sheets in the centre, separated from the blankets by a fold of counterpane on either side.



is about three-fourths filled. The mouth of the inlet should now be secured (the funnel being removed), and the bed made up in the ordinary manner, using, as in the case of the air-bed, at least two under-blankets to absorb perspiration.

Cold water must not be used to fill a water-bed, as it takes a considerable time to get warm through, and is liable to chill the patient; at the same time, the water must not be too hot, or it will injure the india-rubber material of which the bed is made. The bed must not be more than three-fourths filled, as, if more water be put in, it becomes hard and unyielding, and does not accommodate itself to the shape of the body.

Both on air and water beds the sheet and blankets beneath the patient will require frequent changing, as they quickly become wet from perspiration, which the waterproof material of the bed does not allow to escape.

265. *Preparing Bed for Operations.*—In all cases of operations, and where there is a discharge of any kind from a patient, the bed should be prepared in the following manner:—A waterproof sheet, or what is better, as being more pliant, a piece of German cloth, a yard wide, and a yard and a half or two yards long, should be laid across the bed where it is necessary to protect it, and over this piece of waterproof a draw-sheet is placed. The *draw-sheet* is made by folding an ordinary cotton or linen sheet lengthwise to nearly the same breadth as the waterproof cloth used. One end is tucked in under the mattress, and the other rolled up on the opposite side of the bed. When the part of the draw-sheet under the patient gets soiled, it may be withdrawn a little towards one side of the bed, and thus a dry part can be constantly kept under the patient without the necessity of each time it is soiled replacing it by a fresh sheet. In cases of amputation, where, to support the stump, pillows are used, precautions should be taken to keep them dry by covering them with waterproof material of some kind.

#### THE NURSING OF HELPLESS PATIENTS.

Patients may be helpless from a variety of causes; from weakness, from paralysis, from injury. When helpless from whatever cause, it is of great importance that attendants should be acquainted with the readiest, easiest, and safest methods of lifting and laying them. When patients are weak, or have been a long time in bed, it should be borne in mind the tendency there is to faint when any



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attempt is made to get into the erect position. Thus, when lifting or laying such patients, they should be as little as possible removed from the horizontal position. This consideration is taken into account in the methods recommended for performing the following offices for helpless patients :—

**266. *Lifting and laying a helpless Patient.***—There are numerous mechanical contrivances for lifting patients, but these, not being provided for military hospitals, need not here be described. There are, however, various simple methods by which attendants can lift patients, and from these three may be selected for description.

**First method by three attendants.** One attendant takes up a position at each side of the patient, while the third takes up a position near to and at the same side as the injured limb, should such exist. The three attendants now stoop down. The third attendant takes charge of the injured limb, and, giving it his undivided attention, prepares to lift it, while the other two, each passing one hand under the back of the patient at the lower part of the shoulder-blades, lock them with each other, and passing each his other hand under the thighs close up to the buttocks, lock them with each other in a similar manner. All being now ready, the patient is steadily raised and carried in the horizontal position to wherever it is desired to remove him.

**Second method by two attendants.** Where Captain Russell's stretcher is provided, a patient may be lifted by two attendants. This stretcher consists of two poles connected by strips of webbing and two cross-bars. To use it one pole is removed, and the other, with the webbing attached to it, is laid by the side of the patient. The looped ends of the strips of webbing are passed under the patient, and the pole, which has been removed, passed through the loops. The cross-bars being put into proper position, one attendant takes hold of the handles at each end, and carries the patient as if on an ordinary stretcher. When the patient has been laid down, one pole is removed, and the strips of webbing thus set free withdrawn from under the patient.

**Third method by four attendants.** A patient can be lifted with great ease and comfort by four attendants, two poles six feet long, and the under sheet. One pole is placed at each side of the patient, and the sheet firmly rolled round it, also the under blanket, should the former not be considered sufficiently strong. The four attendants take up a position, two at each side, facing the patient. Each grasps with one hand the end of one of the poles surrounded by the sheet, and with his other hand the pole



near its centre. Being thus prepared by a well-concerted action, the patient is steadily raised and carried as if on a stretcher, feet foremost, over the foot of the bed, to wherever it is desired to remove him.

**267. *Remaking Bed for helpless Patients.***—To remake the bed for a helpless patient, a second bed may be prepared to take the place of the one in use, or a temporary bed may be prepared for the reception of the patient while the one that has been used is being made up. In either case the patient will have to be lifted from one bed and laid on the other. The new bed should be placed by the side of the old one, but sufficiently distant to allow a space between the two for attendants to move freely. The patient may be lifted by any one of the three methods just described, and being carried feet foremost over the foot of the old bed, so as to clear it, he is carried head foremost over the foot of the new bed, the attendants walking along the sides of the bed, and lowered steadily into his proper place.

**268. *Changing Sheets.***—The under sheet may be changed by any one of the following methods:—

First method. Roll up lengthwise half of the dirty sheet, and push the roll as far under the side of the patient as possible. Next roll up one half of the clean sheet and spread the other half over the side of the bed from which the dirty sheet has been removed, and tucking it under the mattress, place the roll alongside the roll of the dirty sheet. This done, gently raise the patient at the opposite side and turn him over the rolls of sheets. Then take away the dirty sheet and unfold the clean one, and tuck it neatly under the mattress, when the patient may be turned into his old position.

Second method. Raise the patient partly into the sitting posture, and roll the dirty sheet from the head of the bed downwards, and push the roll as close under the buttocks as possible. Next roll up crosswise half the clean sheet, and lay the roll by the side of the roll of the dirty sheet, and spread the other half over the pillow and that part of the bed from which the dirty sheet has been removed. Now lay the patient down, and raising the lower extremities and buttocks, draw away the dirty sheet, unfold the clean one, spread it out, and tuck it in under the mattress.

**269. *Changing a Draw-sheet.***—The draw-sheet will require to be frequently changed, in addition to a fresh part of it being brought under the patient when one part becomes soiled.

To bring a fresh part under the patient, the buttocks



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of the patient should be raised by two attendants, each passing a hand and locking them under the thighs, and when thus raised gently pulling the folded sheet without the waterproof towards one side.

To change the draw-sheet, both the folded sheet and the waterproof should be removed; this may be done in the same way as the first method for changing an ordinary sheet, or the patient may be raised by two attendants as just described, and the dirty sheet removed and the clean slipped in.

**270. *Raising helpless Patients in Bed.***—Weakly patients frequently require to be raised in the bed. This may be done by pillows, by a bed with a head-lift, or by a head-lift, which can be slipped in under the mattress and worked by a rack and pinion. When pillows are used they should not be piled one on top of the other under the patient's head, as this has only the effect of raising the head and pressing the chin forward on the chest, a position which is very irksome to the patient, and obstructs, rather than otherwise, his breathing. The pillows should be placed under the patient's back as well as his head. A sloping elevation should be made, commencing at the small of the back, and rising gradually to where a pillow is placed for the head to rest upon.

When the upper part of the body is raised by any of the methods described, there is a great tendency for the patient to slip down towards the foot of the bed. A foot-board with a pillow for the feet to rest against will prevent this, but often the patient cannot bear his feet against the board. Under such circumstances an air or water pillow, either horse-shoe shaped or circular, with a hole in centre, may be put under the buttocks of the patient, and tied by two tapes to the head or sides of the bed, and thus a fixed obstruction will be opposed to the buttocks slipping down.

**271. *Feeding helpless Patients.***—When it is necessary to give food, or drink, or medicine to a patient, the head and, if possible, the upper part of the body should be raised. For fluids, a feeding cup may be employed. Where this is not provided, a spoon, a glass, or mug may be used. When the latter are used, the precaution should be taken of only half filling them. If a vessel of this kind is too full, the fluid is sure to be spilt.

***The Bed-pan for helpless Patients.***—The bed-pan should be used with the greatest care, and with as little disturbance as possible to the patient, especially when injury necessitates its use. There are two kinds in use, the



circular, and the slipper. When the circular bed-pan is used, the patient will have to be lifted by two or three attendants in the same way as already described under the head of lifting a helpless patient, first method, and the pan slipped in under him. With the slipper bed-pan the patient should be raised at one side, and the thin edge shoved in under the buttocks.

**272. Bed-sores.**—Bed-sores generally occur on those parts which are most subject to pressure, viz., the skin of the back, and the prominences of the hips. When using the bed-pan, or washing the patient, or changing sheets, the attendant should watch carefully for approaching bed-sores. If the skin is red and tender, it should be bathed with spirits of camphor, or painted with a solution of gutta-percha and chloroform, and reported immediately. The use of a water bed affords the best preventative against bed-sores.

#### OBSERVATION OF THE SICK.

An attendant well acquainted with his duties ought to be able to note every change which may occur in the symptoms of a patient, whether favourable or otherwise, during the absence of the medical officer. Symptoms are the signs of disease on which the medical officer has to depend to determine its nature, its severity and danger, the treatment, and the probability of recovery. It will thus be understood how important it is that the attendant on the sick should be something more than a mere machine, and how necessary it is that he should be both well informed and observant.

**273. General Appearance.**—The appearance of the patient will very often show whether he has changed for the better or worse. The expression of the face may be that of pain, it may be that of anxiety, or it may be vacant. On the other hand, it may be calm and more hopeful. The colour may be bright red, it may be congested and dark, or it may be pale. The lips may be crimson, purple, or white and bloodless. The nose may look pinched. The cheeks may be sunken and the temples hollow. The eye may be glassy and staring, or it may be dull and heavy. The patient may lie in a listless careless manner, or he may be restless and tossing about; or again, he may be picking at the bedclothes, and his movements tremulous and uncertain.

The position in which he lies should also be noticed;



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whether he lies on his back or on his side, with his legs drawn up or stretched out.

274. *Intelligence, Manner, Temper.*—Patients suffering from disease often show mental derangement. This is called delirium. It may be boisterous, or it may be low and muttering. It may be slight so that the patient can be recalled to himself and for a time speak rationally, or it may be severe that it will be impossible to arouse him from it. In it the patient may see objects and hear sounds which do not exist, and speak and act as if these sights and sounds were real. It occurs more frequently during the night than in the day time.

A close watch should be kept on delirious patients, lest they should get out of bed and escape from the ward, throw themselves out of the window, or do themselves or others some bodily injury.

The manner of a patient should be observed. It may be excited, depressed, or in some way differing from his ordinary manner.

The temper also of a patient may vary. At one time he may be irritable, peevish, and easily annoyed, while at others he may be quiet, good-tempered, and easily pleased.

275. *The Tongue.*—The symptoms presented by the tongue are most important as indications of the state of the system, but as these can be noted by the medical officer at his visit, it is unnecessary here to enter into them.

276. *Sleep.*—It should be noted how long the patient sleeps; whether his sleep is disturbed, whether it is sound and calm, with or without heavy breathing. It sometimes happens that a patient will report that he has not slept "a wink" all night, when in reality he has slept uncommonly well; so that it becomes necessary not to rely too much upon the patient's statement with regard to sleep.

277. *Pain* is an accompaniment of most diseases. It varies much in its nature and modes of occurrence. It may come and go or be continuous, or it may wander about or be fixed, or it may moderate for a time and again come on with great severity. It also varies much in degree, from mere uneasiness to agony. It may be slight, severe, violent, or excruciating. In each of these degrees it may have various characters. It is said to be dull, aching, smarting, burning, tingling, or throbbing. The statements of the patients have to be relied on as regards the existence of pain, but its degree may be generally judged of from the expression of the countenance and the tone of the voice.

The time of attack, the duration, the cessation, the



degree, and character of the pain should all be carefully noted.

**278. State of the Skin.**—The condition of the skin should be watched, especially in febrile diseases; whether it is dry, moist, or perspiring, hot or cold, pale, red, or shrunk. The skin, from being cold, may become hot, then moist and perspiring. The hours at which each of these changes occurs should be carefully noted. The temperature is taken by means of the thermometer.

The thermometer mostly employed is a straight self-registering one (Casella's, Hawksley's, or Maw's, Fig. 14).

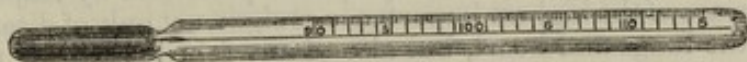


FIG. 14.—THERMOMETER.

It does not require to be read while in position, but may be removed and read when convenient. The index of the thermometer consists of a small piece of mercury detached from the column in the stem of the instrument, which must be set before commencing to take an observation.

To set the index it must be brought down into the clear part of the stem just below the lines indicating the degrees. This is done by taking bulb firmly in the hand, and then by a rapid swing of the arm the index will come down the stem. This swing is to be repeated until the top of the index is below the lines which indicate the degrees.

When the index has been set, the bulb of the instrument may be applied in the arm-pit, or between the thighs, or any part where it can be completely covered by the soft parts, and being retained in position for any length of time over three minutes, the instrument is to be carefully and gently removed, when the top of the index, *i.e.*, the end farthest from the bulb, will denote the maximum temperature during the period the instrument has been in contact with the part.

The patient should be at perfect rest in bed for at least one hour before the observation is made, and should lie on the side at which it is intended to introduce the instrument. In taking the observation in the arm-pit care should be taken that the bulb does not get into the hollow where it will not be closely surrounded by the soft parts.

The medical officer generally records the temperature, but he may at times entrust this duty to the attendant.

Associated with the condition of the skin is the occurrence of shivering, or rigor, a symptom which should never



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be overlooked. Any rash or eruption\* making its appearance on the skin should also be carefully noted.

**279. Pulse.**—The pulse is, as a rule, taken by the medical officer, but if necessary, during his absence, it may be entrusted to the attendant. A regular pulse in the lying down position, without any excitant, should be from 70 to 80 beats per minute. It is generally taken at the wrist by placing the points of the fingers over the radial artery and counting the number of beats by the second hand of a watch in a minute. In disease the number of beats may increase to 140 or even 160 in a minute.

**280. Respiration.**—The symptoms presented by respiration are of the highest importance as signs, not only of disease of the lungs and heart, but also of any febrile state of the system generally. Respiration consists of inspiration and expiration, and in the natural condition occurs about 18 or 20 times in a minute. In diseased conditions it may be frequent or slow, rapid or prolonged, forcible or feeble, spasmodic, wheezing, or stertorous. It may be difficult or laboured so that the patient cannot lie down.

To register the number of respirations, a watch with a second hand should be taken in one hand, while the other hand is placed flat over the pit of the stomach, and the number of heaves counted in a minute.

Associated with disturbed respiration may be sneezing, coughing, hiccough, or a blue and congested state of the face and upper part of the body.

**281. Cough** is a symptom of some irritation in the air-tubes, and has for its object the removal of some matter interfering with respiration. It may occur occasionally, incessantly, or in paroxysms. It may be dry, without expectoration, or moist, with expectoration. It may be short and hacking, harsh or hollow. It may occur at some particular time of the day or night and not at other times. Whatever character it may present should be carefully noted.

**282. Expectoration** is the act of coughing up matters from

\* The rash in Scarlatina consists of bright red points that spread and join; they appear on the second day, first showing on the face.

The pustules in Small-pox appear on the third day, first on the face; at first like grains of shot under the skin, afterwards they fill out and become depressed on the top.

The eruption in Measles appears on the fourth day; circular dots like flea-bites which coalesce into horseshoe-shaped blotches.

In Typhus the skin becomes dusky and the so-called "mulberry rash" appears from the fifth to the eighth day.

In Typhoid fever, the rash appears first on the abdomen from the seventh to the fourteenth day; it consists of rose-coloured circular spots, scattered and few in number.



the air passages. The matter expectorated is named *sputa*. Every patient who expectorates should be provided with a spitting cup. The sputa may be watery and frothy, yellow, thick, and purulent, rusty, streaked with blood; or it may consist for the most part of blood and then constitutes *hæmoptysis*.

If the sputa be not kept for the medical officer's inspection, the attendant should observe its quantity and character, and when the matter brought up is blood, he should be careful to observe whether the patient coughs it up, vomits it, or brings it up from the back of the throat, the mouth, or the gums.

283. *Urine*.—The quantity and character of the urine and the manner of passing it vary in disease. The patient may pass it more frequently than usual, with or without pain, in a large or small stream, even in drops, or he may be unable to pass it at all, a condition which is called *retention of urine*.

The quantity may be increased, or diminished, or even suppressed altogether. The colour may vary from that of water to blood colour. There may or may not be a deposit. All of which should be observed. It is usual for some urine to be kept for the medical officer's inspection and examination. It should be kept in a thoroughly clean vessel.

284. *State of bowels*.—The stools should be observed as to number, colour, consistence, and nature; and whether or not there is pain, griping, or straining accompanying the act of passing them.

285. *Appearance of wounds and sores*.—The discharge should be noticed as to quantity, colour, consistence, and whether it has increased or diminished since last dressing the sore or wound, whether it contains any foreign body, pieces of bone, &c., and whether it is offensive in smell.

The colour of the surface of a wound may be red, grey, or dark. The edges may be swollen and puffy, surrounded by a red blush. Blood may ooze from it. All these conditions should be carefully noted and reported to the medical officer. A foreign body, such as a piece of cloth, bullet, a piece of bone, or such like, should be carefully preserved.

286. *Appetite and thirst*.—Any variation in the appetite, whether for better or worse, or any peculiarity should be noted, also any partiality. Patients often take a dislike to some particular article of food, or express a wish for some other. Their wishes in these respects should be consulted as far as possible. Thirst or desire for drink should always be attended to and gratified as far as it can be.



## PART III.

### INSTRUCTIONS FOR TRAINING STRETCHER BEARERS AND BEARER COMPANIES.

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#### Preliminary Remarks.

Section I.—Stretcher Exercise.

Section II.—Drills and Exercises with Improvised Stretchers,  
&c., &c.

Section III.—Drills and Exercises with Ambulance Wagons.

Section IV.—Drills and Exercises with Wagons, other than  
Ambulance Wagons.

Section V.—Drills and Exercises with Cacolets and Litters.

Section VI.—Parade, Inspection, and Manœuvres of a Bearer  
Company.

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#### APPENDIX TO PART III.

The Formation and Management of Dressing Stations.

General Rules for the proper carriage of Stretchers.

Contents of Orderly's Dressing Case.

„ Surgical Haversack.

„ Surgery Wagon.

„ Field Medical Companion.

„ Field Medical Panniers.

„ Field Fracture Box.

„ Box of Apparatus for Fractures and Dislocations.

„ Pharmacy Wagon.

Plan of a Bearer Company Encampment.

Plan of a Moveable Field Hospital Encampment.

Method of Pitching a Hospital Marquee and Tent.

Medical Staff Corps Regimental Call.

Method of laying out an Orderly's Kit in a Barrack Room.

Method of arranging Bed, Clothing, &c., in a Barrack  
Room.

The Medical Staff Corps, marching order (front view).

„ „ „ „ (rear view).



## PART III.

## PRELIMINARY REMARKS.

*Organization for Removing the Wounded (founded on the Medical Regulations).*

287. On taking the field, the Medical Department with an army corps will include an organization designed expressly for the purpose of speedily collecting the wounded during and after an engagement, and removing them from the battle-field to the field hospitals in the rear.

The soldiers by whom this duty is to be performed are designated "Stretcher Bearers," more briefly "Bearers," and the unit of the organization the "Bearer Company."

288. The number of bearer companies for a division will be two, and for an army corps eight, including one attached to the cavalry brigade and Corps troops; each company is complete in itself, and will not be divided.

289. A bearer company will be formed of trained bearers from the Medical Staff Corps and its reserves, and will be under the command of a medical officer.\*

290. The medical officer in command will be accountable to the Principal Medical Officer at the Base for the arms, accoutrements, clothing and necessaries of the personnel; and direct accountant for the equipment and stores held by the company.

291. The transport of a bearer company, whether wheeled or pack (the latter for use in mountain warfare or where there are no roads suitable for wagons or carts), will be furnished by the Commissariat and Transport Corps, and while attached to the bearer company will be under the command of the Commanding Medical officer; it will not be taken away or used for any second purpose unless under the direct authority of the General Officer Commanding the Army Corps.

292. The wheeled transport of a bearer company includes ambulance wagons, a surgery wagon when practicable,† store carts, water carts, &c. The pack transport of a bearer company, on the other hand, includes cacolets and litters, field panniers, &c., borne by mules.

\* The personnel of a bearer company includes 1 surgeon-major in command, 2 surgeons, 1 quartermaster, 1 serjeant-major, 6 staff serjeants and serjeants, 6 corporals, 48 privates, and 1 bugler, as well as the officer and men of the Commissariat and Transport Corps attached for transport duties.

† A surgery wagon is a wagon specially fitted with baskets containing instruments and medical and surgical appliances. For further details of it see Appendix p. 165.



### Part III. Instructions for Training Stretcher

293. A certain proportion of the wheeled transport may be in reserve; those wagons, known as wagons of the second line, are generally made to follow the army corps at a distance of half a day's march, and are brought up only when necessity for their employment arises.

294. As a general rule, the disposition of a bearer company (provided with stretchers and wheeled transport) in action will be as follows:—Four bearers will be told off to a stretcher, two to carry it at a time and two for a relief. Upon the latter men also will devolve the duty of removing the arms, ammunition and accoutrements of the wounded to the rear and of carrying the surgical haversack and water bottle. Every such detachment is called a stretcher detachment; four stretcher detachments constitute a section, which, when practicable, will be placed under the immediate command of a staff-serjeant or serjeant. The bearers of a bearer company are divisible into two sections, each under a non-commissioned officer; the remaining non-commissioned officers and men are intended for duty, either at the collecting or dressing stations or with the ambulance wagons of the first or second line, &c.

295. When an action is anticipated, the Principal Medical Officer of the division will, under instructions from the General or other officer commanding, point out to the medical officer in command the positions chosen for collecting rendezvous and for dressing stations; the former will usually be under shelter, but as near the fighting line as consistent with safety, and the latter, if possible, out of fire. Advantage will always be taken of buildings or other shelter near the scene of action.

In the absence of orders from the General or other officer commanding, the Principal Medical Officer of division will himself issue the necessary instructions to the bearer company.

When no orders have been received from the General Officer Commanding or from the Principal Medical Officer of division, the medical officer in command of the company will, on his own responsibility, organise the collecting and dressing station or stations, and take such measures as may be necessary for the relief and transport of the sick and wounded.

296. The medical officer will place the Collecting Station in charge of the serjeant-major, and with him a non-commissioned officer, having in his care the field companion and water-bottle and a small reserve of bandages and first dressings to replenish the surgical haversacks of the stretcher bearers. The ambulances, or other sick carriages, of the First Line will rendezvous at this point, drawn up with the horses' heads towards the dressing station; the collecting station will be indicated by a red cross flag.

The two sections of bearers with stretchers and haversacks will be paraded and sent out under one of the medical officers to succour and collect the wounded: they will bring the wounded to the collecting station and place them in the ambulances or other sick carriage, returning at once to the



scene of action and taking fresh stretchers with them if necessary; the stretcher parties will not pass in rear of the collecting station.

297. As the ambulances or other sick carriage are loaded with wounded, the serjeant major will move them off towards the Dressing Station, each under charge of a non-commissioned officer or private of the Medical Staff Corps; they will deposit the wounded at the dressing station and return at once to the collecting rendezvous. The full number of ambulances and proportion of sick carriage in the first line will always be maintained, and will never pass in rear of the dressing station during the action.

298. At the dressing station will be assembled the medical officer in command, one of the surgeons, and the quartermaster, together with the necessary medical and surgical equipment, medical comforts, and water carts. If no building is available the surgery tent will be pitched, beef tea and stimulants got ready, and every preparation made to succour the wounded as they come in. Additional medical officers and men may be temporarily lent from the field hospitals to the collecting and dressing stations to assist, should the pressure of work be great or the distance from the hospitals considerable.

299. As the wounded are dressed they will be placed in the ambulances or other sick carriage of the Second Line, taken to the field hospitals, under the direction of the quartermaster, and attended by non-commissioned officers and men of the Medical Staff Corps. The ambulances of the second line may be supplemented by local carriage.

300. The officer and men of the Transport Corps will also during an action afford every assistance in superintending the movements of the ambulances.

The quartermaster-serjeant, Medical Staff Corps, with the company cooks, batman, and baggage, will be placed a short distance in rear of the dressing station, and will have food ready prepared for the company at the close of the action.

The foregoing instructions must necessarily be varied to meet the exigencies of the locality and warfare in which the army is engaged, and according to the need of advancing the collecting and dressing stations on a forward, or of receding them on a retrograde movement of the troops; but the general principle will always be kept in view of having the collecting and dressing stations at no great distance apart, so as to shorten the journeys of the ambulances of the first line and bring the wounded within reach of surgical aid as speedily as possible.

301. The dressing stations will be distinguished during daytime by two red cross flags and during the night by two red lanterns. Directing red cross flags will be placed between the collecting and dressing stations and between the latter and the field hospitals to mark the road.

During an action the wounded straggling from the field will



### Part III. Instructions for Training Stretcher

be attended to at the dressing stations and transferred to the rear with all possible speed.

When practicable, men badly wounded will be carried to the dressing station, or even to one of the field hospitals, if in the vicinity, without removal from the stretchers.

302. When all the wounded have been removed from the open, the woods and ditches in the neighbourhood will be methodically searched, so that there may be no possibility of any wounded, or those only apparently dead, remaining uncared for. Lanterns for searching in the dark form part of the equipment of a bearer company.

303. When the necessary surgical treatment has been afforded at the dressing station, the medical officer will attach to the clothes of the wounded man a diagnosis ticket (specification "tally") if not already affixed when dressed on the field, on which will be specified his regiment, number, rank, and name, with the nature of the injury, the treatment, and any precautions required as to transport; the man's name and wound will also be entered on the counterfoil of the tally book.

304. The arms, ammunition, and accoutrements of a wounded man will be carried with him to the dressing stations and field hospitals, and handed over to the quartermaster of the hospital into which he is received, who will pass them on, in accordance with Section V, Part I, of the Regulations for the Supply of Stores to an Army in the Field.

Arms, ammunition, and accoutrements thus received by the Medical Department will not be taken on charge in the field hospital or bearer company ledgers, but will be entered with the inventory of the man's effects in the pack store book (Army Book 182), as laid down in Part I, Section IV, of the Medical Regulations. Ammunition will be dealt with as specially ordered by the General Officer Commanding the lines of communication.

Such inventories, as well as the articles enumerated, will be passed on with the man from hospital to hospital, and likewise when he is discharged to his corps, or to any place to which he may proceed, for final disposal; the inventories will be endorsed by each person receiving over the articles.

305. Care must be taken, before putting a wounded man's rifle into an ambulance, or using it as a splint, that if loaded the cartridge be withdrawn.

306. Officers and non-commissioned officers of a bearer company will be responsible that the private property of the dead and wounded is not misappropriated. A severe punishment will follow any such act of misappropriation.

307. At the close of an action, and when the dressing stations have been evacuated, the bearer companies will rendezvous at the field hospitals unless otherwise ordered.

308. In mountain or desert warfare, the mules carrying the field panniers, &c., and the cacolets and litters, will be halted at



## Bearers and Bearer Companies. Part III.

the dressing station, the bearers then marched out under one of the medical officers to succour and bring in the wounded on stretchers or by one or other of the improvised methods, rifle stretchers if possible, or by means of the improvised seats. At the dressing station the cacolets and litters will be loaded, and the mules sent back to the rear.

309. In minor actions the wounded will be collected and removed by the trained stretcher bearers of the regiment or corps engaged, in the proportion of two men per company. These bearers, acting under the directions of the medical officer attached to the corps, will leave their rifles and valises in the company carts, take their stretchers, and proceed to the scene of action, apply a first dressing, and remove the wounded to the rear. The regimental bearers will never lose touch of their corps during an action, but keep in close proximity to them, and on no account attempt to carry the wounded long distances back, or in any case beyond, or in rear of the collecting stations formed by the bearer companies.

### INSTRUCTION OF STRETCHER BEARERS.

310. The duties of bearers being primarily to search for and succour the wounded, by administering to them water and stimulants, by applying a temporary dressing such as the nature of the case may require, and by removing them and their arms and accoutrements to a place of safety; and, secondarily, to pitch tents and hospital marquees, to cook for the wounded, and to find guards for the wagons on the line of march and in camp; it follows as a matter of necessity that they must undergo a course of training to enable them to undertake the technical portion of these duties.

311. The period of training will, as a general rule, occupy about four weeks, the theoretical and practical portions of the training being carried out at the same time.

312. As to theoretical training, this will be given by the Instructor in the following elementary subjects:—(1) The outlines of the anatomy of the human body, including a brief account of the osseous system and of the circulation of the blood. (2) The different appliances used as a temporary dressing, viz., field splints, tourniquets, lint and bandages, the first field dressing, &c. (3) The immediate treatment of gunshot wounds and of cases of emergency, such as bleeding, sunstroke, frostbite, burns and scalds, the apparently drowned, &c., and, (4) lastly, a description of ambulance material generally and the arrangements for the transport of the wounded, the instructor being careful to dwell frequently on the part played by the individual bearer, and to represent to him the very great importance of his calling.

The practical training will of course include the application of field splints, tourniquets, and temporary dressings, lifting



### Part III. Instructions for Training Stretcher

and laying the wounded, and the loading and unloading of the various forms of ambulance conveyance, as well as handling the same. On no account whatever should the Instructor allow the class to pretend to load or unload. "Dummy" wounded should be provided on all occasions for loading or unloading, else the correct methods of handling the wounded cannot be acquired.

The drills and exercises for this purpose, which will be found in the succeeding sections, are arranged with a view to facilitate and expedite the instruction of a large number of men at a time; these, and the more strictly professional part of the instruction will invariably be imparted by, or in the presence, and under the direction of a medical officer. The Instructor should constantly bear in mind that in the case of the rank and file, he has to deal with men of very different powers of comprehension, many of whom have no previous knowledge whatever of the subject; great patience and the utmost distinctness of expression therefore are necessary on his part. It will be found advantageous perhaps to begin the instructional work of the day by a lecture on one of the elementary subjects before mentioned, then for a drill with ambulance material to take place, to be succeeded by an exercise in the practical application of splints, tourniquets, bandages, &c., and finally to close the work of the day by a second ambulance drill.

No one of these drills, exercises, or lectures should occupy more than one hour. If intermingled in the manner indicated, there need be no apprehension of exhausting the bearer's attention, and at the end of a month's instruction he ought to be well qualified to undertake the duties of stretcher bearer.

#### SECTION I.—STRETCHER EXERCISE.

The regulation field stretchers in use are those known as Mark I, or the old pattern field stretcher, and Mark IV and V, or Surgeon-Major Faris's field stretchers.

313. Mark I, or the old pattern stretcher, consists of a piece of stout canvas stretched between two slight, round poles of ash. The poles are slipped into plaits made at each side of the canvas, and are kept the requisite distance apart by two iron rods (*traverses*), each of which is fastened by a staple to one of the side poles, and being bent at right angles at the other end fits into a hole in the opposite pole at about seven inches from its extremity. The stretcher is provided with a small horse hair pillow and a pair of leather shoulder slings (Fig. 15).



314. Mark IV and V, or Surgeon-Major Faris's stretchers, closely resemble each other, and for all practical purposes may be regarded as one and the same form of stretcher. They differ from Mark I in the following particulars:—the canvas is tanned and nailed to the poles with brass nails through an edging of leather; the poles are square and

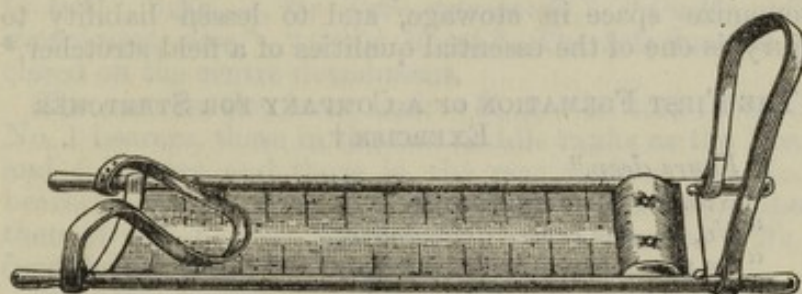
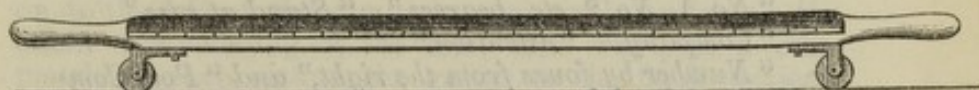
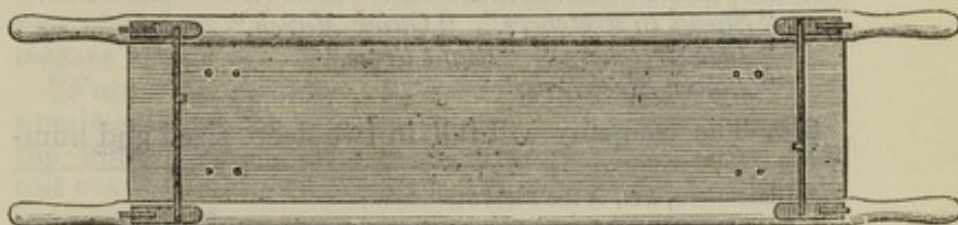


FIG. 15.—FIELD STRETCHER MARK I.

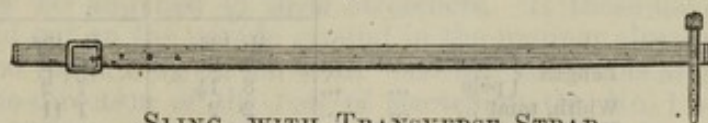
(The slings have recently been fitted with transverse straps.)



SIDE ELEVATION.



PLAN, UNDER.



SLING, WITH TRANSVERSE STRAP.

FIG. 16.—FIELD STRETCHER, MARK V, OR FARIS'S.

thicker, and kept at the required distance apart by two flat, wrought iron jointed bars (*traverses*), they are also fitted with four rackets carrying three-inch wooden rollers. A pillow and pair of shoulder slings are provided also with these stretchers, but the pillow is wedge shaped varying from three and a half to one and a half inches in thickness, and is intended to be kept in the new pattern ambulance



### Part III. Instructions for Training Stretcher

wagon for use with the stretchers supplied with the wagon: eyelet holes are made in the canvas of the stretcher for the attachment of the pillow to it by strings. The shoulder slings also are fitted with transverse straps which serve the purpose of confining the package formed by the field stretcher when folded up. (Fig. 16.) N.B.—A capability of being folded up into a small compass to economize space in stowage, and to lessen liability to injury, is one of the essential qualities of a field stretcher.\*

#### THE FIRST FORMATION OF A COMPANY FOR STRETCHER EXERCISE.†

"Fours deep."  
 "Number the detachments."  
 "No. —, the centre detachment."  
 "On the centre detachment close." "Quick March."  
 "Front rank, No. 1 bearers."  
 "Second rank, No. 2 bearers."  
 "Third rank, No. 4 bearers."  
 "Rear rank, No. 3 bearers."  
 "No. 1, No. 2, etc., bearers." "Stand at ease."  
 "Company." "Attention."  
 "Number by fours from the right," and "Post Commanders."  
 "Number the Sections."  
 "Stand to stretchers." "Quick March."  
 "Lift stretchers." "Right dress."  
 "Lower Stretchers."

315. The company will fall in two deep, sized and num-

\* Dimensions, &c., of the Field Stretchers:—

			Mark I.		Mark IV, V.	
			ft. ins.		ft. ins.	
Length	canvas	...	6	8	6	0
	pole	...	8	1½	7	9
Width, total	...	...	2	2	1	11
Height	...	...	0	1½	0	5½
Weight	...	...	16	lbs.	32	lbs.
Tonnage	...	...	—		·08	tons

† Men detailed for this exercise must already have been well grounded in squad and company drill. They will parade without arms, or if armed with sidearms only, and in "drill order." Previous to the parade, a supply of folded up stretchers, in the proportion of one stretcher for every four men present, will be laid out on the parade ground in a row, at intervals of about thirty inches, and in such a manner as to allow of the company of bearers being drawn up about a dozen paces in rear of them, the pillow end of Mark I stretchers (when used) to be next the parade, and the rollers of Mark IV and V stretchers (when used) to be directed towards the right flank of the company.



bered as a company in the usual manner. Fours deep are next formed : each four men as they now stand, taking them from front to rear, constitute a stretcher detachment, and belong to the same stretcher.

*"Number the detachments."* The detachments are then numbered, the front rank man of each detachment calling out the number of his detachment in succession from right to left. *"No. —, the centre detachment."* *"On the centre detachment, close."* *"Quick March."* The detachments are closed on the centre detachment.

The men in the front rank will now be told off as the No. 1 bearers, those in the two middle ranks as the Nos. 2 and 4 bearers, and those in the rear rank as the No. 3 bearers respectively of each detachment, and the numbers then proved by the instructor:—*"No. 1 bearers," "No. 2 bearers,"* &c., in succession, *"Stand at ease."*

The company is next numbered from the right in sections of fours, the right hand man of the front rank calling out *"one,"* the second from the right *"two,"* the third *"three,"* the fourth *"four,"* the fifth from the right *"one,"* and so on to the left of the company successively by fours ; the officer commanding at the same time will post a commander to each section, the guides to the flank sections, the markers and other non-commissioned officers to the intermediate ones, each commander falling in two paces in rear of the centre of his section, and as a fifth or supernumerary rank ; the officer commanding in his usual place.

*"Number the Sections."* The sections are then told off and numbered, and the numbers proved by the instructor. On the word *"sections"* the commander of each section will call out the number of his section, *"No. 1," "No. 2,"* &c., in succession from right to left.

*"Stand to stretchers."* *"Quick March."* The company will now be marched to their stretchers. If these have been laid out on the parade ground in the manner already described (page 106), on the word *"march,"* the whole step off in the direction of the row of stretchers, the No. 1 of each detachment selecting a point to the left of the stretcher intended for his detachment to march upon. Each bearer on reaching his post on the left of the stretcher halts without further word of command, No. 1 with his toes in a line with the front end of the stretcher poles, No. 3 with his heels in a line with the rear end of the poles, No. 2 one pace in rear of No. 1, and No. 4 one pace in front of No. 3, every man close up to, and touching the stretcher with his right foot.

On the other hand, should the stretchers not have been



### Part III. Instructions for Training Stretcher

laid out in a row on the parade ground, but lie in a heap on the ground, or in a wagon, the command will be given by the instructor, "*No. 3 bearers, left (or right) turn.*" "*File on stretchers.*" "*Quick March*"; and after the men have received their stretchers, and passed the heap, the guide who has marched them over will give the command, "*Left (or right) about wheel,*" and on reaching the left (or right) of the company, "*Left (or right) form,*" "*Lower stretchers.*" The stretchers during this movement will be carried by each man on the right shoulder at the slope, (pillow end uppermost if Mark I stretchers are used), until the order to *lower* is given, when the No. 3 will stoop down without moving the feet, place the stretchers quietly on the ground, and rise to attention together.

"*Lift stretchers.*" The stretchers will next be lifted by the Nos. 1 and 3 of each detachment. To do this Nos. 1 and 3 stoop down, and lay hold of both handles of the poles with the right hand (rollers away from them if Mark IV or V stretcher is used), and then rise to attention together, holding the stretcher at the full extent of the arm. To *lower* stretchers from this position, Nos. 1 and 3 stoop down, place the stretcher on the ground, and then rise up together.

The company may now be practised in marching to the front and rear in close and extended order, and also in moving in column of sections. When the company in line in close formation is ordered to retire, or if retiring to advance, the bearers of each detachment will turn about towards the stretcher, the Nos. 1 and 3 transferring it from the right (or left) to the left (or right) hand at the same time.

In extended order, however, and in a subsequent part of the drill (with "prepared" stretchers), the line will be retired, or if retiring advanced, by each detachment wheeling to the right about, No. 3 marking time on his own ground until the stretcher becomes square.

"*Move to the right (or left) in fours.*" "*No. 2 (or 4) to take the stretcher.*" "*Right (or left) turn.*" When circumstances necessitate a quick movement to either flank, instead of wheeling by sections, the men will be turned in the direction required by the word "*right (or left) turn,*" preceded by the caution, No. 2 (or 4), whichever number is named, taking the stretcher, and placing it on his right shoulder at the slope, and, if Mark I stretcher, with the pillow end uppermost. To resume the forward movement, the command "*front turn*" is given, upon which every man will turn to the front, the stretcher being brought to the



trail, and the handles then grasped again by the Nos. 1 and 3.

At this stage of the exercise the company will be formed up preparatory to dismissal, or to the repetition of the exercise by the following words of command:—*“Lower stretchers,” “Right about turn,” “Quick march,” “Halt,” “Front,” “From the right re-form two deep,” “Quick march,” “Right dress,” “Right turn,” “Dismiss,”* or—*“Fours deep,” &c., &c., “Stand to stretchers,” “Quick march,”* if the exercise is to be repeated.

#### TO PREPARE STRETCHERS FOR USE.\*

*“Prepare stretchers.” “Fold up stretchers.”*

316. Bearers having been instructed in the foregoing drill will next be taught the method of preparing stretchers for use, and for this purpose the company (having lifted stretchers) will be extended at intervals of four paces, and directed to lower stretchers. Mark I field stretchers will be *prepared* as follows:—On receiving the command, the Nos. 1 and 3 of each detachment turn to the right, kneel down on the left knee, and proceed to unbuckle the transverse straps; they then separate the poles, hook in the traverses—taking care to have the staples facing each other—stretch the canvas to the full extent, and take a few turns round the poles and hooks with the lashings, which serve to retain the hooks and the canvas in position; the free end of the pillow is next secured by No. 3: Nos. 1 and 3 then arrange the slings on the handles of the poles as follows:—the sling is doubled on itself once, tongue of the buckle outside, the loop of the sling is then passed over the near handle, and the free ends left resting on the opposite handle, the whole then acting simultaneously—those on the left working by the stretcher detachment on the right, the front rank man of which will give the time by raising his disengaged arm, stand up, and front. Nos. 2 and 4 stand fast while this is being done.

317. A similar method will be adopted as regards Mark IV and V field stretchers, that is to say Nos. 1 and 3 of each detachment turn to the right, kneel down on the left knee and separate the poles, passing a hand in under the traverse, however, to make certain of its being perfectly straight; Nos. 1 and 3 then arrange the slings on the

\* Knee-caps will be worn for this exercise and all subsequent exercises when it is requisite for the men to kneel on the ground.



### Part III. Instructions for Training Stretcher

handles, stand up and front as if *preparing* Mark I field stretcher.

*"Fold up stretchers."* When it becomes necessary to fold up stretchers, Nos. 1 and 3 of each detachment will turn to the right, kneel down on the left knee, remove the slings from the handles, and place them on the ground beside them.

318. With Mark I stretchers, the pillow at one end (the end next the detachment) and the lashings will be let loose, the traverses unhooked, they and the pillow turned in along the poles, and the pole next the detachment laid on top of the other one; as soon as this has been done Nos. 1 and 3 face each other, and stand up, lifting the stretcher up between them as they do so: then resting the poles between their thighs, they proceed to roll the canvas tightly round them, and to spread out the slings evenly on top of the roll, a transverse strap at either end; the transverse strap is now first passed through the loop of the other sling, then round the roll, and buckled off tightly, upon which the Nos. 1, taking the time from the No. 1 of the right detachment, front, Nos. 1 and 3 retaining hold of the handles of the stretcher.

With Mark IV and V stretchers, after Nos. 1 and 3 kneel down, and remove the slings, the jointed traverse will be bent inwards with the hand, the canvas raised and prevented falling down between the poles, the poles then approximated and the stretcher folded in the same manner as Mark I stretcher already described.

To repeat the exercise, the order *lower stretchers* will be given, and the company then directed to prepare them as before.

#### TO LIFT AND LOWER STRETCHERS.

*"Lift stretchers." "Lower stretchers."*

319. The principal point to be attended to in lifting and lowering prepared stretchers is unity of action on the part of Nos. 1 and 3 bearers of each detachment; No. 3 must be habituated from the first to work simultaneously with No. 1, to wait for No. 1 should the latter not happen to be ready to lift or lower as soon as he is, or to call out *"Stand fast,"* should No. 1 be in advance of him, and then *"Go on,"* when ready. When the men, standing to prepared stretchers, are directed to lift them it will be done in the following manner, at first by numbers, then judging the time:—



*"Lift stretchers."* Nos. 1 and 3 of each detachment stoop down; each man grasps a doubled sling at its centre with the fingers and thumb of the right hand, removes it from the handles, and stands up again; they each take a side pace to the right over the pole and close their heels; they then each place a sling over their shoulders, dividing it equally and with the buckle end over the right shoulder.

*"Two."* They stoop, slip the loops of the slings over the ends of the poles, commencing with the left, and then firmly grasp the poles; after a short pause the word *"Three"* is given by the instructor, upon which Nos. 1 and 3 of each detachment steadily raise the stretcher off the ground and stand up holding the stretcher at the full extent of the arms; during the operation No. 3 must closely conform to the movements of No. 1, so that the horizontal position of the stretcher may be maintained throughout. Directly Nos. 2 and 4 perceive that Nos. 1 and 3 have stood up, No. 2 takes a pace to his front and wheels to the right-about in front of No. 1, No. 4 turns to the left-about, and both men then adjust the slings on the neck and shoulders of Nos. 1 and 3 respectively, taking care not only that the sling is well below the level of the collar of the frock, but that it lies accurately in the hollow of the shoulder in front. As soon as these points have been attended to, No. 2 turns to the right and wheels to the left about into his place, upon which Nos. 2 and 4 front together, the whole working by the right stretcher detachment, which will look to the left and give the time.

*"Lower stretchers."* On the caution *"Lower,"* Nos. 1 and 3 of each detachment will be prepared to stoop; and on the word *"Stretchers,"* both men lower the stretcher very cautiously on the ground, No. 3 again closely conforming to the movements of No. 1. They then each proceed to slip the loops of the slings off the ends of the poles; stand up, remove the slings from their shoulders, double them, and hold them in the right hand in the manner already described. On the word *"Two,"* Nos. 1 and 3 stand to stretchers, then stoop down, arrange the slings on the handles as before described and stand up again.

This exercise may then be repeated, or the stretchers folded up.



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Part III.      Instructions for Training Stretcher

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TO MARCH WITH STRETCHERS.

“*Advance.*” “*Retire.*” “*Right (or left) incline.*” “*Halt.*”

320. The main purposes to be kept in view in marching with a stretcher are as follows :—Firstly, the mode of progression of the bearers should be so regulated as to avoid any impulses being thereby communicated to the stretcher. This can be best accomplished by the *broken step*, a short pace not exceeding twenty inches, allowing no springing from the fore part of the foot, and, by keeping the knees well bent while the advance is being made. And, secondly, the stretcher must be maintained on all occasions in the horizontal position, or in a position as near to the horizontal as possible, the inclination downwards, in the latter case, being towards the feet of the patient, so as to ensure the greatest amount of safety to the person who is being carried upon it. Men of the same height are therefore selected to act together as bearers ; and, on sloping ground, the general rule\* for the bearers is, to carry the foot end of the stretcher foremost down hill, but the head end foremost up hill.

“*Advance.*” The stretchers having been lifted, and the order “*Advance*” given, No. 4 of each detachment at once doubles round by the head of the stretcher to the centre of the opposite pole, and No. 2 steps short two paces, which brings him also to the centre of the stretcher. In the meantime, No. 1 of each detachment steps off with the left foot, and No. 3 with the right ; both taking a short pace, not to exceed twenty inches in length, in quick time, keeping the knees well bent, feet close to the ground, and using the hip joints as little as possible. At “*Retire*,” each stretcher detachment will wheel to the right-about, the No. 3 of the detachment marking time till the stretcher is square. At “*Halt*,” Nos. 1 and 3 halt ; No. 2 takes a pace to his front, and No. 4 doubles round by the head of the stretcher to his former position on the left of the stretcher.

N.B.—The *broken step* will require much practice and frequent repetition before the proper carriage of wounded men on stretchers can be secured.

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\* Further particulars are given in the Appendix to Part III.



## Bearers and Bearer Companies.

## Part III.

## LOADING AND UNLOADING STRETCHERS.

*"Take post at the right (or left) of the wounded."* *"Advance."* *"Lower stretchers."*

*"For loading"* { *Lift wounded.*  
                          *Lower wounded.*

*"Lift stretchers."* *"Advance."* *"Halt."* *"Lower stretchers."*

*"For unloading"* { *Lift wounded.*  
                          *Lower wounded.*

*"Lift stretchers," &c., &c., as before (if the exercise is to be repeated).*

321. To place a patient on a stretcher involves three separate operations, viz :—

The patient must be lifted off the ground by the four bearers of the detachment.

The stretcher must then be laid on the ground immediately under him by one of the bearers (No. 4).

And the patient must then be lowered on the stretcher by three of the bearers (Nos. 1, 2, 3), assisted by the fourth.

The most essential point in conducting the lifting and laying is unity of action on the part of the bearers to whom it is entrusted, including, as it does, the proper distribution of the power (the bearers' hands and arms) under the weight. No. 1 under the neck and chest; No. 2 under the pelvis and hips; and No. 3 under the lower limbs. It must be distinctly understood by them that, although each man is to raise a certain part of the weight of the patient's body, all must act in concert, or else his injuries and sufferings may be seriously aggravated by want of attention to this point.

For this exercise, the company having lifted prepared stretchers, will be formed in extended order at six paces interval. A party of "dummy" wounded, proportionate to the number of stretcher detachments, and provided with canvas suits to protect their clothing, will now be marched in front of the company and directed to lie down in a row, each patient with his head towards the company,\* and at about one dozen paces in front of a stretcher.

*"Take post at the right (or left) of the wounded."* *"Advance."* The caution will now be given to the company at which side of the wounded the stretchers are to be

\* It will be readily understood that the precise position of the wounded, laid down here, is for purposes of drill only. When the bearers are thoroughly acquainted with the exercise, the wounded may be distributed at random, in any position.



### Part III. Instructions for Training Stretcher

placed ; which, on service, will vary according to the nature of the ground, and this will immediately be followed by the word "*Advance.*" Each stretcher detachment then moves off towards its corresponding patient ; having reached his side, a halt is made without further word of command, the No. 4 of the detachment being held responsible for the position of the stretcher. When lowered, it should be but one pace distant, and in a line with the patient's body. The instructor, seeing that this has been correctly carried out, will order the stretchers to be lowered. The stretchers will now be loaded first by numbers, and then judging the time.

"*For loading.*" "*Lift wounded.*" On receiving this order every detachment moves off.

If the stretcher has been placed on the *right* of the patient, No. 4 marks time, Nos. 1, 2, and 3 wheel to the left-about, close round by the patient's feet, continuing the wheel in every instance until No. 1 comes opposite the patient's shoulders, No. 2 opposite the pelvis, and No. 3 opposite his knees ; each man, on reaching his appointed place, halts, and the whole turn inwards together ; No. 4 at the same time placing himself opposite No. 2.

If the stretcher has been placed on the *left* of the patient, the detachment wheels to the right-about past the foot of the stretcher No. 4 to the centre of the side of the patient's body nearest the stretcher, Nos. 1, 2, and 3 close round by the patient's feet to the opposite side, to the appointed places before described ; the whole then turn inwards together, No. 4 placing himself opposite No. 2.

"*Two.*" The whole stoop down and kneel on one knee (the left if the stretcher has been placed on the right of the patient, and *vice versa*). The four bearers now proceed to lay hold of the patient's body. No. 1 passes one hand round by the opposite axilla under the patient's neck, and the other under the shoulder nearest to him, and he is to avoid disturbing a broken arm, Nos. 2 and 4 pass their hands and arms under the patient's loins and hips, and No. 3 passes both arms under the lower limbs, if there should happen to be a fracture, with one hand above and one below the seat of fracture, in order to support it, and to prevent movement of the ends of the broken bone. As it facilitates the lifting, the patient, if he possibly can, is now to be directed to clasp his arms round the neck of No. 1 bearer.

At "*Three,*" the detachment, acting like one man, slowly lift the patient's body about twenty-four inches off the ground, using their knees as a means of support, and



steady it in that position, the horizontal position of the patient's body being maintained throughout the movement ; No. 4 now relinquishes his hold, doubles round by the head of the stretcher to the centre of the pole farthest from the patient, and, laying hold of the near pole with his left hand, and the one farthest from him with his right, lifts the stretcher and places it under the patient close up to the bearers' feet, and then for additional security assists in supporting the patient.

*"Lower wounded."* All four bearers will now lower the patient and place him on the centre of the canvas, in the position\* best suited to the nature of his wounds, very gently then remove their hands and arms from under him, and stand up, No. 1 or No. 4 of the right detachment, as the case may be, giving the time to the remainder as usual.

At *"Two,"* the men stand to stretchers by the shortest road. This will vary with the side of the patient at which the stretcher has been placed in taking post. If at his right side, Nos. 1, 2, and 3 turn to the right, and No. 4 to the left, and all wheel to the right-about round to their places. If at his left side, the whole make a left turn, and Nos. 1, 2, and 3 wheel to the right-about round to their places.

Slings may then be taken up, the stretchers lifted, and the company practised marching with loaded stretchers ; after which the company will be halted, and the stretchers lowered, and unloaded, at first by numbers, and then judging the time.

*"For unloading."* *"Lift wounded."* At this order each

\* Special care should always be taken to notice the part injured and the nature of the injury, as these determine in a great measure the position in which the patient should be placed during transport. In all cases the head should be kept low, and on no account pressed forward on the chest.

In wounds of the head care should be taken that it is not placed so that the injured part presses against the conveyance.

In wounds of the lower limb the patient should be laid upon his back, inclining towards the injured side; such position being less liable to cause motion in the broken bone during transport in cases of fracture.

In wounds of the upper limb if the patient require to be placed in a lying down position, he should be laid on his back, or on the uninjured side; as in cases of fracture there is less liability in such a position of the broken bones being injured during transport.

In wounds of the chest there is often a difficulty of breathing. In such cases the patient should be placed with the chest well raised, his body at the same time being inclined towards the injured side.

In wounds of the abdomen, the patient should be laid upon the injured side, with his legs drawn up; or, if the wound be in the front of the abdomen, he should be placed upon his back and his legs drawn up, so as to bring the thighs as close to the belly as possible; a pack or other article being placed under his hams to keep his knees bent.



### Part III. Instructions for Training Stretcher

detachment moves off. Nos. 1, 2, and 3 wheel to the left-about, and No. 4 to the right-about, to their appointed places; the whole halt, and turn inwards together.

At "*Two*," all proceed, as before described, to lay hold of the patient.

And at "*Three*," he is raised and steadied as before, No. 4 draws away stretcher, and then assists Nos. 1, 2, and 3, until the patient is lowered, passing round by the head of the stretcher for this purpose.

"*Lower wounded*." The patients will be lowered, made to stand up, and marched to the front again with a view to repeating the exercise. As soon as the patients are clear of the detachments, the men will stand to stretchers as follows:—the whole turn to the right, Nos. 1, 2, and 3 then wheel to the left-about to their places, No. 4 subsequently closing in to his proper place.

#### TO CHANGE THE NUMBERS.

322. In order to qualify each member of the stretcher detachment to perform all the duties, the numbers must be changed. This will be done by the following words of command, when the men are standing to prepared stretchers:—

"*Nos. 2 and 4 two paces left-close.*" "*Quick march.*"

"*Nos. 1 and 4 right-about turn.*"

"*The whole Quick march.*" "*Mark time.*" "*Front turn.*" "*Halt.*"

"*Stand to stretchers.*" "*Quick march.*"

The Nos. 2 and 4 now become the Nos. 1 and 3.

Or Nos. 1 and 2 can be made to change places with Nos. 3 and 4, by

"*Nos. 1 and 2 two paces left-close.*" "*Quick march.*"

"*Nos. 1 and 2 right-about turn.*" "*The whole Quick march.*"

"*Mark time.*" "*Front turn.*" "*Halt.*"

"*Stand to stretchers.*" "*Quick march.*"

#### LOADING AND UNLOADING WITH REDUCED NUMBERS.

##### 3 Bearers.

323. In the event of there happening to be only three bearers present, the stretcher will in this case be placed at the patient's head, and in the same line as his body. The bearers will then lift the patient, rise to the erect position, carry him head foremost over the foot of the stretcher, the horizontal position of his body being maintained



throughout the movement, and then place him in a suitable position lying down on the canvas. When unloading, the patient will be lifted and carried head foremost over the head of the stretcher. To lift the patient; one bearer, placing himself on the injured side in a line with the patient's knees, must raise and support the lower limbs, the other bearers raise the body—kneeling down, on opposite sides of the patient near his hips, facing each other, they each pass an arm under his back and under his thighs, and lock their fingers, thus securing a firm grasp preparatory to lifting.

#### 2 Bearer.

324. When only two bearers are available, the stretcher will also in this case be placed at the patient's head, and in the same line as his body. The bearers will then lift the patient, rise to the erect position, carry him, in loading, head foremost over the foot of the stretcher, and in unloading head foremost over the head. The method of lifting will vary according to whether the lower limbs are severely injured, or not. (a) With a severe injury of one of the lower limbs, both bearers place themselves on the injured side: the one in a line with the patient's knees must raise and support the lower limbs, the one near the patient's hips the body; assisted by the patient himself as far as possible, the horizontal position of the patient's body being maintained throughout the movement. (b) With the lower limbs intact, or only slightly injured, the patient may be lifted by one of the improvised seats described in the next section, provided, however, that there are no symptoms of shock present; in the latter case, method (a) must be resorted to.

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#### SECTION II.—DRILLS AND EXERCISES WITH IMPROVISED STRETCHERS, Etc.

When field stretchers are not available, wounded men may be carried short distances by means of various improvised methods. The principal of these are the *rifle stretcher*, by which it is possible for four bearers to remove a patient in the recumbent posture; and the *two, three, and four-handed seats*, by which it is possible for two bearers to form seats adapted for the removal of patients in the sitting posture.



### Part III. Instructions for Training Stretcher

The company will first be practised in forming the rifle stretcher, and these improvised seats.

#### TO FORM RIFLE STRETCHERS.

*Stores required, Rifles and Rugs.*

*"Prepare rifle stretchers." "Lift arms and rugs."*

325. The company having been sized in the usual manner, the rifles (with bayonets fixed) and rugs will be served out, the rifles to every right file, front, and rear rank (or No. 1 and No. 4), and the rugs to every front-rank man (or No. 2) of the left files. The rifles to be held at the order, and the rugs rolled and fastened by a strap to be worn across the right shoulder. The formation of the company will then be proceeded with on the principles laid down in Section I., Part III., and the stretcher detachments extended at four paces interval.

*"Prepare rifle stretchers."* On this command all the Nos. turn to the right, Nos. 2 and 4 of each detachment remain steady, but Nos. 1 and 3 take two paces to their then front, halt, and turn to the right-about—as soon as Nos. 2 and 4 see this they each close outward so as to cover Nos. 1 and 3—upon which No. 2 takes the rug off his shoulder, unbuckles the strap, and throws one end of the roll to No. 3, who assists him in unrolling it and then spreading it out evenly lengthwise between the four men; as soon as Nos. 1 and 4 perceive that the rug is ready they stoop down and lay the rifles on the ground under the edges of the rug, one on either side, muzzles to the front, butts to the rear, hammers facing inwards (if old pattern). All the Nos. now proceed to roll the rugs tightly round the rifles, a like number of rolls round each, until the space between the two rifles measures twenty inches; the rolling then ceases, the men stand up and stand to stretchers, as follows:—Nos. 2, 3, and 4 of each detachment turn to the left, No. 1 to the right; No. 1 then wheels to the left about to his place, halts, and fronts. No. 3 wheels to the right-about round by the head of the stretcher to his place. No. 2 steps back and No. 4 steps forward a pace, while Nos. 1 and 3 are wheeling.

*"Lift arms and rugs."* No. 3 of each detachment now turns to the left-about, Nos. 1 and 3 go round to the opposite side, Nos. 2 and 4 close outwards and cover Nos. 1 and 3. The whole then turn inwards together, and kneel down on left knee and unroll the rug. Nos. 1 and 4 take up the rifles, while Nos. 2 and 3 roll up the



rug as follows :—The foot end will be brought up to the head end, and the whole then rolled from the head end towards the foot, upon which the strap is buckled round the ends. No. 2 then puts the rug over his shoulder, and all the Nos. stand up, Nos. 2 and 4 still facing Nos. 1 and 3. The whole immediately form detachment as follows: Nos. 2 and 4 take two side paces inwards, Nos. 1 and 3 two paces to their then front, upon which the whole front together.

TO FORM 2, 3, OR 4-HANDED SEATS.

*"Rear rank two paces step back."* *"Slow march."*

*"Form 2, 3, or 4-handed seats."*

*"Front."*

*"Close order."* *"March."*

326. *"Rear rank two paces step back."* *"Slow march."*  
The company having been sized in the usual manner, will first have the ranks opened. *"Form 2, 3, or 4-handed seats."*



FIG. 17.—TWO-HANDED SEAT FORMED BY TWO BEARERS.



### Part III. Instructions for Training Stretcher

The right files make a turn to the left and the left files turn to the right, so as to face each other. A 2, 3, or 4-handed seat is now made. *The 2-handed seat* (Fig. 17) by the bearers joining the front pair of hands together, the left files locking the fingers of the left hand with the fingers of the right hand of the right files, palms uppermost, at the same time crossing the unoccupied hands and arms as if they were placed round the loins of a patient sitting in the seat. *The 3-handed seat* (Fig. 18) by the

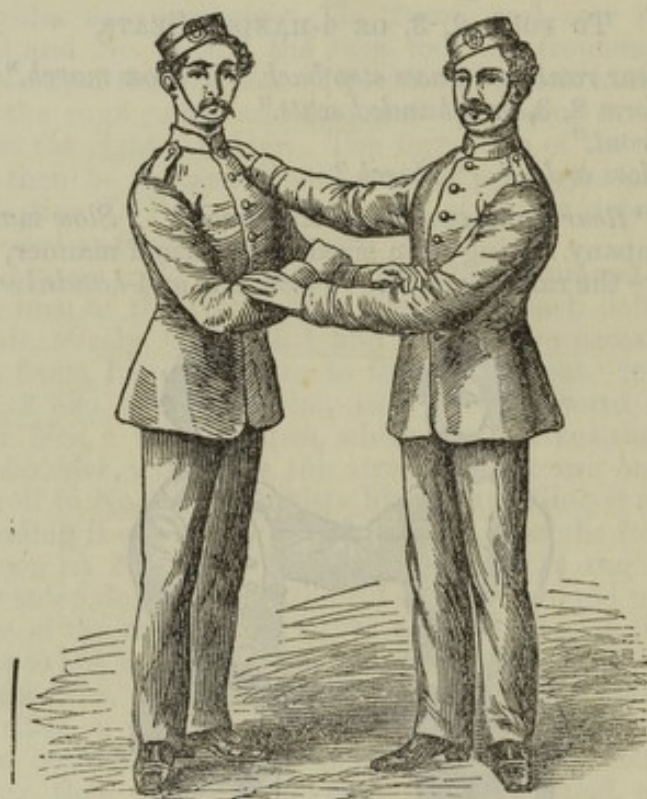


FIG. 18.—THREE-HANDED SEAT FORMED BY TWO BEARERS.

right files grasping the thick portion of the left forearm with the right hand—the left files then grasping the right forearm of the right files with the left hand, and the right files the left forearm of the left files with the disengaged hand. The hand which the left files have still disengaged is then made to rest on the adjoining shoulder of the other bearers so as to form a back support. *The 4-handed seat* (Fig. 19) by both bearers grasping the left forearm with



the right hand, and then grasping the disengaged forearms with the disengaged hands, backs uppermost ; they thus mutually support each other and are mutually supported.

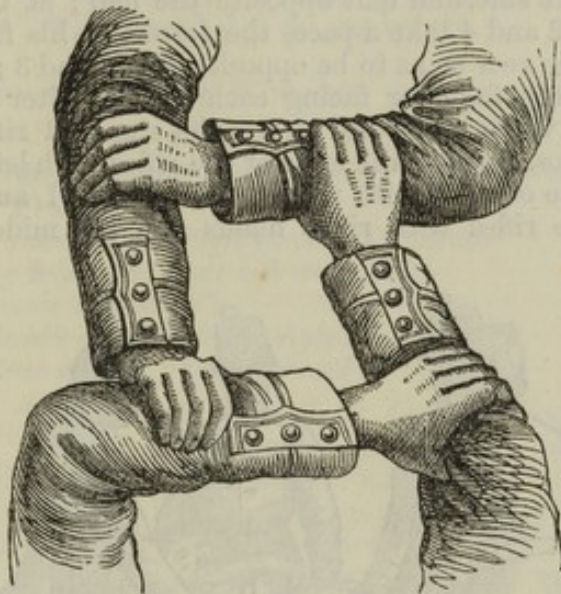


FIG 19.—FOUR-HANDED SEAT FORMED BY TWO BEARERS.

*"Front."* On the word *"Front,"* the men smartly drop the hands to the sides and turn to the front. *"Close order."* *"March."*

#### LOADING AND UNLOADING, AND MARCHING WITH RIFLE STRETCHERS (FIG. 20).

- "Take post at the right of the wounded."* *"Advance."*
- "Prepare rifle stretchers."*
- "For loading, lift wounded, &c. (as with field stretchers)."*
- "Lift rifle stretchers."*
- "Lower rifle stretchers."*
- "For unloading, lift wounded, &c." (as with field stretchers).*
- "Lift arms and rugs."*

327. Rifles and rugs having been served out to the company, and detachments formed, and a party of "dummy wounded" extended in front at four paces interval, the rifle stretcher detachments will be directed to *"Take post at the wounded,"* to *"Prepare rifle stretchers,"* and then to *"Lift"* and *"Lower"* the wounded in the manner before detailed. On



### Part III. Instructions for Training Stretcher

the command "*Lift rifle stretchers*," No. 3 of each detachment turns to the left about, and then Nos. 1 and 3 move round by the foot and head of the stretcher respectively to the opposite side, and halt opposite the end; at the same time Nos. 2 and 4 take a pace, the former to his front, the latter to the rear so as to be opposite Nos. 1 and 3; all now turn inwards together facing each other; after a short pause, the whole stoop and grasp the rug and rifles very firmly—Nos. 2 and 3 the ends of the rifles with left hands and middle of rifles with right hands—Nos. 1 and 4 the ends of the rifles with right hands and the middle with

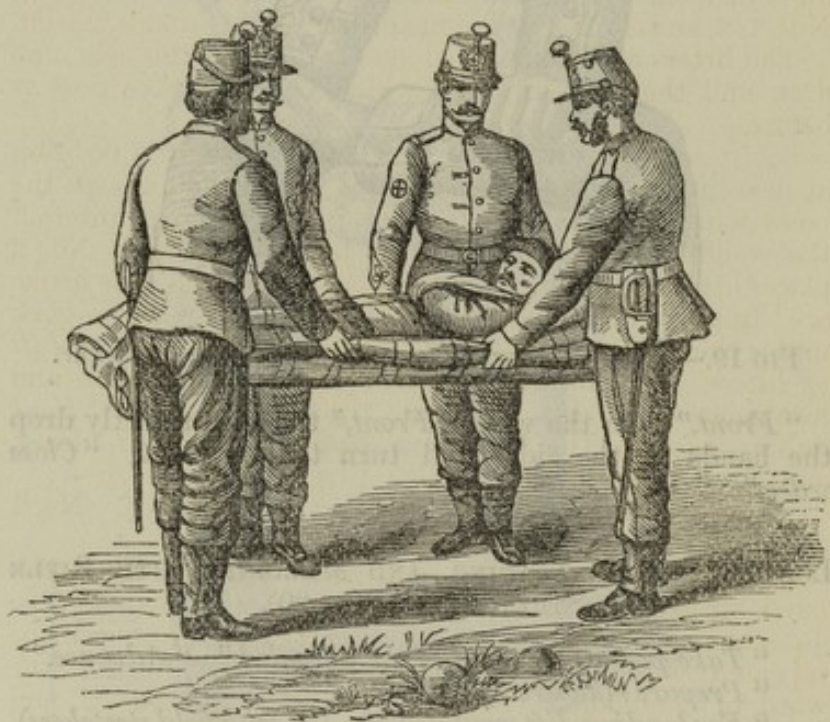


FIG. 20.—RIFLE STRETCHER.

left; very firm grasp of the rug must be taken by every man, else the weight of the patient will cause the rug to unroll, and so expose the patient to the risk of a fall.

In advancing or retiring, it will also be remembered that Nos. 2 and 4 must step off with the left foot if Nos. 1 and 3 step off with the right, a broken step being necessary. After some practice in marching the stretchers will be unloaded, and arms and rugs taken up. If requisite to change the numbers, the command "*Lower arms and rugs*" will be given, upon which the rifles and rugs will be laid down on



the ground, close to the men's feet, muzzles of the rifles to the front, and the numbers changed, as detailed in Section I, Part III. To repeat the exercise, the command will be "*Lift arms and rugs,*" "*Take post at the right of the wounded*" "*Advance,*" &c., &c., as before.

#### TO LIFT AND CARRY WOUNDED BY IMPROVISED SEATS.

##### TWO-HANDED SEATS.

"*Rear rank right-about turn.*" "*Quick march.*" "*Halt.*"

"*Front.*"

"*Ranks from the left (or right) extend.*"

"*By 2-handed seats lift wounded.*"

"*Lower wounded.*"

"*Ranks on the left (or right) close.*"

"*Rear rank.*" "*Quick march.*" "*Halt.*"

328. "*Rear rank right-about turn.*" "*Quick march.*" "*Halt.*" "*Front.*" The company having been sized, the rear rank will be retired to ten paces from the front rank. A party of "*dummy wounded,*" in the proportion of one to every two bearers will then be extended at four paces interval in front of both ranks, and directed to sit down, backs towards the bearers.

"*Ranks from the left (or right) extend.*" On the word "*Extend,*" the two men on the flank named stand fast, the remainder turn outwards and extend, the supernumeraries pacing along the line and seeing that every two men halt immediately in rear of a patient. The wounded will now be lifted and lowered in the following manner, at first by numbers, then judging the time :—

"*By 2-handed seats lift wounded.*" The right half files now take an oblique pace to the right front with the right foot, and the left to the left front with the left foot, each man then makes a left and right turn respectively so as to face each other. "*Two.*" Both bearers kneel on the knee next the patient's feet, and at once form a 2-handed seat beneath his thighs. "*Three.*" They steadily rise together, lifting the patient off the ground, close their heels, and jam the patient's body in between and against their own, passing their unoccupied hands and arms round his loins and pelvis to give him support.

If required to advance, both bearers will step off with opposite feet, the right half files with the right and the left half files with the left feet; the left half files looking to the right for the dressing.

If to retire, the right half files will mark time and bring the left round, both men moving on when square.



### Part III. Instructions for Training Stretcher

*"Halt. "Lower wounded."* At this command both men stoop and kneel down, and place the patient sitting on the ground, disengage their hands quietly, and rise to the erect position.

*"Two."* Both men front and take an oblique pace to the rear, the right half file to the left rear, and the left half file to the right rear. This will bring them to their original position; the ranks can then be closed, the wounded marched to the rear, the rear rank advanced, and the parade dismissed, or the exercise be repeated.

#### THREE AND FOUR-HANDED SEATS.

*"Rear rank right-about turn." "Quick march." "Halt."*  
*"Front."*

*"Ranks from the left (or right) extend."*

*"By 3 or 4-handed seats lift wounded."*

*"Lower wounded."*

*"Ranks on the left (or right) close."*

*"Rear rank quick march." "Halt."*

329. The company and "wounded" parties will be arranged as in the former exercise, except that the wounded will be placed standing.

*"By 3 or 4-handed seats, lift wounded."* The bearers now turn so as to face each other, preparatory to forming 3 or 4-handed seats. *"Two."* 3 or 4-handed seats are formed. The bearers then stoop, bending the knees slightly, and place the seat under the patient's buttocks.

The patients at the same time are to pass both arms over the bearer's heads, and place them on their shoulders.

*"Three."* The bearers steadily rise together, lifting the patient off the ground and closing in as they do to his body. Advancing and retiring will then be practised, as in the former exercise.

*"Lower wounded."* The patients are placed standing, and the bearers take up their original position; when the exercise may be repeated, or the company dismissed, as in the former exercise.

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#### SECTION III.—DRILLS AND EXERCISES WITH AMBULANCE WAGONS.

The regulation carriages which are designed expressly for the conveyance of sick and wounded troops, are called Ambulance Wagons. Of these there are two patterns in



use in the service, viz :—Mark I, or the old pattern, and Mark III, or the new pattern Ambulance Wagon.

330. In the case of Mark I wagon, the driver rides the near horse, but in the case of Mark III wagon he occupies a seat on the box ; in other respects, as regards the number of horses (two) required for draught purposes, in general form, and especially as regards the number and arrangement of the wounded, the wagons are almost identical.

Accommodation is provided for six or seven sick or wounded persons, two inside on stretchers, two in front, and two or three seated in rear—when practicable one of the three seats in rear is allotted to an attendant. The front seat is approached by a ladder, and the hind seat by a step attached to the tail board ; the recumbent patients are carried on stretchers resting on the floor of the wagon, on a special “wagon stretcher” in Mark I wagon, on Mark IV or V field stretchers in Mark III wagon. From this it follows that the introduction of recumbent patients into old pattern wagons must invariably be preceded by all the inconveniences of a transfer of the wounded man from Mark I field stretcher to the “wagon stretcher.”

#### DESCRIPTION OF MARK I OR THE OLD PATTERN AMBULANCE WAGON (FIG. 22).

It consists generally of a wood framed body supported on four steel springs, over a fore and hind carriage. The wagon is fitted with a cover of waterproof canvas supported by bale hoops of ash secured to the sides. From these bale hoops, a basket (*a*) for valises, &c., is suspended, and also straps for securing rifles (*b*). The forecarriage takes a water barrel (*c*). The “wagon stretcher” (Fig. 21) is

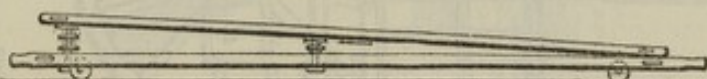


FIG. 21.—WAGON STRETCHER (SIDE ELEVATION).

double, the top frame is covered with canvas, stretched tight over it by straps, and lacing beneath, with a stuffed cushion sewn on at the head to form a pillow ; it is connected to the under frame by hinges at the lower end, the centre and head resting on indiarubber springs fitted between the two frames ; the ends of the sides of the lower frame, which are six feet nine inches long, form handles for lifting, and four small rollers are fitted beneath them to facilitate entry into the wagon. The “wagon stretcher”



# Part III. Instructions for Training Stretcher

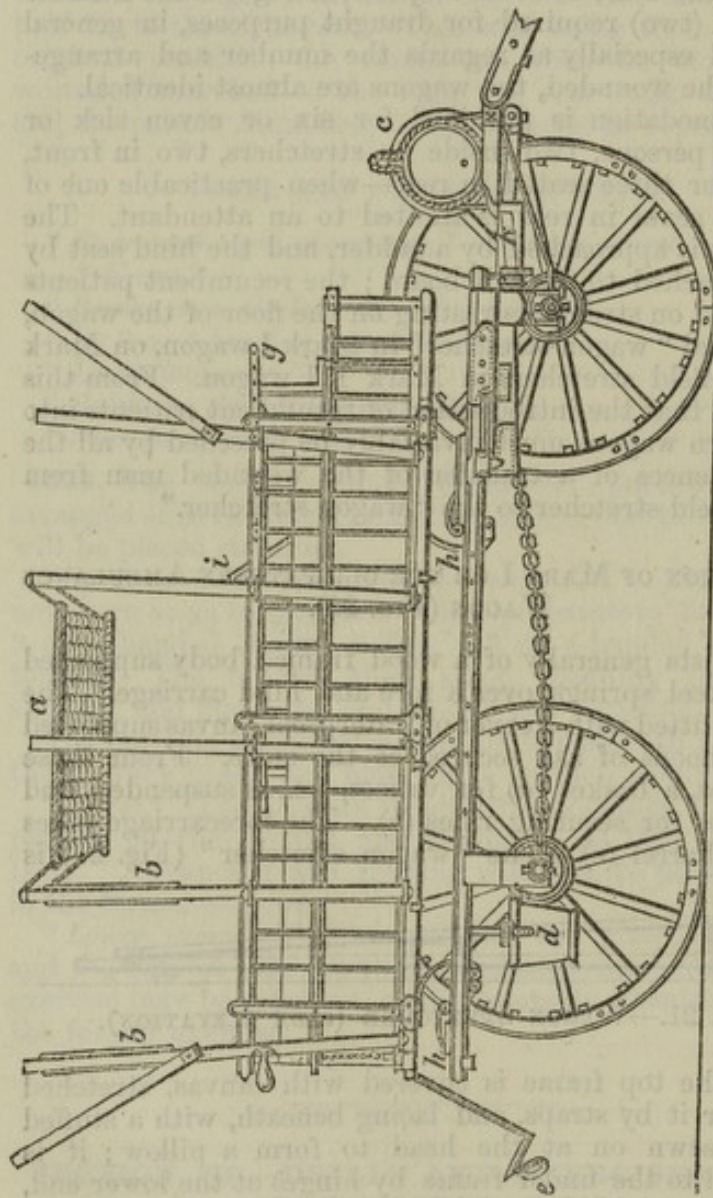


FIG. 22.—AMBULANCE WAGON, MARK 1.

- a* Basket for valises.
- b* Straps for firearms.
- c* Water barrel.
- d* Water bucket.
- e* Apron.
- f* Grease tin.
- g* Ladder.
- h* Springs.
- i* Seat.
- k* Swingle tree.



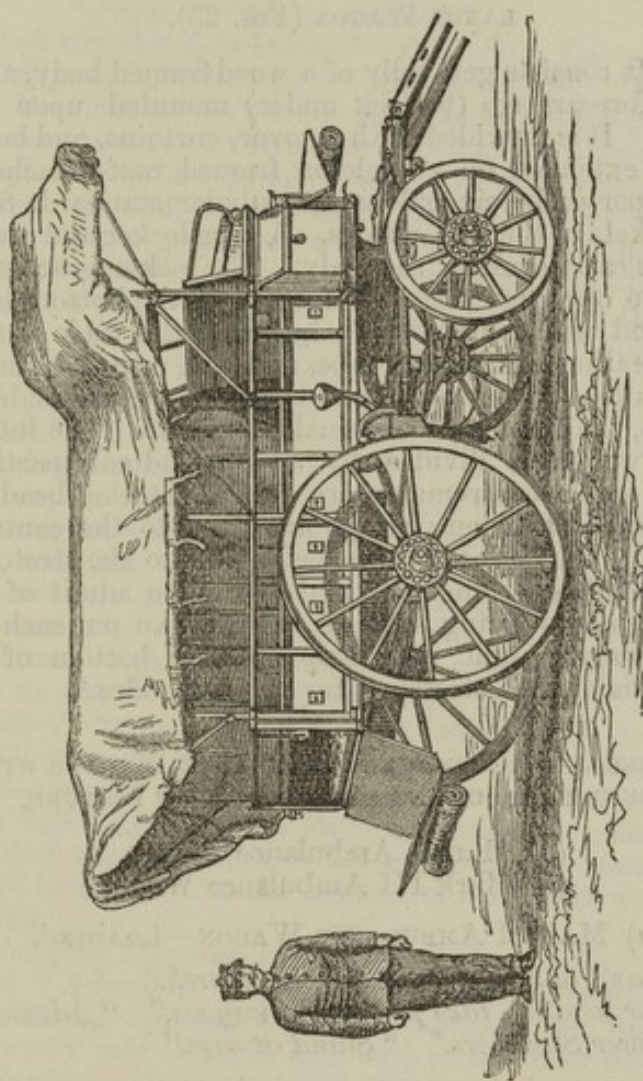


FIG. 23.—AMBULANCE WAGON, MARK III.



### Part III. Instructions for Training Stretcher

is intended for use solely in the wagon ; on the arrival of a patient on an ordinary field stretcher, he is transferred to the "wagon stretcher" for the purpose of being placed in the wagon.

#### DESCRIPTION OF MARK III OR THE NEW PATTERN AMBULANCE WAGON (FIG. 23).

331. It consists generally of a wood framed body, a roof, and a forecarriage (to lock under) mounted upon steel springs. It is provided with a cover, curtains, and hood of canvas, extended on a skeleton framed roof attached to and supported by six galvanised tubular standards fitting into sockets in the wagon sides. A corn locker and a water tank are carried under the body. The locker is accessible from two openings with lids formed in the bottom of the body, and will contain three bushels ; the tank is fitted with a leather funnel and tube, and will contain nine and a half gallons : a moveable box is carried on each side, one for wine, the other for tools, small stores, &c. The interior of the wagon is divided by a longitudinal partition. Valises and accoutrements are carried at the head and foot of each stretcher ; straps are fixed to the centre of the roof to carry the pillows belonging to the stretchers, to the front and hind standards, so as to admit of four field stretchers being carried folded, two on each side of the wagon ; and with loops to the bottom of the wagon, under each stretcher, for securing rifles.\*

#### LOADING AND UNLOADING AMBULANCE WAGONS WITH WOUNDED REQUIRING THE RECUMBENT POSTURE.

(a) Mark I Ambulance Wagon.

(b) Mark III Ambulance Wagon.

(a) MARK I AMBULANCE WAGON—LOADING.

*"Stand to stretchers."* *"Quick March."*

*"For loading, take post at the wagons."* *"Advance."*

*"Lower Stretchers."* *"Stand at ease."*

		Mark I.			Mark III.		
		cwt.	qrs.	lbs.	cwt.	qrs.	lbs.
Weight of wagon complete	...	12	1	0	17	2	23
Tonnage	...	—			3·625 tons.		
Track of wheels	...	5 feet 2 ins.			5 feet 2 ins.		



## Bearers and Bearer Companies.

## Part III.

*"Right stretcher detachments"—*

*"Attention." "Lift wounded."*

*"Lower wounded."*

*"Lift wagon stretchers."*

*"Load."*

*"Right turn." "Right wheel." "Quick march."*

*"Halt." (Abreast of left stretcher detachments.)*

*"Front." "Stand at ease."*

*"Left stretcher detachments." Do. Do. Do.*

*"Company." "Attention." "Lift stretchers." "Retire."*

332. Previous to the parade the wagons, in the proportion of one to every two stretcher detachments about to be exercised, will be drawn up in single rank at one end of the parade ground, at half intervals, and with the hind part towards the ground on which the parade of the company is ordered to be held. The company will then be paraded at a point about thirty paces in rear of the line of wagons, and the instructor will form it into stretcher detachments in the manner already laid down in Section I, Part III, and tell off the detachments as right and left detachments, the odd numbers being the right, the even the left, detachments.

Half-way between where the company parades and the line of wagons, a row of prepared stretchers, old or new pattern, according as the wagons are old or new pattern, will be laid out at four paces interval, and at the foot of each a patient, wearing a canvas suit to protect his clothing, and with or without a rifle and valise, will be directed to stand. The order will now be given *"Stand to stretchers," "Quick march,"* upon which each detachment will proceed by the shortest road to its stretcher. The patients will at the same time be directed to lie down at full length on the stretchers, and the company on reaching the stretchers to lift stretchers, preparatory to a move being made to the immediate rear of the wagons for loading.

*"For loading, take post at the wagons." "Advance."* On the word *"Advance,"* the line of stretcher detachments advances in the appointed manner towards the line of wagons, every pair (a right and left) of stretcher detachments selecting a common point, the wagon intended for them, to march upon: the right pair of detachments marches by the shortest road to the wagon on the extreme right of the line of wagons, the next pair to the wagon next to it, and so on in succession to the left of the line, the advance in each instance being continued until a point one stretcher's length in rear of the wagon is reached



### Part III. Instructions for Training Stretcher

by the No. 1 of the detachment; a halt is then made without further word of command, No. 3, if need be, immediately closing to his right or left the distance required to bring the stretcher directly in line with the floor of the wagon. The right stretcher detachment to be directly in rear of the off compartment, and the left directly in rear of the near.

While the advance is being made, and when the stretchers are ten paces distant from the wagon, Nos. 2 and 4 of each detachment double out in front of the stretcher and proceed to the hind end of the wagon, and lay down the rifle, valise, &c., belonging to the patient on the ground, outside the near hind wheel, withdraw the linch pins (tail-board), pull down the tail-board, lift up the back-board and place it on the ground alongside the patient's equipment; by the time that this is done the detachment to which they belong will have halted, and this they now proceed to rejoin. The instructor will then direct the stretchers to be lowered. "*Lower stretchers.*" "*Stand at ease.*"

As both stretchers cannot be introduced or removed at one and the same time, on account of the limited space in rear of the wagon for the men to work in, the right stretcher detachments will be directed to load, or unload, as the case may be, first, and the left allowed to remain standing at ease during the operation.

With wagons of the old pattern the patients must first be transferred from the ordinary stretcher to the "wagon stretcher." The lifting and laying for this purpose is to be conducted in the usual manner, as described in Section I. Part III, and by the following words of command, "*Right stretcher detachments.*" "*Attention.*" "*Lift wounded.*" No. 4 of each detachment, the moment the patient is lifted clear, draws the stretcher away four paces to the right of the detachment, doubles to the end of the wagon, and commences to draw out the off "wagon stretcher," looking to the No. 4 of the detachment on the extreme left for the time; then standing on the right of the stretcher, and laying hold of it at its centre, left hand over on the pole opposite him, right hand under on the pole nearest him, so as to keep the stretcher horizontal after its removal from the wagon, he draws it completely clear of the wagon, moves with it to the rear, and places it on the ground immediately underlying the patient (taking care in doing so not to knock it against the feet or legs of the other men of the detachment), and then, for additional security, assists in supporting the



patient. "*Lower wounded.*" The patient is next lowered, and the men stand to stretchers. The wagons will now be loaded in the following manner, at first by numbers, then judging the time :—

"*Lift wagon stretchers.*" On this command, No. 3 of each detachment turns to the left about, and then Nos. 1 and 3 move round by the head and foot of the stretcher respectively to the opposite side, and halt opposite the ends of the pole; at the same time Nos. 2 and 4 take a pace, the former to the front, the latter to the rear, so as to be opposite Nos. 1 and 3. All the numbers now turn inwards together towards the patient, Nos. 2 and 4 facing Nos. 1 and 3.

"*Two.*" The whole stoop and lay hold of the poles of the stretcher. Nos. 2 and 3 grasp the ends of the poles with their left hands, and the centre of the poles with their right. Nos. 1 and 4, on the other hand, grasp the ends of the poles with their right hands, and the centre with their left, palms of the hands in every case to be uppermost: care must also be taken not to insert the fingers in the space between the upper and lower framework of the stretcher, lest they may get jammed.

"*Three.*" The four bearers of each detachment by a simultaneous movement now lift the stretcher off the ground and stand up, holding it at the full extent of the arms.

"*Load.*" The men advance with the stretcher towards the end of the wagon, the front and rear rank men breaking step during the advance, and carrying the stretcher very steadily, and halt one pace distant from the floor without further word of command. On the word "*Two,*" the stretcher is raised on a level with the floor, and the front pair of wheels are placed resting upon it. Nos. 1 and 2 now retire in rear of Nos. 3 and 4, and the latter give the stretcher the proper direction for insertion, and then, avoiding all jerking and jolting, slowly introduce it, until the rear pair of wheels touch the end of the floor. At the same time No. 1 doubles round by the off side of the wagon, and springs up on the fore-carriage, so as to be ready to guide the poles of the stretcher, when they come within his reach, into the openings prepared for them in the front-board.

"*Three.*" The rear end of the stretcher is lifted up, and the rear pair of wheels placed resting on the floor, and the stretcher then pushed home. This accomplished, No. 1 jumps down from the fore-carriage, the No. 1 of the detachment on the extreme right giving the time to the



### Part III. Instructions for Training Stretcher

remainder, and rejoins his detachment, which now falls in single rank in rear of and facing the wagon, No. 3 being on the right, No. 1 on the left, and Nos. 2 and 4 between. The right stretcher detachments are now marched back to their places in line abreast of the left stretcher detachments.

The left detachments having been called to attention will be directed to load in a similar manner, the only points of difference being that, on the patient being lifted, No. 4 of each detachment will draw away the stretcher only as far to the right of his detachment as to be just clear of the line of the off hind wheel; and further, before retiring to their places in line No. 2 of each detachment, will replace the back-board *in situ*. Both stretcher detachments of each wagon having in this way loaded, the company will be directed to "*Lift Stretchers*," and "*Retire*" to the original alignment, where the detachments will be formed up as before, and the stretchers lowered, preparatory to unloading the wagons.

#### (a) MARK I AMBULANCE WAGON—UNLOADING.

"*For unloading, take post at the wagons.*" "*Advance.*"

"*Right stretcher detachments.*" "*Unload.*"

"*Lower Stretchers.*"

"*Left Stretcher detachments.*" *Do. Do. Do.*

"*Company.*" "*Attention.*" "*Return wagon stretchers.*"

"*Retire.*" "*Stand to stretchers.*"

The wagons will now be unloaded at first by numbers, then judging the time.

333. "*For unloading, take post at the wagons.*" "*Advance.*" The stretcher detachments in pairs now advance to the wagons, the right pair to the wagon on the extreme right, the next pair to the wagon next to it, and so on from right to left, each detachment halting directly in rear of its wagon, and opposite and at one pace distant from the compartments, the right detachments opposite the off, and the left detachments opposite the near compartments, as before, No. 1 to be next the wagon, and Nos. 2, 4, and 3 to be correctly covering No. 1. The left detachments will then be allowed to stand at ease.

"*Right stretcher detachments.*" "*Unload.*" On this command, Nos. 1 and 3 of each detachment take a side pace to the right, No. 2 a pace to his front, and No. 4 a pace to his rear.

"*Two.*" No. 2 of each detachment now lifts up the back-board and places it on the ground outside the near hind wheel; he then returns to the end of the wagon,



when both he and No. 1 lay hold of the off "wagon stretcher," both men grasping the poles nearest to them, the former with his left hand and the latter with his right, and both then very steadily and slowly commence to draw it out until its front wheels rest on the end of the floor.

"*Three.*" The bearers of each detachment standing nearest the wagon—Nos. 1 and 2—now transfer the head end of the stretcher to the Nos. 3 and 4, and then themselves proceed to lay hold of the foot end, upon which it is lifted clear of the wagon, and carried a stretcher's length direct to the rear, when the detachment will halt without any further word of command. The men will next be directed to "*Lower stretchers,*" and stand to them, the patients to stand up and move to the foot of the stretchers, where they are to remain until ordered to the rear for a repetition of the exercise.

The left detachments will then unload in a similar manner. On the command "*Return wagon stretchers,*" the Nos. 4 of the right detachments double round to the opposite side of the stretchers, lay hold of them as before, and then working by the left replace them in the wagons, and return to their detachments; the same thing is then done by the Nos. 4 of the left detachments, who, however, in addition will replace the back-boards before rejoining.

The company, and "wounded"—having procured their rifles and valises—will then be retired in rear of the line of stretchers, the former directed to stand to stretchers and the latter to lie down on them if the exercise is to be repeated.

(b) MARK III AMBULANCE WAGON.—LOADING  
AND UNLOADING.

334. The new pattern wagon is loaded and unloaded in almost a precisely similar manner to the old, and by the same words of command, with one exception, and that is, since the new pattern stretcher is adapted for use in the new pattern wagon, the patient requires no transfer. Of course should a patient happen to be conveyed to the new pattern wagon on any other than the new pattern stretcher, a transfer will still be necessary.

Words of command, no transfer being necessary :—

LOADING—

"*For loading, take post at the wagons.*" "*Advance.*"

"*Lower stretchers.*" "*Fix slings.*" \* "*Stand at ease.*"

\* Nos. 1 and 3 of each detachment now attach the slings to the traverses of the stretcher by buckling the transverse straps round the traverses, in



### Part III. Instructions for Training Stretcher

*"Right stretcher detachments,"—*

*"Attention."*

*"Lift stretchers" (as if "wagon stretchers)."*

*"Load."*

*"Right turn." "Right wheel." "Halt." "Front."*

*"Stand at ease."*

*"Left stretcher detachments," Do. Do. Do.*

*"Company." "Attention." "Retire."*

#### UNLOADING—

*"For unloading take post at the wagons." "Advance."*

*"Right stretcher detachments,"—*

*"Unload."*

*"Lower stretchers," "Unfix slings."*

*"Left stretcher detachments." Do. Do. Do.*

*"Company." "Lift stretchers." "Retire."*

The company will then be retired, and the exercise repeated.

#### LOADING AND UNLOADING WOUNDED ABLE TO SIT UPRIGHT.

335. After the stretchers have been introduced, and the men thoroughly instructed in the exercise, they will be taught to assist patients who are supposed to be able to sit, into hind and front seats. They should be practised in lowering the ladder and in lashing it up again; also in putting away articles of equipment, rifles, valises, &c., in the various positions assigned to them in the wagon.

### SECTION IV.—DRILLS AND EXERCISES WITH WAGONS OTHER THAN AMBULANCE WAGONS.

#### COUNTRY CARTS, GENERAL SERVICE WAGONS, &c., &c.

Country carts, or general service wagons, are most frequently employed to effect the evacuation of wounded men from the field hospitals to the base hospitals. When used for this purpose the floors should be well covered with straw, and the stretchers conveying wounded requiring the recumbent position should be placed on this.

336. For this exercise the company, the carts or wagons, new pattern stretchers, and the "wounded," will be

such a manner as to have the slings extended between the traverses below the canvas bottom; here they are not in the way, and will be ready for use when the stretcher is unloaded.



drawn up on the parade ground, in the same manner as detailed in Section III. Part III, and the same steps taken to load and unload as are taken in the case of new pattern ambulance wagons. In loading, however, the Nos. 1 and 2 of each detachment, after the end of the stretcher has been placed resting on the floor, will spring into the wagon, and with the assistance of the other Nos. on the ground, lift the stretcher into any required position.

Sometimes the recumbent wounded have to be put into the wagons without stretchers, no material being available. When this happens, four bearers will lift each wounded man in the usual manner and carry him to the wagon. On arriving at the back of the wagon, No. 4 will spring into the wagon and grasp the wounded man under both shoulders and lift him in, assisted by the other Nos. on the ground; the other Nos. will now get into the wagon, and all will help to place the wounded man in the most advantageous position possible.

Unloading is the converse of this proceeding. Neither operation should ever be practised with less than four bearers to each patient, so as not to expose the patients to the danger of a fall.

#### RAILWAY WAGONS.

The railway wagons in this country which can be made use of for the purpose of transporting wounded men, are second-class carriages and goods wagons.

N.B.—No special instructions appear to be necessary for loading and unloading such wounded men as are able to walk and assume the sitting posture, recumbent patients alone being alluded to in the text.

#### LOADING AND UNLOADING A TRAIN COMPOSED OF SECOND-CLASS CARRIAGES.

*"Stand to stretchers." "Quick march."*

*"Lift stretchers."*

*"In succession from the right (or left), load."*

*"In succession from the left (or right), unload"*

337. For each compartment the following stores are required :—Two cross supports\* to place upon the opposite seats, and two "wagon stretchers."

\* The cross supports require to be specially constructed, so as to prevent shifting of the stretchers during transit.

They should be made of wood, and measure 4 ft. 8 ins. in length, 6 ins. in breadth, and 1½ ins. in thickness.

A centre block and two side blocks should be nailed on one side, leaving two gaps, into each of which the pole of one stretcher when *in situ* fits.



### Part III. Instructions for Training Stretcher

For this exercise the company will be drawn up on the platform facing the train, and formed into stretcher detachments in the manner detailed in Section I, Part III. A row of "wagon stretchers," at two or more paces interval, and with the head end of each stretcher next the company, will be laid out on the platform between where the company parades and the carriages, and on these then the "wounded," will be directed to lie down.

*"Stand to stretchers."* *"Quick march."* The bearers will first be ordered to stand to stretchers and then to lift them in the manner described in Section III, Part III, for lifting wagon stretchers. *"Lift stretchers."*

*"In succession from the right (or left), load."* The stretcher on the flank named is now carried to the doorway of the farthest compartment at the corresponding end of the train, the end of the stretcher introduced through the doorway, and the front pair of wheels rested on the floor. No. 1 or No. 2, according to whichever bearer is at the side opposite the door, now gets inside the compartment, and proceeds to arrange the cross supports. He then takes hold of the handles of the stretcher, and with the assistance of Nos. 3 or 4 carries the stretcher, to the opposite side of the compartment, and places it on the cross supports close up to the partition of the carriage, and with the inner pole resting in the gaps in the cross supports.

The stretcher next to the flank stretcher is next introduced into the same compartment in a similar manner, then the one next to it into the adjoining compartment, and so on with each stretcher in succession, two stretchers to every compartment, to the left of the line, each detachment on the completion of the duty returning to its proper place in the company.

*"In succession from the left (or right), unload."* The detachments now unload in succession, that on the flank named being the first. On the arrival of the detachment at the doorway, Nos. 1 and 3 (or Nos. 2 and 4) jump inside, and lift one of the stretchers out of its place towards the centre of the compartment. No. 3 (or No. 4, as the case may be) descends first to the platform, and with the aid of No. 4 (or No. 3) draws the end of the stretcher through the doorway, No. 1 (or No. 2) carrying the other end. When the latter reaches the doorway, No. 2 (or No. 1) comes to his assistance, and then the stretcher is lifted clear of the carriage, and placed in proper position on the platform for a repetition of the exercise.



The remaining stretchers are then removed in succession one after the other by the remaining detachments, and in a similar manner.

The exercise may then be repeated, or the wounded and stretchers removed, and the company dismissed or marched off in the usual way.

#### LOADING AND UNLOADING A TRAIN COMPOSED OF GOODS WAGONS.

*"Stand to stretchers." "Quick march."*

*"Lift stretchers."*

*"In succession from the right (or left), load."*

*"In succession from the left (or right,) unload."*

These wagons, owing to their want of elasticity, are unsuitable as they stand for sick-transport purposes.

339. There are two principal methods of rendering goods wagons available for the transport of wounded men:—

a. Grund's method. (Fig. 24).

b. Zavodovski's method. (Fig. 25).

For each wagon the following stores are required:—

For *Grund's method*—Four springs, two poles, and three field stretchers, Mark IV or V pattern. The springs are set in the floor of the wagon, and the poles intended for the reception of the stretchers are to be placed resting on the springs.

For *Zavodovski's method*—Four cables, sixteen ropes, eight hooks and rings, four poles, and eight field stretchers, Mark IV or V pattern. The rings and hooks are inserted in the sides of the wagons near the roof; from these the cables are suspended across the wagons, sixteen looped ropes are attached to the cables, and by means of these two tiers of stretchers can be supported, four stretchers in each tier.

The company and field stretchers will be drawn up on the platform for this exercise as for the last.

The stores having been arranged in the wagons, the bearers will be directed to stand to stretchers, and to lift them in the same manner as wagon stretchers.

*"In succession from the right (or left), load."* The stretcher on the flank named is now carried to the doorway of the farthest goods wagon; there the detachment will wheel about, and carry the stretcher head foremost into the wagon, and place it across the poles, if the wagon is fitted on Grund's system, or in the loops of the ropes if on Zavodovski's. N.B.—In Zavodovski's system the



### Part III. Instructions for Training Stretcher

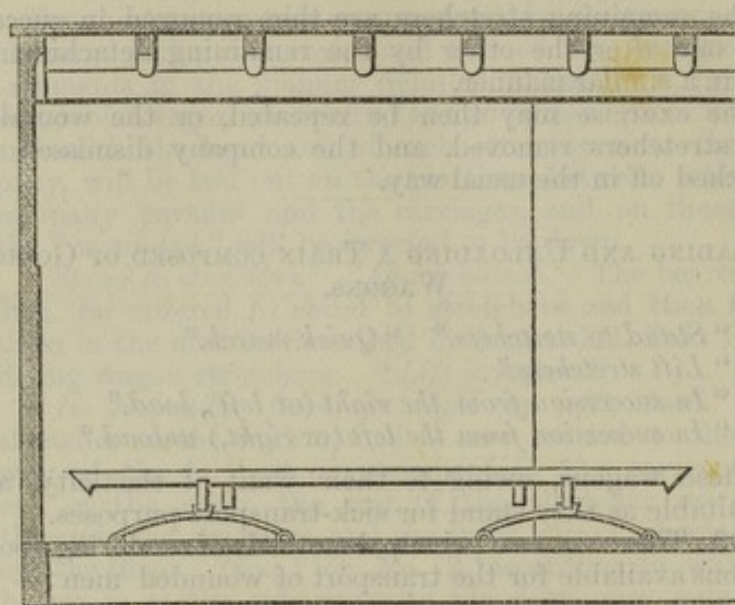


FIG. 24.—LONGITUDINAL SECTION OF PART OF A GOODS WAGON FITTED ON GRUND'S PLAN.

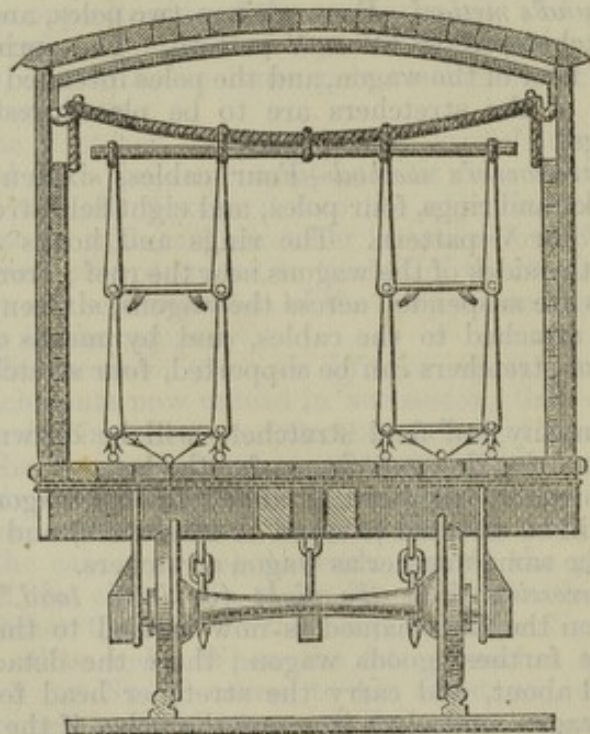


FIG. 25.—TRANSVERSE SECTION OF A GOODS WAGON FITTED ON ZAVODOVSKI'S PLAN.



upper tier of stretchers are introduced first, and then the lower; the off stretchers in either case first, then those nearest the doorway.

The stretcher next to the flank stretcher is next carried to the same wagon, then the one next to it again, and so on in succession to the left of the line, until all the stretchers have been introduced, each detachment on the completion of the duty returning to its proper place in the company.

*"In succession from the left (or right), unload."* The detachments now advance in succession and remove the stretchers one after the other, the lower tier, in Zavodovski's system, first, then the upper, and place them on the platform in a proper position for a repetition of the exercise.

N.B.—In Zavodovski's system the lower tier of stretchers require to be made fast to the floor, to prevent the swaying about that would otherwise take place. Before the wagon fitted on this system can be unloaded, therefore, these lashings must be cast adrift, and after it is loaded the lashings must be made fast to the rings on the floor provided for the purpose.

The exercise may now be repeated, or the "wounded" and stretchers removed, and the company dismissed, or marched off in the usual manner.

#### SECTION V.—DRILLS AND EXERCISES WITH CACOLETS AND LITTERS.

In mountain and desert warfare, it becomes necessary sometimes to employ pack transport instead of wheeled transport for the conveyance of the wounded.

The so-called mountain equipment consists of Cacolets, or folding chairs, for the conveyance of sitting patients, and litters, or folding stretchers, for those whose disability necessitates the recumbent posture.

Cacolets in pairs, and litters in pairs, are constructed to be hooked on pack saddles, one on each side.

339. The pack saddle used is the general service pattern, and that known as size No. 1.\*

\* It consists of the following parts:—

One bit T-bridoon, with rein.

„ breeching, circular web.

„ collar, breast, circular web.

One collar head-stall, circular web.

„ crupper, circular web.

„ girths, circular web.



### Part III. Instructions for Training Stretcher

#### TO SADDLE AND UNSADDLE.

"—files on the right take post at the mules." "Quick march."

"Unsaddle."

"Saddle."

340. The company will first be taught how to saddle and unsaddle. For this purpose, any number of mules not exceeding the number of files in the company, properly saddled and bridled in the first instance, will be led out in front of the company by the muleteers, and drawn up in line in extended order at six paces interval, and at about six paces from the front rank, facing the same direction as the company.

"—files on the right take post at the mules. Quick march." On this command a file from the right of the company will move off to each mule; the right file to the mule on the right of the line, the second file from the right to the mule next to it, and so on in succession from right to left. On arriving at the hind-quarters of the mule, the front and rear rank men in each instance separate; the front-rank man to proceed to the near side, and the rear-rank man to the off. Both halt without any further word of command on reaching the saddle, and with the shoulders next the mule close in to the pannels, facing the front.

"Unsaddle." The front-rank man now turns to the right and sets loose the girths, commencing with the rear one. The rear-rank man moves round under the mule's head to the near side, and sets loose the breast and neck straps, and then returns to the off side, where he proceeds to pick up the breast and neck straps and the girths, all of which he then places upon the seat. Both men then sweep the saddle back on the mule's hind-quarters; the rear-rank man removes the crupper and places it upon the seat, seeing which the front-rank man grasps the saddle tree with both hands—hands between the hooks, palms downwards—and lifts it clear of the mule, taking a pace to his then rear as he does so.

"Saddle." The front-rank man takes a pace towards the mule, and as he does so raises the saddle up and places it on the hind-quarters, whereupon the rear rank man proceeds to pass the crupper, and then both men help to

One pannels, pairs.  
 " rein chain, tinned.  
 " saddle-tree.  
 " seat

One straps, baggage sets.  
 " " crupper.  
 " " girth attached to tree.  
 " surcingle, circular web.



draw forward the saddle. The rear-rank man now draws down the girths and breast-straps. He then throws the neck-strap over the mule's neck, and with the breast-strap in his left hand goes under the mule's head to the near side, and buckles both in their appointed places, the latter to the pannel casing, the former to the breast-strap itself, returning to the off side in time to turn to the front with the front-rank man. Meanwhile the front-rank man girths, commencing with the front one, and both men then front together.

The first party of men having in this way been instructed how to saddle and unsaddle, they will be turned about, directed to rejoin the company, and allowed to stand at ease, while the remainder of the company is put through the exercise.

#### CACOLETS.

341. A pair of the latest pattern (Mark III) cacolets weigh 56 lbs. Each cacolet consists of the following parts:—a seat, or cushion; two hanging bars, terminating in hooks by which the cacolet is attached to the pack-saddle, and certain parts designed to prevent the patient from falling

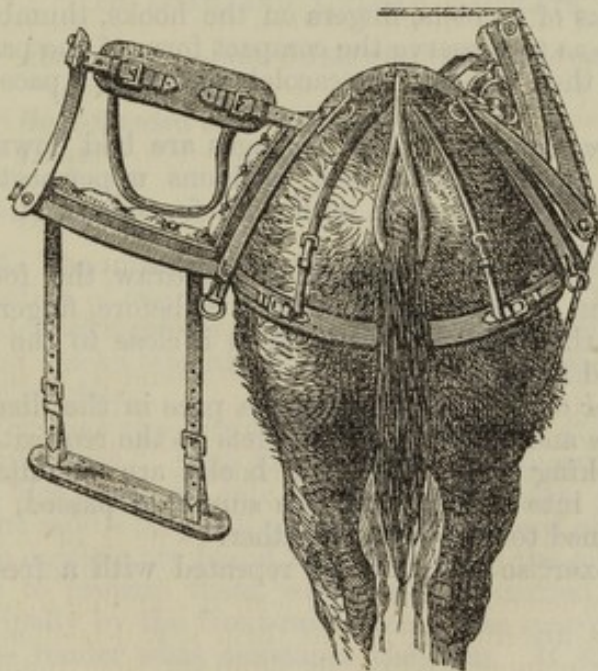


FIG. 26.—END VIEW OF MULE CHAIR OR CACOLET, OPEN FOR USE, AND PACKED FOR TRAVELLING.



### Part III. Instructions for Training Stretcher

out of the cacolet; a foot-board, and slings; two up-rights, and a side rail, and back and waist straps. When not required for use, the pair of cacolets are constructed to fold up against the saddle, against which they can then be kept closely approximated by means of a surcingle. (Fig. 26.)

#### TO HOOK ON AND UNHOOK CACOLETS.

"—files on the right take post at the mules." "Quick march."

"Unhook cacolets."

"Lower cacolets."

"Lift cacolets."

"Hook on."

342. For this exercise the mules (with cacolets folded up) will be placed by the muleteers in front of the company, in the same manner as directed for saddling.

"—files on the right take post at the mules." "Quick march." On this order, a file proceeds to each mule and takes post as in saddling. "Unhook cacolets." Both men turn inwards towards the mule. The front-rank man loosens the surcingle, removes it, and places it on the ground at the muleteer's feet. Both men then simultaneously grasp the hooks of cacolets, fingers on the hooks, thumbs on the seats, so as to preserve the compact form of the package.

They then unhook the cacolets and take a pace to their rear.

"Lower cacolets." The packages are laid down on the ground at the men's feet, cushions uppermost, hooks pointing away from the mule, and foot-board on top, and both men rise up.

"Lift cacolets." The men stoop, draw the foot-board aside, and lay hold of the cacolets as before, fingers on the edge of the cushion, so as to keep it close to the hanging bars, and rise up.

"Hook on." Both men take a pace in the direction of the mule and raise up the cacolets to the requisite height for hooking on. The four hooks are simultaneously dropped into their places, the surcingle passed, and the men turned to their front together.

The exercise will now be repeated with a fresh party of men.



## TO PREPARE CACOLETS FOR USE.

"—files on the right take post at the mules." "Quick march."

"Prepare cacolets."

"Fold up cacolets."

343. The mules in front of the company, as before.

"—files on the right take post at the mules." "Quick march."

On the order a file proceeds to each mule and takes post as in the former exercise.

"Prepare cacolets." Both men turn inwards towards the mule. The front-rank man removes the surcingle, and places it on the ground at the muleteer's feet. The seats are then drawn down horizontal, the side rails raised, and the waist and front straps unbuckled.

"Fold up cacolets." The converse of the above. The waist and front straps are buckled, the side rails lowered, the seats pushed up to the saddle, the foot-boards placed on top and between the hanging bars, the surcingle then passed, and the men turn to the front together.

The exercise may then be repeated with a fresh party of men.

## TO LOAD AND UNLOAD CACOLETS.

"For loading.—files on the right take post at the mules."

"Quick march."

"By 2-handed seats lift wounded."

"Load."

"Unload."

"Lower wounded."

344. The mules in front of the company as before in the proportion of one mule for every two files. The patients, provided with canvas clothing, will be placed, sitting on the ground (backs towards the company), three paces in front of the cacolets.

"For loading—files on the right take post at the mules."

"Quick march." Two files now proceed to each mule, the right files to the off side, the left to the near. On reaching the saddle they halt without further word of command. If the cacolets are found to be folded up the order will be given to prepare them, which will be carried into effect principally by the front-rank men. The rear-rank will of course render what assistance they can. If on the other hand the cacolets are already prepared, the order will be given, "By 2-handed seats lift wounded," upon which



### Part III. Instructions for Training Stretcher

the men will advance and place themselves on each side of the patients, the front-rank men on their right, the rear-rank men on their left. On "*Two*," they kneel down and form 2-handed seats, and on "*Three*," they very steadily rise up together, lifting the patients off the ground as they do.

"*Load*." Every file steps back to a cacolet, halting immediately in front of it.

"*Two*." The patients are raised up as high as the cacolets, and put sitting in the seats, being directed to assist the bearers as much as possible while this is being done. The front-rank men then arrange the foot-boards under the patients' feet and secure the front straps, while the rear-rank men at the same time pass the waist-straps round the patients' waist and secure them. Each file then takes post outside the cacolet.

"*Unload*." The converse of the above. The front-rank men unbuckle the front straps and remove the patients' feet from the foot-boards, and the rear-rank men unbuckle the waist-straps. This done, the whole place themselves about the patients, preparatory to forming 2-handed seats. On the near side the front-rank man takes post between the mule's shoulder and the patient, the rear-rank man outside the patient. On the off side the rear-rank man goes inside, the front-rank man outside. Each file then forms a 2-handed seat under the patient's thighs, and both men circle the patient's waist with their disengaged hands and arms as far as possible.

"*Two*." The patients are lifted clear and firmly grasped, and each file takes three paces to the front and halts. "*Lower wounded*" follows when the patients are put sitting on the ground and the men take post.

The exercise can then be repeated judging the time with a fresh party of men.

#### TO LOAD AND UNLOAD WITH REDUCED NUMBERS. 3 BEARERS.

"*For loading—detachments on the right take post at the mules.*" "*Quick march.*"

"*By 2-handed seats lift wounded.*"

"*Load.*"

"*Unload.*"

"*Lower wounded.*"

345. When three bearers only are available, the cacolets



## Bearers and Bearer Companies. Part III.

will be loaded or unloaded one at a time, and one after the other.

The mules (in the proportion of one mule for every three men) and patients will be drawn up as for the last exercise, and the company will be formed three deep, each three men constituting a detachment, as follows:—

Number by threes.

Threes right (or left).

Left (or right) turn.

On the right close. Quick march.

Front rank, No. 1 bearers; centre rank, No. 2; and rear rank, No. 3 bearers.

*“For loading.—detachments on the right, take post at the mules.” “Quick march.”* One detachment now moves off to each mule, Nos. 1 and 2 to the near side, No. 3 to the off. On reaching the saddle they halt, No. 2 in rear of No. 1. If folded up, the cacolets will first be prepared. If already prepared, the loading will be at once proceeded with. *“By 2-handed seats, lift wounded.” “Load.”* The patient opposite the near cacolet is first lifted and put into the near cacolet by Nos. 1 and 2, in the manner already described. No. 3 on the word *“Wounded,”* however, turns to the left and grasps the side rail of the off cacolet, so as to be prepared to counteract the weight of the patient when placed in the near cacolet, retaining hold until such time as the off cacolet is loaded, when he can let go his hold. The patient opposite the off cacolet is then lifted by Nos. 1 and 2 and put into the off cacolet, upon which No. 3 releases his hold, and proceeds to secure the straps and foot-board on the off side, while Nos. 1 and 2 do the same on the near. All the numbers then take post.

*“Unload.”* No. 3 of each detachment doubles round to the near side, and falls in close behind the cacolet; Nos. 1 and 2 unbuckle the straps, &c., and form 2-handed seat; No. 3 then grasps the side rail, so as to counteract the weight in the opposite cacolet when the near is unloaded. *“Lower wounded.”* The patient is then lifted clear, and lowered. Then the off cacolet is quickly unloaded in a similar manner. All the numbers take post, are turned about, directed to rejoin the company, and the exercise repeated with others.

### LITTERS.

346. A pair of the latest pattern (Mark III) litters weigh 106 lbs. As the cacolets are sometimes called *clding fchairs*, the litters may with equal right be called *folding stretchers*.



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Each consists of an iron framework, jointed, in three parts—head, centre, and foot-piece (the head-piece is protected by a hood and provided with a pillow)—a canvas bottom, two uprights, and a side rail, hanging bars terminating in hooks by which the litter is suspended from the hooks of the pack-saddle, belly-band and suspension straps, and an apron.\* (Fig. 27.)

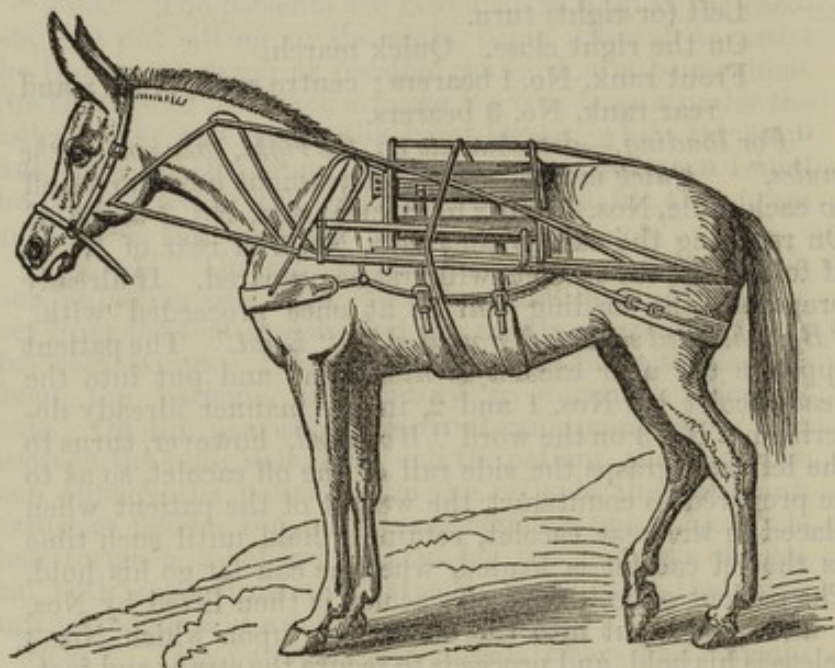


FIG. 27.—MULE LITTER ATTACHED TO ITS PACK-SADDLE.  
(*The framework only of the litter is shown*).

When not required for use, the pair of litters are constructed to fold up against the saddle, and are there retained by a surcingle.

\* The apron is made of Russia duck, sufficiently large to cover the exposed portion of the litter with its sick or wounded occupant. The aprons are attached to the litters at their ends, the front end having seven button-holes corresponding with the leather buttons on the hood of the litter, and the rear having two leather thongs, each with button and button-hole for attachment to the bottom of foot-piece. The top of each apron is also provided with three beech toggles  $2\frac{1}{2}$  inches in length, with strong loops and one leather button; the former are for the purpose of securing the sides when rolled up for additional ventilation, and the latter for securing the front when turned back for the same purpose. The inner edge of the apron is notched in two places, to clear the hanging bars of the litter.



## TO HOOK ON AND UNHOOK LITTERS (FOLDED UP).

"—files on the right take post at the mules." "Quick march."  
 "Unhook litters."  
 "Lower litters."  
 "Lift litters."  
 "Hook on."

347. The mules will be brought on the ground with litters folded up, and placed by the muleteers in the same position as for cacolet exercise, but facing the company. "—files on the right take post at the mules." "Quick march." On this order a file proceeds to each mule, the front-rank man to the near side, the rear-rank man to the off. "Unhook litters." Both men turn inwards; the front-rank man sets loose the surcingle, removes it, and places it on the ground at the muleteer's feet. The litters are then drawn down horizontal, and both men lay hold of them, the front rank man right hand on outer rail, left hand on inner; the rear-rank man, left hand on outer rail, right hand on inner; both litters are then unhooked, and the men take a pace to their rear. "Lower litters." The litters are placed on the ground, hanging bars nearest the mule, and the men rise up. "Lift litters." The men stoop, take hold of the litters as before, and rise up. "Hook on." A pace is taken in the direction of the mule, and the litters raised to the requisite height for hooking on. All four hooks are simultaneously dropped into their places, the litters turned up against saddle, the surcingle passed, and the men front. The exercise will then be repeated with fresh numbers.

## TO PREPARE LITTERS FOR USE.

"—files on the right take post at the mules." "Quick march."  
 "Prepare litters."  
 "Fold up litters."

348. The mules in front of the company as before, with litters folded up.

"—files on the right take post at the mules." "Quick march." A file proceeds to each mule and takes post as in the former exercise.

"Prepare litters." Both men turn inwards. The front-rank man removes the surcingle and then the litters are drawn down and opened out. First the foot-pieces are raised up and extended, and then the head-pieces (the belly-band and suspension straps, generally stowed away



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in the near litter, are now removed and placed on the ground along with the surcingle). The joints are next fixed—beginning with the inner joint between the head and centre-pieces, then proceeding to the outer joint, then to the outer joint between the foot and centre-pieces, and ending with the inner joint between foot and centre-pieces—by passing a linch-pin through the holes in the iron framework, and the thongs through the linch-pins to prevent them slipping out.

This done the aprons are to be rolled lengthwise and placed on the inner side of the litter close to the hanging bars—extended from the pillow to the footrail—the end with leather thongs at foot; the hood-rod straps are then laid at full length on top of the roll, upon which both men take up a position outside the centre-pieces facing the front.

*“Fold up litters.”* The converse of the above. The hood-rod straps are rolled up and put away in the hood at the top of the pillow, the aprons are folded up square, not so large as the pillow, and placed on the pillow, the belly-band and suspension straps placed on the centre-piece of the near litter, linch-pins withdrawn, commencing with the one inside the foot-piece and ending with the one inside the head-piece, each man returning to the centre-piece then folds up the litter, head-piece first, then foot-piece. The folded-up litters are now pushed up against the saddle, the surcingle passed, and the men front.

The exercise may then be repeated with fresh numbers.

#### TO LOAD AND UNLOAD LITTERS.

349. The following are the steps which must be undertaken for loading :—First the litters must be prepared, then unhooked and lowered, then the patients lifted and laid on the litters, and finally the litters rehooked on the pack-saddle. For unloading, the litters must be unhooked first, then lowered, and then the patients removed.

This can be best accomplished with 8 or 6 bearers; it can also be done with 4.

The mules will be drawn up in front of the company as before, with litters folded up. A patient will be directed to lie down on the ground in front of each litter, head next the litter and body in line with it when opened out.



## Bearers and Bearer Companies.

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## TO LOAD AND UNLOAD WITH 8 BEARERS.

*"For loading—detachments on the right take post at the mules." "Quick march."*

*"Prepare litters."*

*"Unhook litters."*

*"Lower litters."*

*"Lift wounded."*

*"Lower wounded."*

*"Lift litters."*

*"Hook on."*

*"Fix back suspension straps."*

*"Fix hood-rod straps, belly-band straps, and aprons."*

*"Prepare litters for unhooking, &c."*

350. The company will be formed four deep, and have the detachments numbered, the odd being the right and the even numbers the left detachments, the front rank being the No. 1 bearers and the rear rank the No. 3 bearers, as in stretcher exercise. Two detachments for each mule are required for the exercise.

*"For loading—detachments on the right take post at the mules." "Quick march."* On this command the right detachments proceed to the near litters, the left to the off, and halt with Nos. 2 and 4 opposite the saddle. *"Prepare litters"* as before described, but the work will be done by Nos. 2 and 4 alone, Nos. 1 and 3 closing outwards to make room. *"Unhook litters."* All the Nos. place themselves round the litters in the following order: No. 1 inside the foot-piece facing the hanging bar, and between the litter and the hind-quarters of the mule; No. 3, turning about, goes inside the head-piece and faces the hanging bar; and Nos. 2 and 4 each take a pace, the former to the front, the latter to the rear. As soon as each man reaches his post, he stoops and places his shoulder next the litter under it; on the off side, Nos. 1, 2, and 4 their right shoulders, No. 3 his left; but on the near side, Nos. 1, 2, and 4 their left shoulders, No. 3 his right; at the same time Nos. 1 and 3 grasp the hanging bars with the hands nearest the mule, backs up, thumbs pointing downwards, and Nos. 2 and 4 the framework in front of them, with the hands away from the mule.

The litters are then steadily raised together and unhooked, upon which Nos. 1 and 3 drop their hands. The detachments then close outwards two paces, halt, and remain steady.

*"Lower litters."* All the Nos. put up their hands and grasp the framework, and lift the portion of the litter on



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the shoulder off, and all then acting together very slowly lower the litters to the ground, turning inwards towards them as they do so, and taking care that the horizontal position is strictly preserved throughout. The whole then rise up. The men now stand to litters—*outside* both the near and off litter.

The patients will next be lifted and laid on the litters, at first by numbers, then judging the time.

*"Lift wounded."* The near detachment now takes up the usual position on the right and the off on the left of their respective patients, while the Nos. 4 take post opposite Nos. 2.

At *"Two"* the patients are laid hold of, and at *"Three"* are lifted; Nos. 4 immediately bring over the litters, place them under the patients, and then assist in supporting them. *"Lower wounded"* follows, upon which the patients are lowered, and the men form detachment outside the litters.

*"Lift litters."* The Nos. place themselves round the litters as for unhooking, or as for lifting the wagon stretcher, Nos. 1 and 3 facing Nos. 2 and 4. *"Two."* The whole stoop down and lay hold of the framework. *"Three."* The litters are very slowly and steadily raised, being kept perfectly horizontal, and placed on the shoulder, by Nos. 1, 2, and 4 on the right shoulder, and by No. 3 on the left on the off side, and *vice versa* on the near side.

*"Hook on."* On this command each detachment steps back to the side of the mule, halting when the centre-piece is opposite the saddle. Preparatory to hooking on, Nos. 1 and 3 now grasp the hanging bars with the hands next the mule, whereupon the whole stoop slightly and place the hooks over the hooks of the pack-saddle.

All four hooks are now simultaneously dropped into their places, and the men remain perfectly steady. *"Fix back suspension straps."* The Nos. 3 disengage their shoulders from under the litters and take post outside the centre-pieces facing each other. The No. 3 of the near side having taken up the suspension strap on his way, now throws one end over the litters and saddle to the other No. 3, who buckles it to the strap attached to the outer rail of the centre-piece, and then the near end is buckled on the near side in a similar manner. *"Fix hood-rod straps, belly-band straps, and aprons."* The remaining Nos. remove their shoulders from under the litters. No. 1 of each detachment proceeds to the front of the foot-piece, lays hold of the hood-rod straps, pulls them towards him, thus raising the hood, and then fastens them to the up-



right bars of the footrail, securing the ends in a slip knot. He next secures the end of the apron to the lower bar of the footrail.

Nos. 2 and 4 in the meantime pass and secure the belly-band straps, the short one to a strap attached to the inner rail, the longer one to the outer rail; No. 3 unrolls the apron, spreads it out over the hood-rod straps, but under the back suspension strap, toggles outside, and then buttons the head end of the apron to the hood, commencing with the inside button. The two detachments then take post together.

To repeat the exercise, the order will first be given, "*Prepare litters for unhooking*," on which the aprons will be unbuttoned and rolled, the hood-rod straps unfastened and the hoods lowered, and the belly-band straps set loose. "*Unhook*." "*Lower litters*," then follows as before, except that on the word "*Unhook*" the Nos. 4 will let loose the back suspension strap.

When the litters have been lowered, the patients may be directed to get up, and then to lie down in front of the litters; from which point the exercise can be proceeded with in the manner already described.

#### TO LOAD AND UNLOAD WITH REDUCED NUMBERS.

##### 6 BEARERS.

##### *Words of Command as for last Exercise.*

351. The mules and patients as for the last exercise. The company formed three deep, as directed at page 145. It will then be explained, that three men form a detachment, and that the odd detachments are right detachments, and the even are left; and that two detachments per mule are required for loading. "*— detachments on the right take post at the mules*." "*Quick march*." The right detachments now proceed to the near litters, the left to the off. "*Prepare litters*," as before described; the work being done principally by No. 2, Nos. 1 and 3 closing outwards to make room. "*Unhook litters*." Nos. 1 and 3 take up a position inside the foot- and head-pieces respectively. Nos. 2 stand fast at the centre-piece until Nos. 1 and 3 take post. All the Nos. then simultaneously put their shoulders under and grasp the framework and hanging bars; on the off side, Nos. 1 and 2 their right shoulders, and No. 3 his left; on the near side, Nos. 1 and 2 their left shoulders, and No. 3 his right. The litters are then steadily raised and unhooked, and the detachments close outwards two paces. At "*Lower litters*," the litters are



### Part III. Instructions for Training Stretcher

lowered as before described ; and the men take post outside the litters.

The patients are next lifted and laid on the litters. "*Lift wounded.*" "*Lower wounded.*" One litter is loaded at a time, the near one first ; the No. 2 of the opposite detachment in each case acting as a No. 4 during the lifting and laying, the men subsequently taking post.

"*Lift litters*" now follows, when the Nos. place themselves round the litters in the manner above indicated for unhooking. "*Hook on.*" "*Fix back suspension straps*" (by the Nos. 3). "*Fix hood-rod straps, &c.*" (Nos. 1 take the same duty as in last exercise ; Nos. 2 the belly-band straps, and Nos. 3 the aprons) as before ; after which the detachments take post.

To repeat the exercise, the orders will be given, "*Prepare litters for unhooking,*" "*Unhook,*" &c., as before, except that No. 2 will unfix the back suspension strap.

#### TO LOAD AND UNLOAD WITH REDUCED NUMBERS. 4 BEARERS.

"—*detachments on the right take post at the mules.*"

"*Quick march.*"

"*Prepare litters.*"

"*Unhook near litters.*"

"*Lower near litters.*"

"*Unhook off litters.*"

"*Lower off litters.*"

"*Lift near litters.*"

"*Hook on.*"

"*Lift off litters.*"

"*Hook on.*"

"*Fix back suspension straps.*"

"*Fix belly-band straps.*"

"*Prepare litters for unhooking.*"

352. Mules and patients as before. The company four deep, and the ranks numbered as for stretcher exercise. One detachment only is required for each mule for the exercise, as one litter only can be hooked on or unhooked at a time.

"—*detachments on the right take post at the mules.*"

"*Quick march.*" A detachment now proceeds to each mule.

Nos. 1, 2, and 3 file to the near side and No. 4 to the off.

"*Prepare litters.*" This is done by Nos. 2 and 4. "*Unhook*

*near litters.*" Nos. 1 and 3 take up a position inside the

foot- and head-piece respectively. Nos. 1, 2, and 3 then

put their shoulders under the framework of the near litter,

and grasp it and the hanging bars, while No. 4 places



himself under the centre-piece of the off litter, ready to support it on his back the moment the other litter is unhooked. The near litter is raised and unhooked, and the three bearers close outwards two paces. "*Lower near litters,*" as before. "*Unhook off litters.*" Nos. 1 and 3 double round to the foot- and head-piece of the off litter, No. 2 to the near side, where he grasps the saddle-trees with both hands, so as to keep it steady while the off litter is being unhooked. Nos. 1, 3, and 4 in the meanwhile put their shoulders under the off litter, and unhook it and close outwards two paces. "*Lower off litters*" then follows, on which the litter is lowered and the men take post, Nos. 1, 2, and 3 outside the near litter, No. 4 outside the off.

The litters are then loaded one at a time, the near one first, and then the off, after which the men take post as before.

"*Lift near litters.*" Nos. 1, 2, and 3 take up a position at near litter, No. 4 at off side of saddle, and grasps the trees with both hands, so as to be ready to counteract the weight of near litter when hooked on, until No. 2 places his back under it. "*Hook on,*" as before. The hooks are dropped into their places, and No. 2 gets his back under the centre-piece, so as to support the litter. "*Lift off litters*" now follows. Nos. 1 and 3 to the foot- and head-pieces, and No. 4 outside the centre-piece. "*Hook on,*" as before. The hooks are dropped into their places, and No. 4 gets his back under centre-piece.

"*Fix back suspension straps*" (by Nos. 1 and 3. No. 1 on near, No. 3 on off side).

"*Fix belly-band straps, &c.*" (Nos. 2 and 4 the belly-band straps, Nos. 1 and 3 the aprons and hoods.) The detachment then takes post, and the exercise can be repeated with fresh detachments, beginning with the word of command, "*Prepare litters for unhooking,*" and then *unhook, &c.*, as before, No. 2 unfixing the back suspension strap.

#### SECTION VI. — PARADE, INSPECTION, AND MANŒUVRES OF A BEARER-COMPANY.

##### PARADE.

353. Whenever a bearer-company is mobilised, the bugle sounds for parade should be arranged as follows: one hour and a half before the hour appointed for parade the



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"preparatory," or "dressing bugle," will be sounded. At this call the horses will be saddled and the wagons got ready, and every man and horse will be prepared to turn out five minutes before the "fall in" sounds. Thirty minutes before the hour ordered for parade, the "non-commissioned officers' call" will sound, upon which all the non-commissioned officers and mounted men, on foot, will fall in for inspection, the non-commissioned officers and mounted men of the Commissariat and Transport Corps by the senior serjeant of that corps, and the non-commissioned officers of the Medical Staff Corps by the serjeant-major. On their dismissal, the detachment of the Commissariat and Transport Corps will be turned into stables, and the "fall in" will sound, when every man will turn out, the mounted men with their horses, to march to the wagon park,\* where the drivers at once proceed to hook in and are inspected by the transport officer; the Medical Staff Corps to fall in for inspection by the medical officer second in command.

The drivers having hooked in will receive the order to "mount" from the senior serjeant of the Commissariat and Transport Corps, who will then report to the transport officer and give the order "sit at ease." The transport officer, accompanied by the senior non-commissioned officer, should now inspect the men and wagons as follows:—*"Attention."* *"Eyes right."* *"Draw swords."* He should then pass down the off and near side of each wagon to see that every man and horse is fully equipped, and that the appointment, clothing, and harness are clean and in good order, also that the carriages are clean and the proper articles of equipment on them. Any spare horses for transport purposes should also be inspected at the same time. He will then number his company and tell it off. *"As far as No. — the right half-company,—the remainder the left half-company."*—*"Return swords."* *"Sit at ease."* [On the other hand, if the "bearer-company" is provided with mountain equipment, the transport officer will now have to inspect the muleteers and pack animals.]

While the drivers are hooking in, and are being inspected, the Medical Staff Corps will have fallen in.

The roll having been called by the senior non-commissioned officer, who reports to the medical officer acting

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\* When circumstances allow, the wagons should invariably be drawn up in two ranks, the ambulance wagons in front, and the general service and other wagons in rear.



## Bearers and Bearer Companies. Part III.

as adjutant, the inspection should now be proceeded with as follows :—

*Open order. March.*

*Draw swords.\**

The inspecting officer will pass down the ranks to see that the clothing, appointments, &c., are clean and in good order.

*Return swords. Close order. March. Stand at ease.*

After the inspection the company will be numbered and told off without delay. On the "advance" being sounded the company will be marched in front of the wagon park : bātmén, artificers, and dismounted men falling-in in rear under a non-commissioned officer specially detailed for the purpose.

The commanding officer should now call the parade to "attention," when the reports of the officer second in command, transport officer, and the quartermaster (as to his stores) should be collected by the medical officer acting as adjutant, and be delivered to the commanding officer.

### INSPECTION AND REVIEW.

354. A parade of a bearer-company for inspection should be formed in column at open order. The Medical Staff Corps in line at open order, thirty-one yards in front of the Commissariat and Transport Corps. The Commissariat and Transport Corps wagons also at "order." Ambulance wagons in front : general service and other wagons in rear ; the flank wagons correctly covering the flanks of the Medical Staff Corps, and the remaining wagons distributed at equal intervals between the flank wagons.

When the reviewing officer arrives in front of the centre, at a distance of about fifty paces, he will be received with a salute,—GENERAL SALUTE ; DRAW SWORD,†—the officers coming down to the position of the salute with the commanding officer : after which the officers recover and carry swords, again taking the time from the commanding officer.

\* If armed with rifles and bayonets, the words of command will be as follows :—

*"Fix bayonets. Open order. March."*

After inspection of clothing, &c.,—"Unfix bayonets. Shoulder arms. For inspection, Port arms." After inspection of the blocks, &c.,—"Close order.

*March. Examine arms."*

† If armed with rifles, "Present Arms," "Shoulder Arms."



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The commanding officer then accompanies the inspecting officer, the whole remaining steady while he makes his inspection. The transport officer will give the command, "*Eyes right* (or *left*)," as he comes to the Commissariat and Transport Corps, and "*Eyes front*" when he has passed. As soon as the inspection has been made, the bearer-company will take close order. RETURN SWORDS. CLOSE ORDER. MARCH. Upon this being repeated by the transport officer the rear wagons will also move up to their places.

[If the bearer-company is provided with mountain-equipment, the mules will be drawn up for inspection in rear of the Medical Staff Corps.]

#### MANŒUVRES.

355. [A party of men of some other corps should be sent on in advance, for the purpose of representing "wounded," and directed to take up a position in front of the ground on which the bearer-company is about to exercise. On reaching this ground a label indicating the nature of a supposed injury will be attached to each man's tunic, and he will then be allowed to lie down and wait for the advance of the bearers.]

The bearer-company being formed up on parade preparatory to marching off will receive the following words of command: THE BEARER-COMPANY WILL ADVANCE IN COLUMN OF ROUTE.—MEDICAL STAFF CORPS: FOURS RIGHT. QUICK MARCH. Upon which the Medical Staff Corps will advance in sections of fours (dressing-station party in rear), closely followed by the wagons (ambulance wagons, each to be accompanied by a Medical Staff Corps corporal, leading), also in column of route.

On the line of march the posts of officers, if mounted, will be as follows: the medical officer in command of the bearer-company at the head of the column, the other officers in rear of the Medical Staff Corps, and the transport officer in rear of his wagons and spare horses. The officer in command will move from one part to another as occasion requires his presence for the preservation of order.

On reaching suitable ground for exercise the HALT will be sounded, and the dressing-station party be directed to fall out and FORM DRESSING STATION, on which order the commander of the party—a non-commissioned officer, previously detailed for the purpose—will march his men clear of the main body and the line of wagons. "*Front.*" "*Quick march.*" "*Right* (or *left*) *wheel.*" "*Halt.*"



## Bearers and Bearer Companies. Part III.

N.B. When only one "dressing station" is to be formed, two serjeants and at least ten privates of the Medical Staff Corps should be told off as a dressing-station party.

The wagons, which are intended to be left at the "dressing station" (all, except the ambulance wagons), will, at the same time, be made to wheel to the left (or right); then take ground to the left (or right), and form line at close interval. This will bring the wagons into such a position as to have the horses' heads facing the rear. "*Rear wagons left (or right) wheel.*" "*Left (or right) take ground.*" "*Close interval on No. 1.*"

Officers selected for duty at the "dressing station" by the officer in command will now also be directed to fall out, and the formation of the "dressing station" will be at once proceeded with (for directions for which see Appendix).

On the ADVANCE being sounded, the march of the column will be resumed and continued for at least half a mile further to the front, when ground will be selected for the formation of a collecting station. The HALT will now be sounded, the Medical Staff Corps deployed, and the ambulance wagons reversed about ten paces in rear of the company, "*Wagons,*" "*Left (or right) wheel.*" "*Left (or right) take ground.*" "*Half interval on No. 1.*"

On this being done, the wagon corporals will proceed to prepare the wagons for the reception of wounded: they will lower the ladder and tail-board, and place the back-board on the ground, and the stretchers, surgical haversacks and water bottles, required by the company for immediate use, on or resting against the hind seat; the spare stretchers will be laid on one side.

The company should now be directed to search for wounded, "with," or "without stretchers." THE COMPANY WILL SEARCH FOR WOUNDED. If "without stretchers," the surgical haversacks only will be served out, one to each file of the company; an advance will then be made in the direction of the "wounded," urgent dressings applied, and those who, from the nature of their injuries, are unable to walk to the collecting station, will then be brought in by one or other of the improvised methods.

If "with stretchers," the company, on receiving the order, will be formed for stretcher exercise, in the manner described in Section I., Part III. The guides will then march the Nos. 3 and Nos. 4 to the wagons for the stretchers, surgical haversacks and water bottles, on receiving which the men will be marched back to the company, when the stretchers will be prepared and lifted, and an advance



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ordered to be made in the direction of the wounded. As soon as a stretcher detachment reaches a man who, from the nature of his injury, is unable to walk to the collecting station, the detachment will halt and place the stretcher by his side. All tight clothing will then be loosened, his accoutrements and valise taken off, and such dressings as are urgently required applied. He will next be lifted and laid on the stretcher, and the stretcher itself lifted and removed to the rear; Nos. 2 and 4 at the same time removing his rifle and accoutrements. As the detachment is approaching an ambulance wagon, Nos. 2 and 4 will hurry forward and lay down the man's equipment on the ground outside the near hind wheel, subsequently rejoining the detachment and assisting in loading the wagon in the manner described in Section III., Part III. Throughout this entire operation, each step of which will be conducted as described in a former part of this Manual, the prescribed words of command will be given in every instance to the detachment by the No. 4 of the detachment.

As soon as an ambulance wagon is loaded with its full complement of wounded it is to leave immediately for the "dressing station." Previous to its departure the wagon corporal will be held responsible that the ladder is properly lashed up in its place, and that the men's arms and accoutrements are properly put away in the positions assigned to them. It will also be part of his duty to accompany the wagon back to the "dressing-station," to assist in unloading it there, and to return with it again to the front. Each wagon in succession, as fast as it can be loaded, will follow the first one, and the empty wagons be sent back for more wounded, this process being continued till all the wounded are collected and removed.

When the last wounded man has been put away in the wagon, the Medical Staff Corps will fall in, fold up stretchers, and be marched back to the "dressing station," in front of which they will be halted. The Nos. 4 will then be directed to remove the dressings, the dressing-station party to strike the operating tents, whereupon the tents, surgical haversacks, water bottles, and stretchers, etc., will be put away in the wagons, and the parade formed up, previous to a march home.

N.B.—The above instructions more particularly have reference to the manœuvres of a bearer company with wheeled transport.

The following apply to a bearer-company with mountain equipment:—

On the line of march the pack animals in half-sections



will be made to follow the Medical Staff Corps, and since mountain equipment is not to be employed nearer the field of action than the dressing station the mules will be halted at the "dressing station," wherever this is directed to be formed, and the bearers will be sent forward to bring in the wounded in the best way they can, by one or other of the improvised methods. The wounded arrived at the "dressing station," loading the cacolets and litters will be proceeded with in the appointed manner, as described in Section V, Part III; subsequently they will be unloaded, and the parade formed up preparatory to marching off.

#### MARCHING PAST.

When a Bearer Company is ordered to march past, the *bearers* will march past as a company in line, followed at a convenient distance by the *wagons* in two or more ranks, ambulance wagons leading, the tail-boards of the latter to be kept lowered, the wagon corporals to be seated on the hind seats, and the directing flank of each rank of wagons to be made to cover the directing flank of the company correctly.

Under no circumstances will stretchers be carried in the hand by bearers in marching past.

#### Posts of Officers, &c., &c.

##### COMMANDING OFFICER.

356. In line at close order—In rear of the centre, about twenty paces from the supernumerary rank.

In line at open order—in front of the centre, nine paces from the front rank.

##### OFFICER SECOND IN COMMAND.

In line at close order--In rear of the centre of the right half company, six paces from the supernumerary rank.

In line at open order—On the right of the line of officers.

##### ACTING ADJUTANT.

In line at close order—In rear of the centre of the left half company six paces from the supernumerary rank.

In line at open order—On the left of the front rank.

##### QUARTERMASTER.

In line at close order—In rear of the centre of the line six paces from the supernumerary rank.

In line at open order—Do. do.



## Appendix.

### TRANSPORT OFFICER.

In column of route—In rear.

When the "bearer-company" is formed up for inspection—

Half a horse's length in front of the centre of the line of wagons.

At order—One and a-half horse's length in front of the centre.

### SERJEANT-MAJOR.

In line at close order—In the supernumerary rank centre.

In line at open order—Do. do.

### COMMISSARIAT AND TRANSPORT CORPS SERJEANTS AND CORPORALS.

In column of route—The senior in front of the wagons, the remainder on reverse flank.

In line—One horse's length in rear.

At order—On the flank of the wagons.



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## APPENDIX TO PART III.

**THE FORMATION AND MANAGEMENT OF DRESSING STATIONS DURING PEACE MANŒUVRES.**

a. The order having been given to "Form dressing station," the "rear" wagons will at once wheel into position; the operating tents will now be taken out of the general service wagons by the dressing-station party, and pitched opposite the centre of the line of wagons, fifteen paces in front of the line and ten paces from each other, doors facing the front.

b. A pair of field panniers will be placed in each.

c. A "directing" flag will be placed in the ground, ten paces in front of each doorway; and two others in line with these, at points marking the flanks of the line of wagons.

d. As each ambulance wagon arrives from the front, it will be made to halt and reverse opposite the space between the two flags in front of the tents. The dressing-station party, assisted by the wagon corporal, will then unload it. The "slightly wounded" will be made to fall in between the two flags on the left. The "severely wounded" will be conveyed on their stretchers to the space between the two flags on the right where the "wounded" will be lifted and laid on the ground. In both instances the rifle and accoutrements of each man will be laid on the ground at his feet. The stretchers will now be placed in the wagon, which will immediately return to the collecting station for a fresh load of "wounded."

e. The "wounded" having been all brought in, and roughly distributed in this way into two groups, the ambulance wagons will be retired in rear of the "dressing-station," the dressing-station party will fall in two deep in front of the tents, and the company on its return from the front will be halted ten paces in front of the "directing flags," and be directed to ground stretchers and stand at ease. The surgeon in charge of the "dressing station" will now examine all the "wounded," explaining to the men any mistakes that may have been made and directing certain of them to apply plaster of Paris and other splints in certain selected cases. This accom-



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plished, the Nos. 4 will be ordered to take off the dressings; the dressing-station party to strike the tents: whereupon the stretchers, tents, surgical haversacks, water-bottles, &c., will be put away in the wagons, and the parade then formed up previous to marching off.

### GENERAL RULES FOR THE PROPER CARRIAGE OF STRETCHERS.\*

1. When braces or shoulder straps are used to assist the bearers in carrying stretchers, care should be taken at starting that they are buckled so that the parts supporting the poles are all at equal distances from the *surface of the ground*.

2. As most ground over which wounded have to be carried is likely to present irregularities of surface, it becomes an important matter for bearers to practice the carriage of stretchers, so as to acquire a facility of keeping the stretcher level, notwithstanding the ground is uneven. Bearers trained and habituated to this duty perform it with ease and dexterity, irrespective of differences in their own respective heights; while those who have not practised it are not unlikely to cause considerable distress to the person carried, when they have to carry him up and down hill, in consequence of their deficient training. A concerted action of the front and rear bearers is necessary, and each must be aware what part he is to perform according as the end of the stretcher at which he is placed is rendered higher or lower by the unevenness of the surface over which they are passing. The act can readily be acquired by practising the carriage of the stretcher up and down steps. In this practise the front and rear bearers should occasionally change their respective positions. A bearer should also be carried on the stretcher in turn, so as to be made practically aware of the effects of even and uneven carriage.

3. If the ground over which the conveyance has to pass presents a general ascent, and the bearers are of different heights, then the rear or No. 3 bearer should be the taller and stronger man, for his greater height and the greater strength of his arm will be useful in supporting and raising the stretcher up to the level of the end carried by the foremost man. The weight of the stretcher will naturally be thrown in the direction of the man on the lower level.

\* These rules are copied almost verbatim from Professor Longmore's interesting and valuable "Treatise on Ambulances," page 173, *et seq.*



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4. If the ground presents a general descent the front or No. 1 bearer should be the taller and stronger, for the same reasons as those just given as regards the No. 3 bearer under the opposite circumstances mentioned in Rule 3.

5. A sick or wounded person on a stretcher should be carried, if the ground be tolerably level, with his face looking towards the direction in which the bearers walk. The front or No. 1 bearer then supports the end of the stretcher at which the patient's feet are placed; the bearer near the patient's head is the rear bearer.

6. If the bearers have to carry the stretcher up hill, the front bearer should support the end of the stretcher on which the patient's head is placed, excepting in the case mentioned under Rule 7.

7. If the bearers have to carry the stretcher down hill, the rear or No. 3 bearer should support the end on which the patient's head is placed. The reverse position should be assumed by the bearers both as regards going up hill and going down hill, in case the patient being carried is suffering from a recent fracture of the thigh or leg.

The patient's comfort and welfare will be best consulted as a general principle by the arrangements named in Rules 6 and 7. Although under all circumstances the level position should be sought for as much as possible, still, if the slope of the ground be such that it cannot be attained, it appears desirable that the inclination downwards should be towards the feet rather than towards the head of the patient. But with regard to the exception named, the reverse position of the patient is directed in order to prevent the weight of his body pushing the upper end of the broken bone down upon the helpless and motionless portion of the limb below the seat of fracture.

8. No attempt must be made to carry a helpless patient over a high fence or wall, if it can possibly be avoided: it is always a dangerous proceeding. The danger is of course increased in proportion to the height of the wall or fence. But even if the wall be not much higher than one over which the bearers can step, the stretcher must be made to rest upon it, to the inconvenience, and probable pain, of the patient while each bearer in succession gets over the obstruction; and it is better to avoid even this inconvenience, provided the avoidance does not entail great delay. If the fence or wall be high, either a portion of the wall should be thrown down, or a breach in the fence made, so that the patient may be carried through on the stretcher: or, if this be not readily practicable, the patient should be carried to a place where a gate or opening does already



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exist, notwithstanding the distance to be traversed may be increased by the proceeding. It is better that the transportation should be somewhat delayed than the safety of the patient's limbs or life risked.

9. In crossing a ditch, dyke, or hollow, the stretcher should be first laid on the ground near its edge. Nos. 1 and 2 then descend. The stretcher, with the patient upon it, is afterwards advanced. Nos. 1 and 2 in the ditch supporting the front end of the stretcher, while its other end rests on the edge of the ground above. While thus supported, Nos. 3 and 4 descend. All the Nos. now carry the stretcher to the opposite side, and the fore part now being made to rest on the edge of the ground while the rear part is supported by Nos. 3 and 4 in the ditch, the Nos. 1 and 2 are left free to climb up. The stretcher is now pushed or lifted forward on the ground above, and rests there while Nos. 3 and 4 climb up. The bearers then carry the stretcher on.

10. On no account should a stretcher be permitted to be carried on the shoulders of two or four bearers. The evil of such a proceeding is not only that it is difficult to find several bearers of precisely the same height, so that a level position may be secured, but also that the wounded or sick person, if he should happen to fall from such a height owing to the helpless condition in which such a patient usually is, is not unlikely to sustain a serious aggravation of the injuries he may already be suffering from. Moreover, one of the bearers of a stretcher ought always to have his patient in view, so as to be aware of hæmorrhage, fainting, or other change requiring attention, taking place, and this cannot be done when the patient is carried on the shoulders. The height, too, is calculated to cause the patient uneasiness and fear of falling off, which it is also desirable to avoid. For all these reasons, notwithstanding that bearers will often attempt to carry a patient on a stretcher upon their shoulders, from the weight being borne more easily in that position, or with a view of relieving a fatigued condition of the arms, the practice should be strictly forbidden.



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### CONTENTS OF ORDERLY'S DRESSING CASE IN SURGICAL HAVERSACK.

Clasp knife, long bladed.  
Scissors strong.  
Spatula, large.  
Probe and director, combined.  
Needles, common (6).  
Pins.  
Skein of thread.  
Leather case.

### CONTENTS OF SURGICAL HAVERSACK.

(Weight about 5 lbs.)

Inject : morphia, in stoppered bottle and box-wood case	....	....	....	....	....	1/4 oz.
Sal volatile, in stoppered bottle and boxwood case	....	....	....	....	....	2 oz.
Graduated horn cup	....	....	....	....	....	1
Lint, antiseptic	....	....	....	....	....	4 oz.
Loose wove bandages, antiseptic	....	....	....	....	....	4
First dressing bandages	..	....	....	....	....	3
Boric wool	....	....	....	....	....	2 oz.
Isinglass plaster, 1-inch tape	....	....	....	....	....	1 tin.
Plaster, adhesive, 12 yards, 1-inch tape	....	....	....	....	....	2 tins.
Sponges, in waterproof bag	....	....	....	....	....	2
Tourniquets, field	....	....	....	....	....	2
" screw, small	....	....	....	....	....	1
" Esmarch's web	....	....	....	....	....	2
Wax candle and matches	....	....	....	....	....	1 tin box
Wire arm splints, with tapes and buckles	....	....	....	....	....	2 pairs.
Orderlies' dressing case, improved	....	....	....	....	....	1
Waterproof canvas bag	....	....	....	....	....	1

### CONTENTS OF A SURGERY WAGON.

- Basket A. Medicines, tourniquets, catheters, hypodermic syringe, tallies, &c.
- " B. Bandages, lint, tow, wool, plaster, irrigator, lamp, candles, tallies, &c.
- " C. Same as basket B, also a case of resection instruments.
- " D. A case of surgeon's instruments, tooth instruments, amputating knives, stomach pump, trusses, aprons, air cushions, bandages, &c.



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- Basket E. A case of surgeon's instruments, splints, etna, starch, &c.  
 „ F. A dressing tray, and a reserve stock of bandages lint, splints, &c.

### CONTENTS OF FIELD MEDICAL COMPANION

(Weight about 11 lbs.)

#### *Medicines.*

Chloroform	....	....	.... 2 oz.
Iodoform	....	....	.... 1 „
Mixture for Diarrhoea	....	....	.... 1½ „
Spirit Ammoniae Aromat.	....	....	.... 1½ „
Tinct. Opii	....	....	.... 1½ „
Vaseline Antiseptic	....	....	.... 1 box.

*Pills.                      Powders.                      Tablets.*

#### *Surgical Appliances, &c. (Antiseptic).*

- Bandages, open woven, No. 3.  
 „ suspensory, No. 2.  
 „ first dressing, Esmarch's, with pins, &c., No. 2.  
 Calico, 1 yard.  
 Boric wool, 2 oz.  
 Candle and wax matches, in tin case.  
 Horn cup, graduated.  
 Lint,  $\frac{1}{4}$  lb.  
 Measure, minim, in case.  
 Plaster, adhesive tapes, 12 yards.  
 „ isinglass, 1 in. tape, 1 tin.  
 Gutta-percha tissue,  $\frac{1}{4}$  yard.  
 Catheters elastic gum, No. 3.  
 Sponges, surgeon's, No. 3, } in waterproof bag.  
 Zinc basin, small, }  
 Improved ratan splints, with pad cases, 1 pair  
 Tourniquet, field, No. 1.  
 „ Esmarch's web, No. 2.  
 „ tape, No. 6.  
*Leather Case, containing—*  
 Ligature thread.  
 Ligature silk.  
 Surgeon's needles.  
 Sewing needles.  
 White wax,  
 Scissors.  
 Tape.



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Pins.

Hare lip or acupressure pins.

Safety pins.

Sulphuro-chromic catgut ligatures.

Hypodermic syringe, in case, with bottle of morphia injection, and tube of morphia discs.

Water bottle with drinking cup and strap, complete.

### CONTENTS OF THE FIELD MEDICAL PANNIERS.

*Contents of No. 1 (weight about 90 lbs.), "The Medicine Pannier."*

Chloroform, Morphia inject: Iodoform, Diarrhœa Mixt., Quinine; Purgatives, Lamels, and Discs; Brandy, &c.

A case of surgeon's instruments, writing materials, Syr. hypodermic clinical thermometer, &c., candles.

*Contents of No. 2 (weight about 80 lbs.), "The Material Pannier."*

Lint, Plaster, Splints, Bandages, Tourniquets, &c. Extract of meat, Etna and Spirit.

The weight is equalised for side loads by strapping the Field Companion on to No. 2 Pannier.

### CONTENTS OF FIELD FRACTURE BOX.

(Weight about 52 lbs.)

2 jointed thigh splints, wood.

1 set leg splints, right and left, wire.

1 set " " " " wood

$\frac{1}{2}$  set Pott's splints, wood. "

1 " " " wire.

6 pasteboard splints.

1 radius splint, wire.

1 modified McIntyre's splint, wire.

2 yards gutta-percha tissue.

1 lb. plaster of Paris, in  $\frac{1}{2}$ -lb. tins.

$\frac{1}{2}$  lb. cotton wool, antiseptic.

$\frac{1}{2}$  lb. tow, carbolised.

2 yards flannel serge open texture, antiseptic.

12 loosewove bandages.

12 Esmarch's bandages, printed.



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- 12 straps with buckles.
- 1 old linen sheet.
- 1 counter extension apparatus.
- 1 set gypsum bandage instruments, in case.

### CONTENTS OF BOX OF APPARATUS FOR FRACTURES AND DISLOCATION.

- Double incline plane, McIntyre's.
- 2 jointed thigh splints, wood.
- Jointed elbow " wire.
- Radius " "
- 1 pair fore-arm " "
- 1 pair upper-arm " "
- 2 pair thigh " "
- Set of Duncan's ratan cane splints.
- " japanned leg splints.
- 6 pasteboards for "
- 1 lb. gutta-percha for "
- Salter's leg sling.
- Set of dislocation apparatus.
- Set gypsum bandage instruments, in case.
- 4 yards gutta-percha tissue.
- 1 lb. dextrine.
- 2 lbs. plaster of Paris.
- 12 loosewove bandages.
- 2 lbs. tow, carbolised.
- 1 lb. cotton wool, antiseptic.
- 2 yards flannel serge, open texture, antiseptic.
- 2 arm slings, 1 leather, 1 wire.
- 12 Esmarch's bandages, printed.
- 24 straps with buckles.
- 1 old linen sheet.
- 2 broad flannel bandages, 7 by 6.
- 1 counter extension apparatus.

### CONTENTS OF A PHARMACY WAGON.

*(Divided into Compartments A to H.)*

- A. Bandages in drawers.
- B. Antiseptic lint and tow.
- C. Bandages for bloodless operations, splints, pulleys, brass.enema, &c.



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- D. Slides with medicines.
- E. Calico, linen, flannel, plaster, &c., with space for medical comforts and cooking utensils.
- F. Surgical instruments, medical comforts, &c.
- G. Splints and operating table.
- H. Sun screen, operating lamp, mineral oil, &c.

### PLAN OF A BEARER COMPANY ENCAMPMENT.

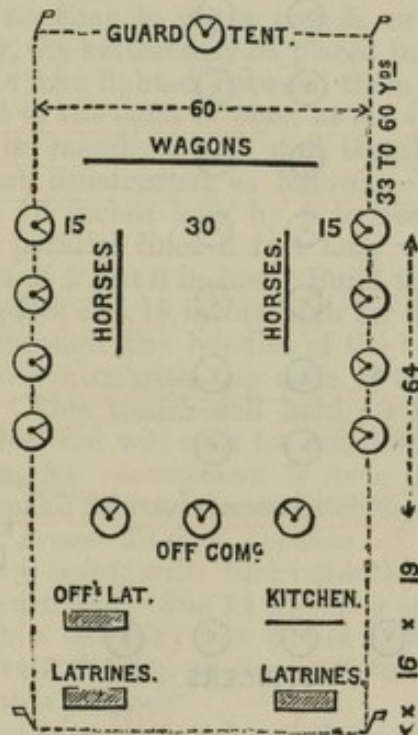


FIG. 28.



GUARD TENT

WAGONS

WAGONS

HORSES.

HORSES.

HORSES.

HORSES.

KITCHEN.

KITCHEN.

OFFICERS.

OFFICERS.

LATRINES.

ASHPIT.

LATRINES.

8x16

19

15

16

128

23 TO 66 Yds

FIG. 29.



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The *cooking place* or *kitchen* (Figs. 28 and 29) should be made in rear of the camp. The following directions are taken from the Regulations for Encampments.

If the *encampment be only for a night*, a trench or two, according to the number of wounded in hospital, should be dug 6 feet long, 9 inches wide, and 18 inches deep at the mouth and continued for 18 inches into the trench, then sloping upwards to 4 inches at the back with a splay mouth pointing towards the wind, and a rough chimney 2 feet high at the opposite end formed with the sods cut off from the top of the trench. This trench will hold 6 Flanders or 9 Torrens' kettles, and will cook for about 50 men.

If there is no time to dig a trench, or the ground be hard or sandy, the kettles may be placed in rows, 10 inches apart, and the fires lighted between them, the heat being thus supplied to the sides in place of the bottom.

On damp or marshy sites a wall trench will be found to answer best, constructed as follows:—Cut some sods of turf about 18 inches long by 9 inches wide, and lay them in two parallel lines 6 feet long with an interval between them of 2 feet 6 inches. Build these walls 2 feet high for Flanders and 18 inches high for Torrens' kettles. Place sticks through the handles of the kettles and hang them over the centre with the ends of the sticks resting on the walls. This trench will hold 10 Flanders or 20 Torrens' kettles, and will cook for about 100 men.

If, however, *the encampment is for a longer time*, it is advisable to make a broad arrow kitchen.

The broad arrow kitchen consists of three trenches converging to a point, with their mouths connected by a transverse trench and a flue 14 feet long connecting these trenches, with a chimney 5 or 6 feet high, formed from the turf cut from the top of the trenches and other sods obtained for this purpose.

This kitchen is constructed as follows:—The site having been selected, a picket is driven to mark the centre of the chimney, and a square of 3 feet marked off on the ground, with a picket as a centre, for the base of the chimney.

The main trench, 26 feet long, is next traced and a picket driven at a distance of 14 feet from the centre of the chimney to mark the head of the centre trench, which is 12 feet long and 9 inches wide. Two other trenches are traced of similar dimensions, one on either side, converging on the head of the centre trench, with their outer ends at a distance each of 5 feet from the central



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one. Each trench has a splay mouth, 2 feet wide and 2 feet long. A transverse trench, 18 feet long, 2 feet wide, and 21 inches deep, connects their outer ends.

One man excavates each trench, commencing from the ends nearest the chimney, the outer trenches from points 18 inches on each side of the central picket (marking the head of the central trench). Each trench is 18 inches deep at the mouth, this depth carried for 18 inches inwards, gradually diminishing to 6 inches where it enters the flue. Another man cuts out the bottom of the chimney and builds it up with the sods cut in construction of the trenches. The third man excavates the draught or flue, which is 14 feet long, 9 inches wide, and 6 inches deep; and as soon as the trenches are dug, he bores a tunnel from the head of each into the flue, taking care that the openings from the outer tunnels do not face one another (which would interfere with the proper working of the draught), then covers the flue with turf or sods from the top of the trenches to the chimney. The other two men excavate the transverse trench and provide turf for the construction of the chimney. The men on the completion of the trenches are employed respectively in providing and mixing clay, carrying water, and covering the trenches for the reception of the kettles. Great care must be taken in the construction of the chimney; all holes and interstices must be plastered up with clay.

The inside of the trenches may be plastered with clay if it be plentiful. If this is done the dimensions should be slightly increased. If clay is scarce the trenches should be cut smooth.

Each trench will accommodate nine Flanders or eleven Torrens' kettles, the holes for which should be moulded from one in clay if procurable. The intervals across the trench should be covered by sods placed grass side downwards, or stones, hoop-irons, sticks plastered with clay, and all interstices closed with clay or sods.

Such a kitchen will cook for 220 men with the Flanders kettle, or for 165 men with the Torrens' kettle, and will last a fortnight even if not plastered with clay.

Tools required are: Axes, pick, 3; Hook, bill, 1; Kettles, camp, 3; Pickets, bundle of, 1; Spades, 4.

Time to construct with 1 non-commissioned officer and 5 men, 4 hours; and time to cook, 1 hour.

*Latrines.*—Latrines should be made as soon as possible after arriving on the encamping ground. Too much care cannot be bestowed on selecting the site of the latrine, and placing it so that it may not be a nuisance, that no filtra-



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tion from it may reach the water supply, and at the same time that it may be convenient.

If the encampment is for only one night or two, a small narrow trench will suffice, with the latrine screen round it. The trench should invariably be filled in before leaving.

If the encampment is likely to stand for any time, then

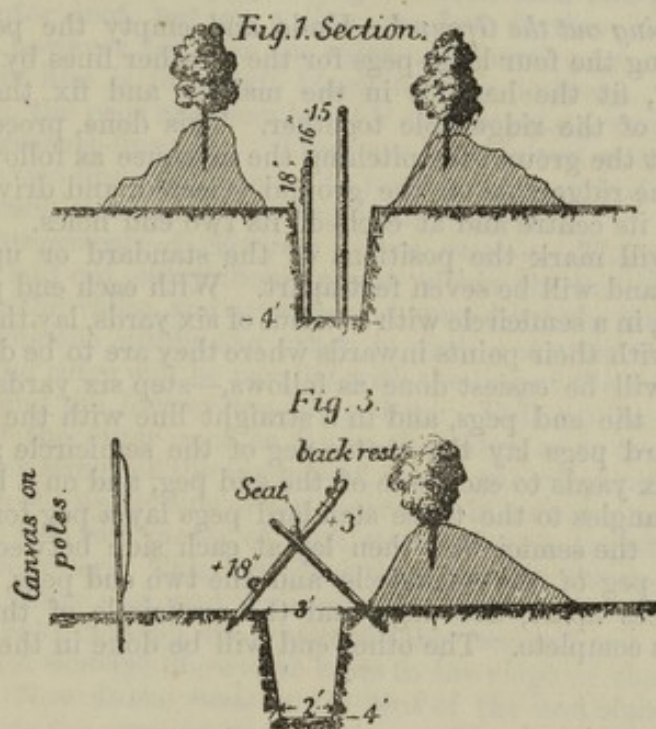


FIG. 30.—LATRINES.

regular latrines should be made. The seat can be formed of one pole and the back of another, as shown in the accompanying drawing (Fig. 30) from Horse Guards' Regulations. A couple of inches of earth should be thrown over the soil every day. This, if carefully done, will prevent all smell.

In a standing camp a urinal should be established.



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### DIRECTIONS FOR PITCHING THE HOSPITAL MARQUEE.\*

*Laying out the Ground.*—Undo and empty the peg bag (keeping the four large pegs for the weather lines by themselves), fit the handles in the mallets, and fix the two pieces of the ridge pole together. This done, proceed to lay out the ground for pitching the marquee as follows :—Lay the ridge pole on the ground selected, and drive in a peg at its centre and at each of its two end holes. These pegs will mark the positions of the standard or upright poles, and will be seven feet apart. With each end peg as centre, in a semicircle with a radius of six yards, lay thirteen pegs with their points inwards where they are to be driven. This will be easiest done as follows,—step six yards from one of the end pegs, and in a straight line with the three standard pegs lay the centre peg of the semicircle ; next step six yards to each side of the end peg, and on a line at right angles to the three standard pegs lay a peg for each end of the semicircle ; then lay at each side between the centre peg of the semicircle and the two end pegs, equal distances apart, five pegs, and the semicircle of thirteen pegs is complete. The other end will be done in the same way.

\* The hospital marquee, complete, consists of the following parts, viz. :—

1 inside linen roof	-	-	-	Packed in a canvas valise, laced up the centre, and marked on the outside "Hospital Marquee."
1 outside ditto	-	-	-	
8 walls (4 inside and 4 outside)	-	-	-	
82 bracing lines (40 inside and 42 outside), with wood runner and button to each	-	-	-	
2 wood vases, painted red	-	-	-	Contained in 1 peg bag, marked on the outside with contents and marquee to which it belongs.
2 weather lines (90 feet long each) with large runners	-	-	-	
180 small tent pegs	-	-	-	
4 large ditto (for weather lines)	-	-	-	Lashed together in one bundle by two box cords.
2 mallets	-	-	-	
1 set of poles, consisting of 8 pieces, viz., 1 ridge in two pieces, and 3 standard or upright in two pieces	-	-	-	Rolled in a bundle round a thin pole, and tied by three box cords.
1 waterproof bottom, made of painted canvas, in four pieces, each piece measuring 15 by 8 feet	-	-	-	



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For the sides of the marquee on a straight line parallel to the three standard pegs and five yards distant, lay six pegs, the first and last of which will be eighteen inches distant from the lines formed by each end standard peg and the two end pegs of each semicircle. Now the pegs for the outer roof are all laid and should be driven before proceeding further.

For the inner roof, lay a peg between each two pegs of the outer roof, but on a line one foot further in. The space, however, between the third and fourth pegs on each straight line is to be left blank for the doorway. These driven, the pegs are complete for the marquee, except the four weather-line pegs. These are each driven at a corner where two lines would meet to form a right angle if drawn from each end and centre peg of the semicircle.

*Arrangement of Marquee before raising.*—The ground being laid out, carry the marquee within the line of pegs, unlace the valise, and arrange and spread out the marquee, the roofs one inside the other, in such a manner that the base and ridge will be parallel with the line of the standard pegs, and the former touching them. Roll up the upper side of the outer roof as far as the ridge, so as to expose the web slings of the inner roof, insert the ridge pole, and roll up the upper side of the inner roof in a similar manner.

Fix the two pieces of each standard pole together by their numbers. This done, pass them through the openings in the inner roof, and their pins through the holes in the ridge pole, through the eyelet in the two end web slings, and also through the eyelet-holes in the ridge of the outer roof. Now fit the vases on the pins of the end standards, and pass the opening lines of the ventilators through the holes of the vases and down through the holes in the ridge of the inner roof by the side of the standards. Next pass the lines for opening and shutting the windows through the corresponding eyelets in the inner roof. Unroll the inner and outer roofs to their proper position, bring the ends of the standard poles so as to prop against the three standard pegs, and square the ridge pole on the three standards thus placed.

*Raising the Marquee.*—To raise the marquee ten men and one non-commissioned officer will be required. These will be styled four weather-line men, six standard men, and one director. One weather-line man will take up a position at each large peg, holding in his right hand the runner, and in his left the line, with a loop ready at any moment to slip on the peg. Two standard men will take up a position at each pole, one at the foot, the other at the



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top, facing each other. When the director sees all are ready he will give the word to raise, when all working together should steadily erect the standards, taking care not to raise one before the other. The director should now go to the side and dress the standard poles, tightening and slackening the weather-lines as required until the poles are perpendicular. He should next go to the end and dress the poles in a similar manner in that direction.

*Putting on the Bracing Lines.*—The weather-line men should not leave their posts until the bracing lines are on. Four of the standard men should put on the bracing lines, while two of them should take mallets to drive any loose pegs there may be. To put on the bracing lines, two men should go to each side of the marquee, commencing with the outer roof, one should take the line at one side of the window, and the other the line at the other side, which should be put respectively on the third and fourth pegs of the outer straight line, thus working towards the ends until meeting the men from the other side. In tightening the bracing lines the marquee should be pulled towards the pegs so as to slacken the line, otherwise the pegs will be pulled out of the ground. The lines of the inner roof should be put on in a similar manner, beginning at each side of the window and working round to the ends. When two lines are together, they should for the present go on the same peg, but afterwards be shifted.

*Putting on the Curtains.*—The curtains are in eight pieces, four for the inner wall and four for the outer wall. The outer curtain should be put on so that the ground flap will be inside and that it can be pegged on the outside. The inner curtain should be put on with the flap out, so that it can be pegged on the inside. Commence with the outer curtain at each side of the doorway and work round towards the ends, taking care to leave enough to overlap and close the doorway. When the curtains are on they should be pegged down both inside and outside.

*Trenching the Marquee.*—A trench nine inches broad and four to six inches deep should be dug round the curtain, especially on the upper side, if the ground be sloping. The trench should be cut well under the curtain, so as not to leave a ledge, otherwise the water will drip on the ledge and run under.

*Points to be attended to.*—When rain comes on, the ropes, as they become wet, get tight, and if not attended to, will pull the pegs out of the ground or break the poles. They will also get tight with a heavy dew. Thus it will be necessary to slack them when rain is expected, and also at



## Appendix.

night if there is a heavy dew. Again, if the ropes have been wet, they will slacken as they dry, and will require to be braced up, otherwise the marquee may flap and draw the pegs. The doorway of the marquee should be on the shelter side. The curtains should be taken off the pegs and raised daily for ventilation. They can be fastened to the bracing lines by the buttons of the peg loops.

### DIRECTIONS FOR STRIKING THE HOSPITAL MARQUEE.

*Curtains and Bracing Lines.*—Unfasten the curtains at the bottom, and unhook them from the roof, beginning with the inner one. Fold each piece into eight parts. The four weather line men should now stand by the weather lines, while four men should unfasten and do up into a skein the bracing lines, beginning with the inner roof at each side of the doorways and working round to the ends. The two mallet men should take up the pegs as the lines are taken off them, and put them away in the peg bag.

*Lowering the Marquee.*—The men should take up positions as in pitching, one to each weather line and two to each pole. When all are ready, the non-commissioned officer should give the word to lower. The weather line men should take the lines off the pegs, but keeping a firm hold, and the standard men should have hold of the poles. All together they should steadily lower the poles, the men at the feet of the poles keeping them from slipping, and the other men lowering them by walking backwards towards the ridge, in the same way as men lowering a ladder.

### DIRECTIONS FOR REPACKING THE HOSPITAL MARQUEE.

*Removing the Poles.*—Roll up the four weather lines and take the vases off the pins, leaving them there attached by the ventilating cords. Spread out the roofs and roll up the upper flap so as to expose the ridge pole. Next pull away the standard poles and remove the ridge pole from the slings.

*Folding the Marquee.*—This done, unroll the upper fold of the roof. Bring over each end to the centre, across the middle of the window, and fold the square thus made from the ridge to the base into three equal parts. Place the eight pieces of curtain on the roofs, lengthwise, overlapping in the centre, and the flaps towards the thick end. Roll up the whole, thus placed, evenly, commencing with the thick end, taking care not to have the roll too wide or too narrow for the valise.



## Appendix.

*Putting Marquee in Valise.*—Spread out the valise, and shoving one of the side flaps under the marquee, roll it into the valise. Having arranged the flaps lace them commencing with the ends.

### CIRCULAR TENT.

The CIRCULAR TENT, complete, consists of—

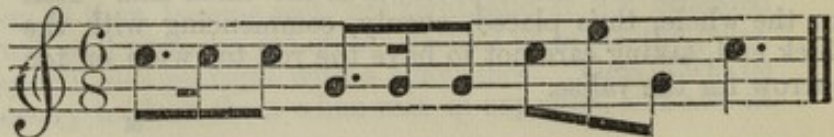
- |  |   |
|--|---|
| 1 circular roof, to which is attached a wall 13 inches deep; 22 bracing lines, with a runner and button to each, with 5 small ventilators at apex of roof; and three of Doyle's ventilators, equal distances apart, but placed 3 feet above the junction of roof with wall ..... | } Packed in a valise, the roof at bottom and the peg bag at top horizontally; the whole forming one compact package, marked outside "Circular Linen Tent complete, with Peg Bag, Pegs and Mallets." |
| 1 peg bag, containing 42 small pegs, 2 mallets (marked on outside with contents and tent to which it belongs) .....  |   |
| 1 pole, in two pieces .....  | Lashed together by 2 cords.   |

### DIRECTIONS FOR PITCHING THE CIRCULAR TENT.

A party consisting of one non-commissioned officer and six men (one file as pole-men, one as packers and as peg-men) will be told off to pitch the tent. Each tent squad will bring up a tent, pegs, and pole, open the tent bag and, in order to mark the spot for the pole to rest, drive a peg between the heels of the pole-man who will grasp the pole; the tent will then be opened, and placed on the pole. If the tent has storm guys, they will be fixed and the ends placed over four pegs driven at right angles to one another 5 yards from the pole, marking four corners; if the tent has no storm guys the four red runners will be held each by a man, the non-commissioned officer seeing that the door points the proper way and that the fly is fastened. All being now ready the tent will be raised, the pole-men remaining inside to keep the pole perpendicular, the guys fixed, the pegging down completed, and a trench, with a proper drain to carry off the water, dug (*see Encampment Regulations*).

### MEDICAL STAFF CORPS REGIMENTAL CALL.

♩ = 108.





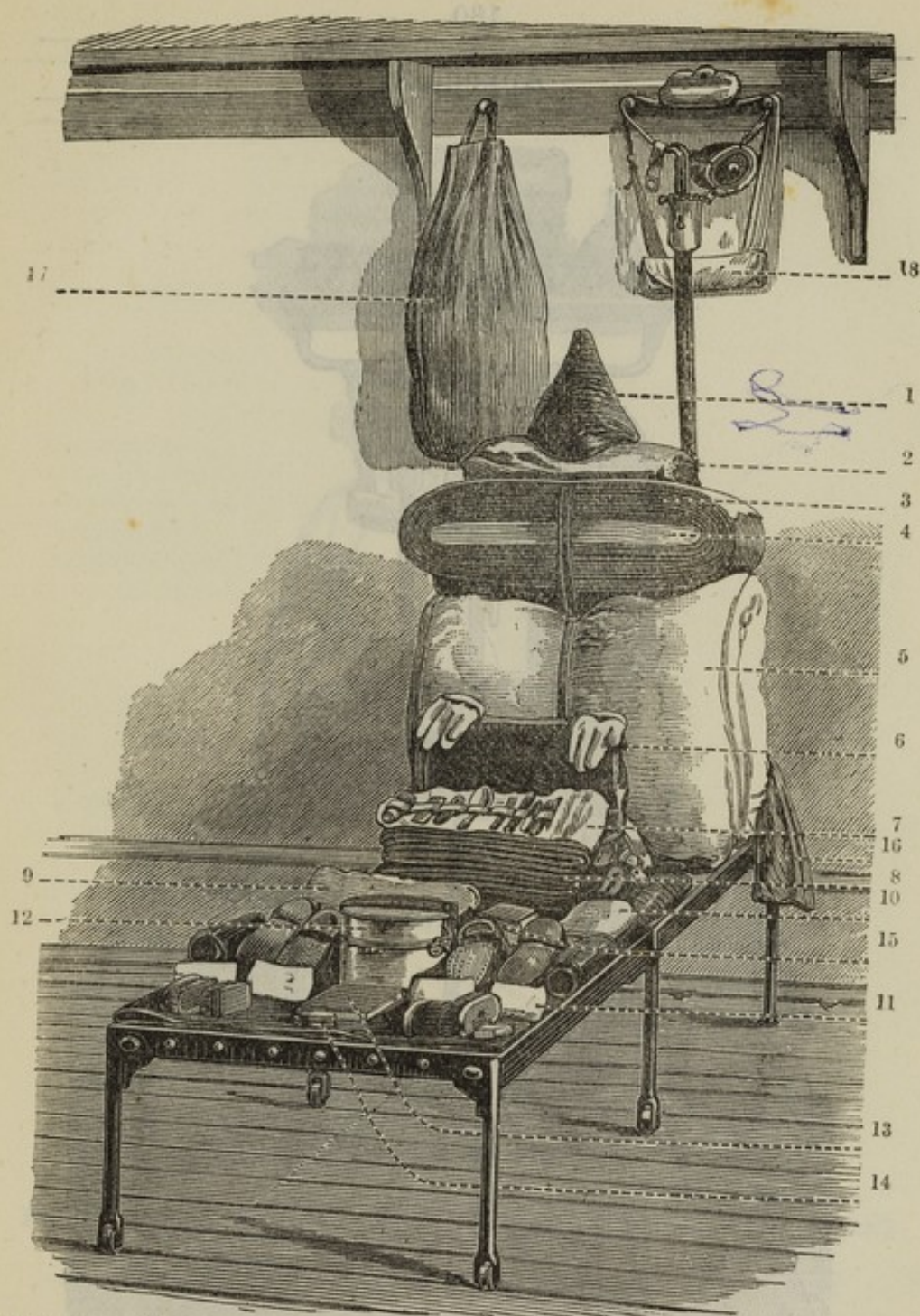


FIG. 31.—METHOD OF LAYING OUT AN ORDERLY'S KIT IN BARRACK ROOM.

*Note.*—The bedstead will be drawn out to the full extent and all the kit laid on it; the orderly will stand at the foot, at the right hand side, small book in right hand.

- |                             |                             |                            |                            |
|-----------------------------|-----------------------------|----------------------------|----------------------------|
| 1. Helmet and Cover.        | 9. Shirts.                  | 10. Towel.                 | 14. Blacking, Cleaning and |
| 2. Tunic folded.            | 11. Socks.                  |                            | Blacking Brushes,          |
| 3. 4. Bedding folded.       | 12. Canteen, canteen cover, |                            | Soap and Sponge.           |
| 5. Mattress and Bolster.    | boots, slippers, and        | 15. Prayer Book and Bib's. |                            |
| 6. Valise and gloves.       | leggings.                   | 16. Cleaning Bag.          |                            |
| 7. Holdall complete.        | 13. Manual for the Medical  | 17. Kit Bag.               |                            |
| 8. Trousers and Great-coat. | Staff Corps.                | 18. Haversack.             |                            |



## Appendix.

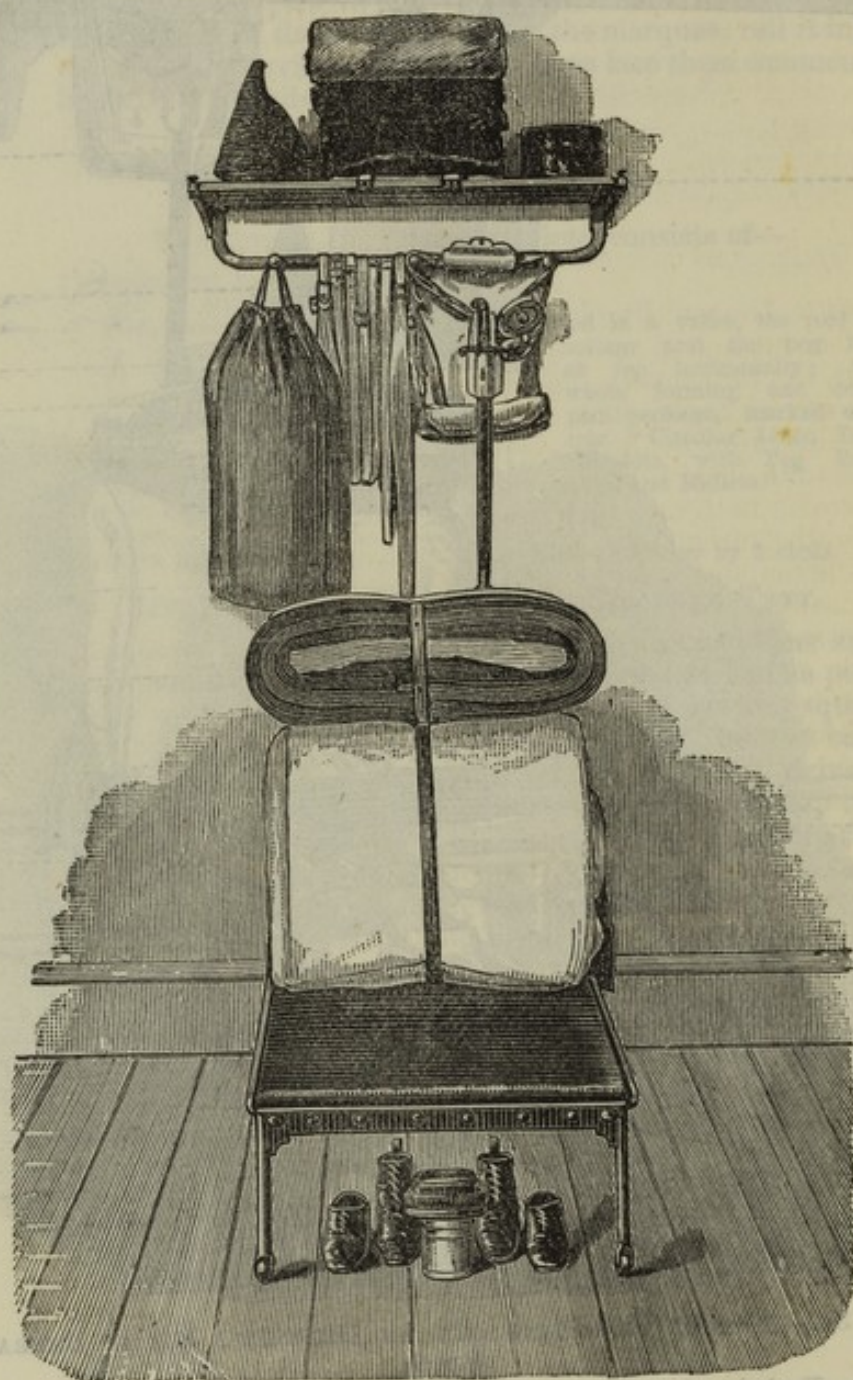


FIG. 32.--METHOD OF ARRANGING BED, BEDDING, &c., IN A BARRACK ROOM.



## Appendix.

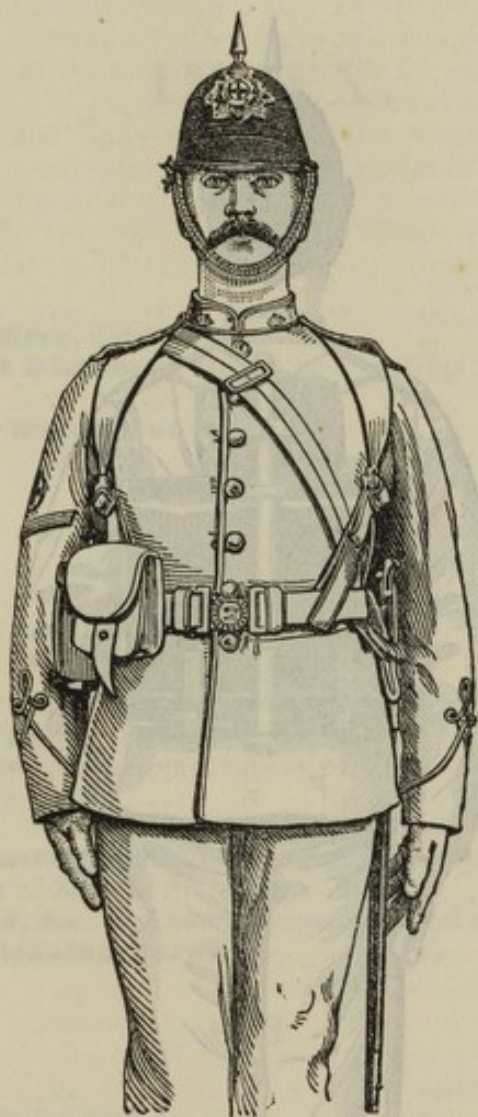


FIG. 33.—MEDICAL STAFF CORPS. MARCHING ORDER (FRONT VIEW).

(NOTE.—In marching order the undermentioned articles are to be worn by the Medical Staff Corps: Serge frock, helmet, valise, complete kit and equipment (see Queen's Regulations, Section XII, paragraph 41).



## Appendix.

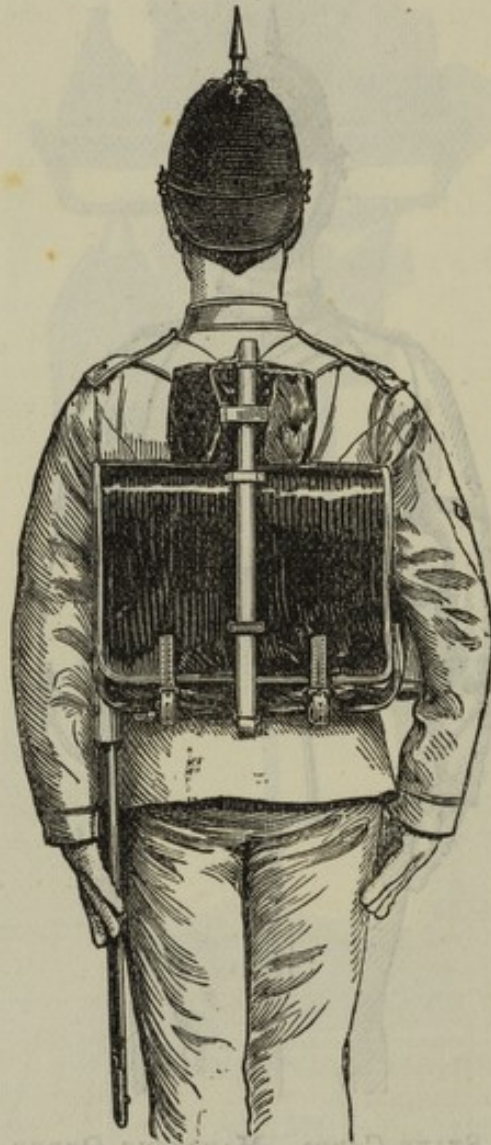


FIG. 34.—MEDICAL STAFF CORPS. MARCHING ORDER (REAR VIEW).



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