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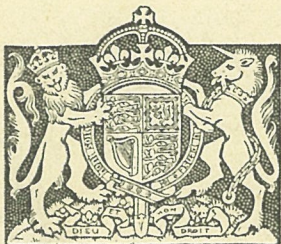
ORDNANCE MANUAL (WAR)

1939

E. Wall Kenton

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(War)

1939

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By Command of the Army Council,

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THE WAR OFFICE,
13th September, 1939.

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PREFACE.

This Manual has been drawn up on the basis of Field Service Regulations, and of the Manual of Movement (War), to guide all concerned and particularly to assist, at the beginning of a campaign, those who have had no previous war experience of the duties they are called upon to undertake.

The instructions should be interpreted reasonably, and with due regard to the public service. Any local instructions that may be issued will be guided and directed by the spirit and intention of this Manual.

No attempt has been made to legislate for exceptional cases, or for special circumstances, which should be dealt with intelligently on their merits as they arise.

The Manual has been drawn up on the general basis of war in a civilized country and in a temperate climate. For other conditions, such of the procedure as is suitable will be adapted for action. Chapter XI.—Minor Campaigns—has been included to assist in this.

Details of equipments are given in the various war Equipment Tables (A.F. G1098 series). Details of personnel and transport will be found in War Establishments.

Suggestions for amendments of this Manual may be submitted at any time, in peace or war, through the usual channels.

ABBREVIATIONS.

A.D.O.S. Assistant Director of Ordnance Services.
 A.F. Army Form.
 A.O.F. Alteration Order Form.
 A.P.O.O. Assistant Principal Ordnance Officer.
 A.R.H. Ammunition Railhead.
 B.A.D. Base Ammunition Depot.
 B.F. Bring Forward.
 B.O.D. Base Ordnance Depot.
 C.I.O.O. Chief Inspecting Ordnance Officer.
 C.O.M.E. Chief Ordnance Mechanical Engineer.
 C.O.O. Chief Ordnance Officer.
 D.A.D.O.S. Deputy Assistant Director of Ordnance Services.
 D.A.G. Deputy Adjutant General.
 D.D.O.S. Deputy Director of Ordnance Services.
 D. of A. Director of Artillery.
 D. of M. Director of Mechanization.
 D.O.S. Director of Ordnance Services.
 D.Q.M.G. Deputy Quarter Master General.
 E.S.O. Embarkation Staff Officer.
 F.P.S. First Provisional Signal.
 F.S.R. Field Service Regulations.
 G.H.Q. General Headquarters.
 G.R.O. General Routine Order.
 I.O.O. Inspecting Ordnance Officer.
 I.P. Interim Period.
 L. of C. Line(s) of Communication, or Lists of Changes.
 L.P. Local Purchase.
 M.F. Maintenance Figure.
 M.F.O. Military Forwarding Officer.
 O.M.E. Ordnance Mechanical Engineer.
 O.O. Ordnance Officer.
 P.A.F. Provision Action Figure.
 P.O.M.E. Principal Ordnance Mechanical Engineer.
 P.R.F. Provision Review Form.
 R.A.O.C. Royal Army Ordnance Corps.
 R.A.O.S. Regulations for Army Ordnance Services.
 R.A.S.C. Royal Army Service Corps.
 R.E. Royal Engineers.
 R.O.O. Railhead Ordnance Officer.
 R.S.D. Returned Stores Depot.
 R.T.O. Railway Transport Officer.
 S.A.A. Small Arm Ammunition.
 S.M. Store Margin.
 S.T.O. Sea Transport Officer.
 S.O.M.E. Senior Ordnance Mechanical Engineer.
 T.N.I. Total Normal Issues (since last review).

**REGULATIONS, ETC., TO WHICH REFERENCE IS
MADE IN THIS MANUAL.**

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Army Manual of Hygiene and Sanitation, 1934	Appx. I
Defence Against Gas, 1935	178, 181, 185, 192
Equipment Regulations, Part I, 1932	220
Field Service Pocket Book, 1939	148, 155
Field Service Regulations, Vol. I, 1930	13, 14, 16, 23, 26, 42, 43, 52, 59, 128, 129, 166, 187, 202, 204
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Note.—Reference is always made to the current edition. Whenever fresh editions of the above regulations, etc., are issued, detailed references in this Manual to chapters, sections, etc., will be amended as necessary.

DEFINITIONS.

(Further information, if required, can be obtained from the sources indicated in brackets.)

"A" and "B" Vehicles.

"A." Tracked and other mechanically propelled fighting vehicles, maintained by the R.A.O.C.

"B." Load-carrying, passenger-carrying and technical vehicles, maintained by the R.A.O.C.

Note.—Load-carrying, passenger-carrying and technical wheeled M.T. vehicles driven by R.A.S.C. drivers are known as "R.A.S.C. vehicles." The maintenance of these is a R.A.S.C. responsibility.

(Mobilization Regulations.)

Base Ammunition Depot.

An ordnance depot of the lines of communication for the receipt, storage and issue of ammunition and explosive stores required by the troops. (For details as to construction, Magazine Regulations; Chapter VI. of this Manual.)

Base Ordnance Depot.

A principal ordnance depot, usually situated not more than 50 miles from the port, where all ordnance stores (other than ammunition) are received and stored in bulk, and issued in detail to units. A base ordnance workshop for dealing with L. of C. repairs and a returned stores depot are included in the B.O.D. organization.

Bulk Breaking Point.

The point at which R.A.S.C. supply lorries are unloaded for breaking bulk, and reloaded on a unit basis.

Daily Ammunition Statement.

A simplified system of accounting for all transactions in ammunition on active service. (Chapter VI. of this Manual.)

Delivery Point.

The point of transfer of loads between second and first line transport.

First Line Reserve Small Arm Ammunition.

The mobilization equipment ammunition shown in War Equipment Tables to complete the war scale; carried in first line transport.

Maintenance.

This term as regards ordnance stores is held to combine the functions of:—

Provision
 Receipt
 Storage
 Issue
 Repair
 Inspection
 (F.S.R., Vol. I.,
 Chapter XI.)

that is, general upkeep of stores after delivery from the producer. The D.O.S. in the field is charged with the "maintenance of ordnance stores."

Pack Train.

Pack trains are made of wagons loaded with supply, medical and ordnance stores (other than ammunition), to comply with the detailed requirements of units and formations. These trains are normally sent forward daily to supply railheads affiliated to formations.

Produce.

Material, obtained from the breaking down of ordnance stores, which is capable of being used again for some purpose; for example, metals, leather, wood.

Production.

This term may be taken as combining the functions of—

Design.
 Specification.
 Experiment and proof.
 Inspection before acceptance into the service.
 Sealing of pattern.

The D. of A. and D. of M. at the War Office are the "producers" of Vote 9 stores, while the D.O.S. is the "producer" of Votes 7 and 8 stores. (F.S.R., Vol. I., Chapter VII.)

Railhead.

The point of transfer from railway to road transport (R.A.S.C. transport units). Separate supply, ammunition and petrol railheads are, normally, provided for each corps.

Rake of Wagons.

A number of wagons coupled together, but not constituting a complete train.

Recovery.

FIRST LINE. Clearing disabled vehicles out of the way of other vehicles and troops. Collecting them (as far as circumstances permit) at convenient first line recovery posts, whence they can be subsequently withdrawn by the R.A.O.C.

SECOND LINE. Collection of disabled vehicles from the various first line recovery posts and their conveyance to R.A.O.C. mobile workshops or railhead.

L. of C. Evacuation from workshop to railhead (or to advanced ordnance workshop, if operating independently) of vehicles which are beyond the capacity of mobile workshops.

Repairs.

FIRST LINE. Such as can be performed by units' own artificers, with the non-power-driven tools, and spare parts, carried by the units themselves.

SECOND LINE. Such as can be performed by mobile ordnance workshops, with the light power-driven tools and small stock of spare parts, carried by such workshops.

L. of C. Such as are beyond the capacity of mobile workshops, and complete overhauls of guns, vehicles and instruments. (F.S.R., Vol. I., Chapter XI.)

Salvage.

The organized collection of abandoned or captured material.

ORDNANCE MANUAL (WAR)

CHAPTER I.

FUNCTIONS AND ORGANIZATION OF THE ORDNANCE SERVICE IN THE FIELD.

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Section 1.—Functions—The Maintenance System.

1. The Ordnance service is responsible to the D.Q.M.G. in the field for the supply and maintenance (see Definitions) of all ordnance stores, which comprise:—

- (a) guns, small arms, ammunition, “A” and “B” vehicles, wireless electrical and optical stores, etc. (Vote 9 stores);
- (b) general stores (Vote 8 stores);
- (c) clothing and necessaries (Vote 7 stores).

2. These responsibilities entail the following action:—

- (a) Provision, receipt, storage, care, handling and distribution to the best advantage of all ordnance stores as defined above; also the maintenance (other than provision) of R.A.F. bombs and ammunition.
- (b) Repair of such stores (other than first-line repairs carried out by units) and the recovery of “A” and “B” vehicles.
- (c) Inspection of guns, ammunition, instruments and equipment generally, and investigation of defects therein.
- (d) Manufacture of stores in exceptional circumstances.
- (e) Advising commanders in connection with the care and use by the troops of ordnance stores, with a view to securing a maximum of fighting efficiency with a minimum expenditure of material.
- (f) Notification to the staff where the necessity for salvage exists, and of the arrangements necessary in connection with the collection and disposal of ordnance salvage.
- (g) Provision of laundries, if ordered (see Appendix I), and facilities for decontamination of clothing, etc. (see Sec. 10, para. 19, note).

3. A representative of the R.A.O.C. is attached to each formation. It is his duty to ascertain, and notify to the base, the ordnance requirements of the troops, except as regards ammunition (see Chapter VI).

He is also charged with the duty of observing and reporting any extravagant use of ordnance stores.

4. The R.A.O.C. installations at the base are responsible for the provision of ordnance stores, and the despatch of these stores to the forward areas by the normal channels of supply; for major repair work, and for the economical disposal of used stores received from the forward areas.

5. Each of the two sets of functions in paragraphs 3 and 4 is complementary to the other, and they will be co-ordinated by the D.O.S.

6. The normal system for meeting the ordnance requirements of the troops (other than ammunition) is by direct supply to units from base ordnance depots in response to detailed indents (except for certain classes of replacement items supplied from ordnance field parks). Packages are vouchered and consigned direct to individual units, and despatched to supply railheads by the daily pack train (see Definitions).

Under stabilized conditions, however, if ordered by the D.O.S., certain stores in universal demand (for example, clothing items. See list in Table I) may be supplied in bulk from the base ordnance depot to the D.A.D.O.S. of each formation, who will arrange distribution in detail to meet units' indents (see Sec. 10, para. 19, note).

Base ordnance depots are stocked initially by receipts from home of stores which are held in peace as war reserves. Subsequently, as soon as it is established, a provision office within each sub-depot becomes responsible for initiating action to replenish the stocks of the base ordnance depot, by demands on home or by local purchase.

7. Ammunition supply, on the other hand, must on principle be automatic (see F.S.R., Vol. I). Expenditure at the front is automatically replenished from the next rearward echelon.

Stocks of all natures of ammunition (including R.A.F. bombs, and explosives for demolition, mining and road-making purposes) will be held in base ammunition depots, whence issues to replace anticipated expenditure will be made by complete train-loads to each ammunition railhead.

As soon as the troops are in contact with the enemy, small stocks will be established at ammunition railhead, from which R.A.S.C. ammunition echelons will be replenished on demand. These stocks will be under G.H.Q. control.

Further stocks on wheels are held by R.A.S.C. corps ammunition parks which replenish divisional or corps troops ammunition companies, or deliver direct to units in special cases. Thus an even flow of ammunition from rear to front is maintained at all times.

Stocks of ammunition and explosives to be maintained in base ammunition depots and by forward ammunition echelons are fixed by the general staff, gun ammunition being based on complete rounds.

The D.O.S., on behalf of the D.Q.M.G., will demand from home the quantity necessary to maintain the authorized stocks; and will issue instructions, based on daily expenditure returns, regarding the quantities to be issued daily from base ammunition depots to ammunition railheads.

8. The organization for carrying out, in the field, repairs (including replacement of component and complete assemblies) to units' equipment (other than ammunition) consists of:—

- (a) Light aid detachments, which are attached to certain units and formations to advise and assist them with their "first line" repair and recovery duties (see Definition).
- (b) Mobile workshop units, equipped with machinery, breakdown and store lorries, which are allotted to certain formations for carrying out "second line" repairs and recovery (see Definition).
- (c) Stationary base ordnance workshops, which are established on a semi-permanent basis at, or adjacent to, the base ordnance depot or depots (see Sec. 44).
- (d) Ordnance field parks from which replacement of components and complete assemblies can be effected. These ordnance field parks also hold a proportion of replacement vehicles (see Sec. 35).

9. Inspection of ammunition and explosives will be carried out by inspecting ordnance officers, who will also investigate defects in ammunition. Repairs to ammunition will be carried out at base ammunition depots, or in ammunition repair factories which will only be formed if necessitated by the development of the campaign.

10. The maintenance organization described above should be considered as normal, when direct supply from base to railheads is practicable. In the following exceptional circumstances, however, it may be necessary to establish advanced depots and workshops:—

- (a) When it is impossible for any reason to arrange a satisfactory supply to railheads or riverheads direct from the base ordnance depot.

- (b) When the L. of C. between the base ordnance depot and railheads is liable to interruption by enemy action, or by climatic conditions, or by reason of some technical weakness.

These advanced installations will be formed only on the direct orders of G.H.Q., and do not form part of the normal maintenance organization. When so formed they will be established on the minimum scale to secure the object for which they are formed. In laying out these advanced depots, the possibility, in a war of movement, of their being converted into main depots, or transferred to another site, must not be overlooked.

11. It would be extravagant, and difficult from an administrative point of view, to organize both the base ordnance depot and the advanced ordnance depot to deal with indents from formations. If an advanced base is established, the normal procedure will be for the advanced ordnance depot to take over this work.

In some cases, such as bulky issues of seasonal stores, or the issue of a gun or vehicle, it may be advisable for the advanced ordnance depot to arrange with the base ordnance depot to load complete wagon loads for various formations. These complete wagon loads will be marshalled into some pack train (see Definitions) at the regulating station and will not be handled at the advance ordnance depot.

When a change-over from the base to an advanced ordnance depot takes place, personnel, records, etc., will be moved forward in two echelons, the second following the first as soon as possible. By this method supply to the troops can be carried on without a break.

12. It will probably be necessary to sub-divide a base ordnance depot.

Such a step will be decided on by the D.Q.M.G., in consultation with the general staff; and will be dictated by consideration of the terrain and available accommodation around the base, the intensity of actual or probable air attacks and the degree of concentration of ordnance or other base installations.

In such a case, the base ordnance depot will be divided into sub-depots as shown in Sec. 36.

These will be administered by the C.O.O. from a common centre.

It will be necessary for the stores issued from each sub-depot to be brought together at a traffic centre, because one or even two sub-depots will not normally be able to make up a complete wagon-load for one formation.

It will in some instances be possible for a wagon to be loaded for two or more formations served from a common railhead, but this cannot be counted on; while to attempt to make up the pack wagons at a forward regulating station would involve a day's delay and possible confusion and losses.

A central traffic organization at the base ordnance depot is therefore imperative.

Details of lay-out and organization will be found in Secs. 36 and 37.

13. It may be found that certain centres of production, on which the Army depends, are so inconveniently situated that the material to be obtained from them cannot easily be absorbed by the normal chain of forward supply through base to railhead.

In such cases, auxiliary ordnance depots may have to be established, as offshoots of the base ordnance depot, for the receipt and issue of such stores. Such depots will carry out, for the particular stores in question, functions comparable with those of the base ordnance depot.

A likely example would be a depot established in a large town, in the vicinity of the theatre of war, for local purchase, and the washing and repair of clothing.

14. The care and safeguarding of stores while in transit (that is, when not in possession of an ordnance installation or of a unit) is the duty of the Movement Control.

15. If the base of operations is situated in a country normally occupied by British troops, the existence of one or more ordnance depots may usually be counted upon.

In these circumstances the local senior officer of the R.A.O.C., subject to instructions received from the home authorities through the local commander, will take such steps in the way of preparation for the campaign as time and circumstances permit.

Such steps may include arrangements for:—

- (a) Issue of stores for the formation of reinforcement camps and rest camps, for troops disembarking and proceeding to concentration areas.
- (b) Issue of stores to such troops.
- (c) Landing, accommodation and protection of stores and ammunition.
- (d) Acquisition of suitable workshops.
- (e) Temporary storage accommodation at wharves or docks.
- (f) Expansion of existing depots.
- (g) Construction of new depots inland.

16. In the case of a country which has not been previously occupied, the duties indicated above will devolve upon the officer appointed as the Director of Ordnance Services in the campaign. For this reason he will accompany the advance party sent to the theatre of operations (see Sec. 4) and, subject to instructions received from the staff, he will make all arrangements for ordnance services connected with general administration.

17. From the time the troops reach the base of operations it will be the business of the ordnance service to keep them supplied with all ordnance stores they may require. The R.A.O.C. may also be called upon to equip whatever local or irregular forces the commander-in-chief may decide to employ or to raise.

18. Lists of the camp equipment (with tonnage) required for various units will be found in the tables at the end of this book; that is

Table II.—	1 infantry division.
„	III.—1 infantry battalion.
„	IV.—1 rest camp for 1,000 men.

19. Covered and uncovered accommodation required for ordnance purposes, in the case of certain forces, are detailed in Table V.

Existing buildings should be utilized if possible, and when selecting them consideration must be given to the following points:—

- (a) Railway facilities should be in existence or the provision of such should be easily practicable.
- (b) If water transport is to be used, wharves should be available.
- (c) Large sheds are best, but if it is necessary to take over buildings with more than one floor there should be adequate lift and crane facilities.

Section 2.—Organization.

1. The ordnance service in the field will be organized and controlled by the D.O.S.

2. The extent of the complete organization will necessarily vary with the magnitude of the operations and with the numbers and composition of the troops assigned to the theatre of war, but the general arrangements will be made on lines which admit of their application to any particular set of circumstances within wide limits of variation.

3. The organization comprises:—

- (a) In the forward areas, R.A.O.C. representatives attached to the headquarters of the various field formations, and R.A.O.C. units allotted as G.H.Q.

corps or divisional troops. These include all or any of the following, with personnel and transport as laid down in war establishment:—

- (i) At headquarters of services (G.H.Q.) a D.O.S. (see Sec. 4), with a P.O.M.E. (see Sec. 5) and a D.D.O.S. for L. of C. duties (see Sec. 13).
 - (ii) With each army headquarters, where the force consists of more than one army, a D.D.O.S. (see Sec. 6) and a C.O.M.E.
 - (iii) With each corps headquarters an A.D.O.S. (see Sec. 7) and a C.O.M.E. (see Sec. 8).
 - (iv) With each divisional headquarters, a D.A.D.O.S. (see Sec. 10) a S.O.M.E. and brigade warrant officers (see **Appendix II**).
 - (v) With each army or corps, a D.A.D.O.S. for ordnance services in connection with the army or corps troops.
 - (vi) Ordnance mobile workshops.
 - (vii) Ordnance field parks.
 - (viii) Light aid detachments attached to certain mechanized formations and units.
 - (ix) At each supply railhead, a railhead ordnance officer with detachment R.A.O.C.
 - (x) At each ammunition railhead, an ordnance officer in charge, with detachment R.A.O.C.
 - (xi) Ammunition detachments with army and corps dumps, when such are formed.
 - (xii) Officers' clothing depots, if ordered.
 - (xiii) Laundry, decontamination and cleansing services, if ordered (see Sec. 10, para. 19, note and **Appendix I**).
- (b) In the L. of C. area, R.A.O.C. units and installations distributed as required, and R.A.O.C. representatives attached to headquarters of sub-areas. These include any or all of the following:—
- (i) For each L. of C.
An A.D.O.S., P. and staff (see Sec. 14).
An A.D.O.S. Amn. and staff, if appointed (see Sec. 16).
 - (ii) For each L. of C. sub-area and base sub-area, a D.A.D.O.S. (if appointed); his staff being found from base ordnance depot establishment.
 - (iii) Base ordnance depots (and advanced ordnance depots if ordered by G.H.Q.).

- (iv) Base ordnance workshops (and advanced ordnance workshops if ordered by G.H.Q.).
 - (v) Base ammunition depots (and advanced ammunition depots if ordered by G.H.Q.).
 - (vi) R.A.O.C. detachments at each regulating station.
 - (vii) R.A.O.C. record section of D.A.G.'s office at the base (G.H.Q., 2nd echelon) (see Sec. 23).
 - (viii) Small production factories for the limited production of first supplies of unforeseen articles and for the development of local resources, such as a soap factory (see Sec. 4, para. 13).
 - (ix) Ammunition repair factory, if required (see Chapter VI).
 - (x) Schools of instruction, if required.
- (c) In the disembarkation port area, R.A.O.C. units and installations distributed as required, and R.A.O.C. representatives attached to the docks service.
- (i) An O.O. Docks.
 - (ii) R.A.O.C. detachment attached to the docks service.
 - (iii) Port workshop detachment.
 - (iv) Vehicle convoy section (for "stock" vehicles only) consisting of a docks detachment and a marshalling park detachment.

On completion of their duties in disembarkation port areas, port workshop detachments are absorbed into the M.T. portion of the base ordnance workshop. Vehicle convoy sections are absorbed into the M.T. sub-depot of the base ordnance depot.

4. The personnel for the base depots and workshops will be provided initially from the war establishments of:—

- H.Q. base ordnance depot, and ordnance store companies.
- H.Q. base ordnance workshop, and ordnance workshop companies.
- H.Q. base ammunition depot, and ordnance ammunition companies.

The actual number of companies to be attached to each H.Q. will depend on requirements. Personnel for railhead and regulating station detachments are included in these establishments.

5. Ordnance companies consist chiefly of the following classes of tradesmen in balanced proportions:—

- (a) Ordnance store companies—clerks, storemen, drivers, etc.
- (b) Ordnance workshop companies—armament artificers and artisans, with a few clerks and storemen.
- (c) Ordnance ammunition companies—clerks, storemen and ammunition examiners, with a few artisans.

In each case a few junior officers are included for reinforcement and administrative purposes, but the majority of the officers are provided in the war establishments of the respective headquarters.

After the beginning of the campaign, reinforcements will not be sent out by companies but as drafts of the individuals required (see Sec. 4, para. 14).

6. The R.A.O.C. personnel of these installations will be reinforced as necessary by military or civilian labour units, which will be obtained from the labour service (see F.S.R., Vol. I, Chapter XII, Sec. 71).

It is of the utmost importance that the daily minimum requirements of labour for these installations should be regularly employed and that they should live near their work, so that the men can get used to their particular classes of jobs.

7. All civilians employed in the ordnance service must be in possession of a pass or licence. They will otherwise be liable to arrest.

8. A diagram showing the organization of ordnance services in the field is given in Plate I.

CHAPTER II.

DUTIES OF INDIVIDUAL OFFICERS.

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Section 3.—General.

Note (i).—The following instructions are to be read in conjunction with more detailed instructions in subsequent chapters.

Note (ii).—When officers of the administrative branch and the mechanical engineering branch are serving together at a station or with a formation, each will have direct access to the staff on matters concerning his specific duties; and each, on such matters, will deal direct with seniors and subordinates in his own branch. The senior, to whichever of the two branches he belongs, will be O.C., R.A.O.C. of the station or formation concerned, and will be generally responsible for the efficiency of ordnance services within that station or formation.

At large installations such as the base ordnance depot and workshops the O.C., R.A.O.C., if holding the rank of colonel (ordnance officer, 1st class, or O.M.E. 1st class)

may delegate his regimental duties as commanding officer, as far as they concern other ranks R.A.O.C., to another officer of field rank. He will notify such delegation to the D.D.O.S., L. of C., and to the commander of the area in which the depot is situated.

1. All officers, R.A.O.C., before embarking with a field force, will be in personal possession of the Ordnance Manual (War) and the Notes on R.A.O.C. Duties and Procedure, except that O.M.Es. who join after mobilization will not be supplied with the latter book.

2. In addition to being in possession of the books laid down by Regulations for various officers, officers holding appointments mentioned in this chapter will apply for, and maintain, all routine orders, instructions, etc., published in the theatre of war, which affect the work of their appointments.

3. All officers will keep diaries of important events affecting their respective services. In the diaries any suggestions for the amendment of this Manual will be entered in such a manner that they will be readily accessible when suggestions for such amendments are called for, before the lessons of the campaign have been forgotten. Alterations in procedure, with reasons therefor, will be recorded in the diaries in this connection. Attention is also drawn to Sec. 4, para. 25, as regards statistical and historical data.

4. All officers in charge of ordnance stores will prepare evacuation schemes to guard against their stores falling into enemy hands. Such schemes should provide both for evacuation, and for destruction in the last resort. Actual destruction will never be undertaken without orders from superior authority unless access to such authority is impossible and the officer in charge considers that he should take the responsibility himself.

5. Where the responsibility for fire fighting and air raid precautions is not vested in some other authority, all officers in charge of ordnance installations will prepare their own instructions for these services, and will submit them to their local commanders for approval.

They will constantly exercise the personnel of their installations in fire fighting and air raid precautions, and will be responsible for the provision of an adequate supply of water tanks, pumps, fire buckets, and other suitable fire-fighting appliances, and of anti-gas clothing and stores.

In No. 1 (M.T.) sub-depot, fire-fighting trucks will always be available.

6. All officers must co-operate fully and maintain close touch with the staff, other services and units.

Section 4.—Director of Ordnance Services.

1. The D.O.S. is the technical adviser of the D.Q.M.G. in all matters appertaining to the ordnance services. His office will be situated at Headquarters of Services (G.H.Q.).

2. His functions and responsibilities are laid down in Field Service Regulations, Vol. I.

3. Under the general instructions of the D.Q.M.G. he will directly control all questions of general administration which affect ordnance services.

4. The distribution of the personnel of his staff at G.H.Q. is shown in Table VI. This staff includes

- (a) a deputy for L. of C. services, who will, on his behalf, administer all ordnance depots on the L. of C.;
- (b) four assistant directors, each responsible for one of the following branches:—

Personnel.

Artillery, ammunition, small arms and signal stores, etc.

General stores and clothing.

“A” and “B” vehicles (including census).

Instructions for the working of the census branch are contained in Appendix III.

- (c) A P.O.M.E., who will control all ordnance workshop services;
- (d) a Chief Inspecting Ordnance Officer, who will deal with all questions on the inspection of ammunition.

5. Under the general instructions of the D.Q.M.G. he will initiate the arrangements for the provision and supply to the troops and the repair of all ordnance stores. To this end he will accompany the advance party sent to the theatre of operations (see Manual of Movement (War), Chapter VIII).

If the provision of ordnance stores and personnel, already made for the opening stages of the campaign, appears to him to require alteration, he will advise as to the changes he considers essential.

He will arrange for estimates from the Director General of Engineer Services as regards such field work stores as are an ordnance supply.

Estimates of requirements of ordnance stores will also be obtained from the Signal Officer-in-Chief, the Director General of Transportation Services, and the Director of Supplies and Transport; for example, for materials for repair, tentage, waterproof covers, and dunnage.

6. He will state ordnance requirements regarding accommodation for depots and workshops, sites for installations

to be constructed, and transport facilities for the further development of ordnance services.

7. In the case of a landing in a hostile country, where preliminary arrangements on shore are not possible, he will propose arrangements for the supply of ordnance stores, including ammunition, to the troops, both during the landing operations and until a base has been established. In this connection, see Chapter XI.

8. As the use of ships as issuing depots is neither efficient nor economical, he will endeavour to arrange for the establishment of a depot on shore, with suitable facilities, as early as possible (see Chapter XI).

9. He will report to D.Q.M.G. any misuse or waste of ordnance stores that may come to his notice.

10. He will advise D.Q.M.G. regarding the number and location of all "general" ordnance installations, such as base ordnance depots, workshops, ammunition depots, in the theatre of operations, and will be responsible for the formation, organization, and control of such installations.

11. He will be responsible for the conditioning and the repair as necessary of damaged or defective ordnance material; and that salvaged stores and empty packages for ammunition and other stores, dealt with under his directorate, are utilized to the best advantage.

12. He will watch for opportunities of saving shipping tonnage by using local resources in materials as far as possible, particularly if the theatre of war is distant from home.

13. If the exigencies of the campaign require it, he will initiate arrangements for the local manufacture of soap, and will take steps to secure the appointment, as officer in charge, of an experienced chemist (previous experience of soap-making is not essential) with a junior O.M.E. as his assistant. The remaining personnel may be non-technical. Particulars of personnel, plant and equipment are contained in the war box of the C.O.M.E. base ordnance workshop.

14. He will administer and distribute ordnance personnel in the theatre of operations. When an increase of establishment is required, he will ask for personnel in detail by ranks, grades and trades, and not by complete ordnance companies (see Sec. 23).

15. He will be directly responsible to the D.O.S. at the War Office for the due and economical exercise of such financial powers as may be delegated to him (see Chapter IX), and will correspond direct with him on all matters of technical detail. Copies of such communications which deal with important matters will be sent to the D.Q.M.G.

16. Should an emergency arise which calls for such powers to be exceeded, when time does not permit prior reference to the home authorities, he will obtain written instructions in the matter from the D.Q.M.G.

17. He will be responsible that all work carried out by the R.A.O.C., which involves expenditure of money or material, is done economically and properly accounted for.

18. He will delegate to his subordinate officers such powers as may appear to him expedient, and will instruct them as to their latitude with regard to excess issues.

19. He will draft instructions relating to ordnance services for inclusion in General Routine Orders. Draft orders on likely subjects are contained in his war box and a list of likely headings is given in Appendix IV.

He will define the circumstance in which his special approval will be required for the issue, from base ordnance depot or field parks, of certain items of vital importance, such as guns, machine guns, mechanical vehicles and certain items of bulk issues. At the same time, if he thinks fit, he will nominate officers by whom these powers of special approval may be exercised.

20. He will issue instructions for the opening of store accounts, and submission of demands, by depots and permanent establishments on the L. of C. as soon as military considerations permit (see F.S.R., Vol. I, Sec. 197).

21. He will convey directions on purely ordnance matters to his representatives in formations and areas by means of Corps Instructions, and will communicate direct on these matters with such representatives. Copies of any communications of this nature which deal with important matters will be sent to the D.Q.M.G.

He will draw particular attention to the necessity for safeguarding public stores and will warn all ranks of the corps of their peculiar responsibilities with reference to Sec. 17 of the Army Act.

22. He will make arrangements for the earliest notification to chief ordnance officers of base depots, and other ordnance officers concerned, of all changes in the distribution of troops which affect the consignment of stores.

23. He will receive through the staff information of the intention of the C. in C. in regard to the nature of operations and anticipated developments. He will then become responsible for an intelligent forecast of detailed requirements of stores, and will communicate his requirements in the form of demands to the D.O.S., The War Office.

In cases where it is anticipated that stores of new design will be necessary, or that expenditure will be appreciably increased in the future owing to possible variations

of circumstances, although an immediate demand is not involved, he will send a warning estimate of requirements to the D.O.S., War Office. These estimates will assist the D.O.S., War Office in regard to production, but such stores will not be despatched to the theatre of war until definite demands have been submitted.

24. If troops furnished by the British Dominions and Colonies or foreign governments form part of the forces in the field, he will at the earliest possible moment secure a decision as to the conditions under which ordnance stores and clothing are to be transferred to or from such troops, and will lay down the detailed procedure to be followed in such cases.

25. As early in the campaign as convenient, he will appoint an officer to collect and index statistical and historical data, such as lay-outs, plants, establishments, detailed accounts of methods and processes, copies of instructive returns, provision statistics, especially rates of monthly wastage, local forms, standing orders, etc. To collect such information this officer should visit all ordnance installations in the theatre of war from time to time, and the ordnance officers in charge of such installations should, between these visits, accumulate copies of all likely matter (see Sec. 3, para. 3).

The D.O.S. will take steps to ensure that this data is handed over to the War Office.

He will maintain a census of M.T. vehicles and assemblies (see Appendix III).

26. At the conclusion of the campaign he will draft instructions to all concerned regarding the disposal of ordnance stores in the possession of the troops which are not to be taken away by them on leaving the theatre of war.

27. In conformity with such orders as may be issued by the War Office, he will carry out the arrangements for the disposal of all stores in ordnance charge at the conclusion of the operations, and for the disposal of the R.A.O.C. personnel.

28. The D.O.S. will, in writing, impress on all ordnance officers serving under his orders the vital importance of safeguarding information which might be useful to the enemy, such as the composition and locality of units and formations. He will require all officers in charge of depots, workshops or railheads or with formations to warn W.Os., N.C.Os. and men serving under their orders that the result of negligence in this respect may have far-reaching effects on operations and on the lives of their comrades. He will draw attention to the Official Secrets Act and Sec. 36 of the Army Act.

Section 5.—Principal Ordnance Mechanical Engineer (P.O.M.E.).

1. A Principal or Chief Ordnance Mechanical Engineer, according to the size of the field force, will be appointed to the staff of the D.O.S.

2. He will control all ordnance workshop services, and will bring to the notice of the D.O.S. any action he considers necessary to improve the efficiency of any of these services.

3. For this purpose he will pay frequent visits of inspection to all ordnance workshops in the theatre of operations.

Section 6.—Deputy Director of Ordnance Services of an Army (if appointed).

1. The Deputy Director will be responsible to the army commander for the due efficiency of the ordnance services of that army. His office will be located at the headquarters of the army.

2. Under the general direction of the army staff he will control and administer ordnance services and will act as technical adviser on all matters connected therewith.

3. He will exercise supervision over the A.Ds.O.S. with the various corps and over D.A.D.O.S. with army troops, and will carry out frequent inspections of the whole of the ordnance arrangements of the army.

4. He will advise as to the number and location of ordnance establishments required within the army area.

5. He will be responsible for the efficiency of such ordnance installations as may be allotted to the army; for example, army ammunition depots and army ammunition railheads.

6. By means of the various members of his subordinate staff he will ensure the regular inspection of the guns, carriages, mechanical vehicles and other ordnance stores and of the ammunition and explosives within his area.

7. He will draft such army orders as bear on ordnance services.

8. He will keep in close touch with the D.O.S. and will advise him in respect of any local conditions likely to have a material effect on the requirements, supply or release of ordnance stores.

9. He will be responsible to the D.O.S. that the financial powers delegated to him are properly administered (see Chapter IX).

Should a commander call upon him to undertake any service which necessitates his exceeding his technical and

financial powers, when the emergency does not permit of prior reference to the D.O.S., the written instructions of the commander will be sufficient authority. A copy of these instructions will be passed at once to the D.O.S.

10. He will advise the army staff regarding the collection and disposal of salvaged ordnance stores.

11. He will correspond direct with the D.O.S. and with his own subordinates on purely ordnance matters.

12. He will administer the whole of the R.A.O.C. personnel serving in the army area.

Section 7.—Assistant Director of Ordnance Services of a Corps.

1. The Assistant Director will be responsible to the corps commander for the due efficiency of the ordnance services of that corps other than workshops.

2. His office will be located at the headquarters of the corps, with personnel as laid down in the war establishment of headquarters of a corps.

3. Under the general direction of the corps staff, he will control and administer ordnance services other than workshops, and will act as technical adviser on all matters connected therewith.

4. He will exercise a close supervision over the D.A.Ds.O.S. of divisions and corps troops, railhead ordnance officers and officers i/c ammunition railheads. By frequent inspections of their work and records he will satisfy himself that they are carrying out their duties efficiently, and keeping themselves informed regarding the stores in possession of units. He will satisfy himself that the orders issued to the troops as to returning stores and ammunition to railheads are complied with. For this purpose he will be provided with transport by corps headquarters.

5. With a view to preventing extravagance and waste, he will compare the records relating to the consumption of ordnance stores by various units, divisions and corps troops, and bring to the notice of the corps commander any instances of conspicuous dissimilarity which cannot be explained. A report of any acts of extravagance or waste should be made to the D.D.O.S. Army.

(Note.—In case a D.D.O.S. Army is not appointed, he will communicate on this, and other matters mentioned below, direct with the D.O.S.)

6. He will restrain the D.A.Ds.O.S. of divisions or corps troops from accumulating stocks of ordnance stores.

7. He will supervise the arrangements made for refitting divisions in his corps.

8. He will supervise the working of ammunition dumps, ordnance field parks, ammunition railheads and other ordnance installations in the corps area other than workshops, and he will see that only prescribed methods of accounting are followed.

9. He will advise, from the ordnance point of view, regarding the best situation and storage arrangements for any ammunition depots or dumps under corps control.

10. He will periodically inspect any accumulations of ammunition and explosives within the corps area, and bring to the notice of the corps commander instances of failure to comply with published orders as to care, custody, and maintenance.

11. He will see that all repairable ordnance material is either dealt with locally or evacuated to the base.

12. He will keep in close touch with the D.D.O.S. Army and will advise him in respect of any local conditions likely to have a material effect on the requirements, supply or release of ordnance stores.

13. He will correspond direct with the D.D.O.S. Army, and with his own subordinates, on purely ordnance matters.

14. He will be responsible to the D.D.O.S. Army that the financial powers delegated to him are properly administered (see Chapter IX).

Section 8.—Chief Ordnance Mechanical Engineer of a Corps.

Senior Ordnance Mechanical Engineer of a Division.

1. Each corps H.Q. will have a C.O.M.E. attached to the staff. He will act as technical adviser, and will be directly responsible for the efficiency of the army field workshops and for the inspection of technical stores dealt with by these workshops, whether in the shops or in the hands of the troops.

2. He will direct and co-ordinate recovery.

3. He will be responsible for the execution of any necessary field inspections of ordnance stores of a technical nature, other than ammunition.

4. He will supervise any experimental work in connection with ordnance stores in his workshops or formations, keeping the necessary records and tabulating results.

5. He will bring to the notice of the responsible officers any case that may come to his knowledge of lack of proper care in the maintenance of equipments, or of failure to carry out any essential modification.

(Note.—The unit commander is at all times the officer directly responsible for the care of the equipment of the unit, and for keeping it up to date, as far as possible, with regard to approved modifications.)

6. The duties of the S.O.M.E. of a division are similar to the above.

Section 9.—Inspecting Ordnance Officer of a Corps.

Note.—These instructions are also applicable to the I.O.O. on the staff of D.D.O.S. Army (if appointed).

They should be read in conjunction with Sec. 61.

1. He will assist, and act as technical adviser to, the A.D.O.S. Corps in all ordnance services connected with ammunition in the corps area, and will be located with the H.Q. of the corps.

2. Under the A.D.O.S. Corps, his special duties will be:—

- (a) Technical inspection of ammunition and explosives and of the arrangements for the storage, care and preservation of these stores throughout the corps area; and the preparation of reports on these matters.
- (b) Investigation of technical defects, accidents, etc., that may occur in the corps area in connection with ammunition, and the preparation of technical reports thereon.

He will attend courts of inquiry upon accidents, etc., in connection with ammunition and explosives in the corps area, either as a member of the court, or to assist with his technical knowledge and experience.

- (c) Drafting of technical instructions on ammunition matters.
- (d) Technical organization and inspection of ammunition railheads and the supervision of any technical work on ammunition carried out there.
- (e) Organization and administration of any ammunition dumps, etc., under the control of the H.Q. of the corps, except any which are specifically placed under the D.A.D.O.S. of a formation.
- (f) Technical oversight of all matters in connection with the salvage of ammunition, and such repairs as are undertaken within the formation area.

3. His duties demand constant mobility, and he will be provided with suitable means of transport.

4. He will take all opportunities of visiting units in the line with a view to making himself familiar with the conditions in which ammunition is stored and used by the troops.

Such experience may form the basis of instructions as to care and use of ammunition to be issued by corps headquarters, and of technical reports on conditions of storage and use of ammunition at the front.

5. During such visits he will take the opportunity of explaining any features of new types of ammunition with which the troops may not yet be familiar.

He will always bear in mind that his duty is to assist rather than to criticize.

6. Should the need arise, he will prepare plans for the destruction of stocks of ammunition in dumps or railheads, when these may be in danger of falling into the hands of the enemy, and will supervise the technical arrangements required for their execution.

He will also carry out or supervise the removal or destruction of blind bombs, shell, etc., when necessary.

7. He will report upon any cases of non-compliance by units with the routine orders for the return of empty Q.F. cartridge cases, clips, etc., and empty ammunition packages, which should be evacuated to ammunition railhead in the returning R.A.S.C. ammunition lorries.

He will impress upon units the importance of ensuring that packages containing empties are free from anything of an explosive nature, and will also draw their attention to the reasons why accumulations of ammunition empties in the forward areas must be avoided. These are:—

- (a) They provide a conspicuous target, occupy valuable space, and impede the fighting troops.
- (b) In the case of wooden packages, they constitute a fire risk.
- (c) They are intrinsically valuable.
- (d) They deteriorate rapidly if left in the open.
- (e) They are always required at home for further use, with a consequential saving of labour, raw materials and manufacture.

8. On behalf of the A.D.O.S. Corps, he will assist in preparing schemes for the opening of ammunition repair factories, etc., or the closing of existing ones, as may be necessary.

9. He will arrange for damaged ammunition to be forwarded to repair factories either in the corps area or on the

L. of C.; special care being taken to mark it conspicuously to indicate its condition. Before despatch, he will satisfy himself that the ammunition is in a safe and fit state to travel, and that it is marked to shew whence it comes.

Section 10.—Deputy Assistant Director of Ordnance Services of a Division.

Note.—These instructions are also applicable generally to D.A.Ds.O.S. of G.H.Q. troops, army and corps troops.

1. The D.A.D.O.S. will be responsible to the divisional commander for the efficiency of all ordnance services of the division other than workshops. His office will be located at the headquarters of the division, with personnel as laid down in the war establishment of the headquarters of a division.

2. He will be responsible for bringing to notice ^{and} failure of the normal system for distribution of ordnance stores consigned to units.

3. He will bring to the notice of the divisional ^{com}mander any extravagance and waste that may come to his knowledge as far as ordnance stores are concerned.

To enable him to judge whether stores are receiving fair treatment, he must be fully conversant with the general condition of the equipment in possession of the troops, and with the reasons for indents for fresh supplies. He will therefore make frequent visits to the units of his formation, and for this purpose will be furnished with suitable means of transport.

4. As accounts are not kept by units in the field, the principal check against waste consists of a comparison between expenditure of similar articles issued to two or more units operating under the same conditions.

He will therefore keep a comparative return of monthly expenditure of clothing and certain main items of equipment, and will forward it, in consolidated form, to the divisional commander and to the A.D.O.S. corps for transmission to the D.O.S.

5. He will keep in close touch with the A.D.O.S. corps, and will immediately report to that officer any local or divisional changes affecting ordnance services, particular attention being paid to matters affecting provision (see Chapter III).

6. He will, without delay, notify base ordnance depots and other ordnance officers concerned of any transfer of units from or to his formation, and will give such detailed

information as will ensure that subsequent issues are forwarded to their correct destination.

Such notifications will be sent in code.

7. He will transfer duplicate copies of outstanding incidents of units moved to other formations to the D.A.D.O.S. of the new formation.

8. In the event of a change of base of supply, he will notify to the new base ordnance depot, and to other ordnance officers concerned, complete details of the composition of the formation, or units, affected.

Any such notification will be sent by coded telegram and simultaneously (for confirmation) by post.

9. He will be responsible that the financial powers delegated to him for local purchase, requisitioning, etc., are properly administered (see Chapter IX).

He will forward triplicate copies of requisition receipt notes to A.D.O.S., P.

10. He will be responsible for the organization and working of any ammunition dumps which may in exceptional circumstances be placed under his control by the H.Q. of his formation.

The necessary personnel will be supplied from the base ammunition depot on application through the usual channels.

11. He will, during intervals of rest, consult the divisional commander regarding the advisability of forming temporary divisional shops of armourers, shoemakers and tailors drawn from any men of these trades who can be spared from their units. At other times he will make suitable arrangements for the work of units which have no armourer to be carried out by the armourer of a unit belonging to his formation.

12. He will confer with the divisional staff upon all matters concerning the salvage of ordnance stores, and will keep them informed of his requirements. He will make special arrangements for the taking over and disposal of ordnance stores recovered by the salvage organization. He will keep in touch with the medical authorities and with the R.O.O. with a view to the retention of such serviceable rifles, accoutrements and other stores as are required to replace unserviceable articles with units.

13. He will keep in touch with, and make himself thoroughly acquainted with the duties and work of, the R.O.O.

14. He will be responsible that moves of R.A.O.C. officers and men are reported at the earliest opportunity to the station or unit to which they are proceeding, and to other R.A.O.C. authorities as may be ordered.

15. He will be the medium through whom all indents for ordnance stores (other than ammunition) will be submitted by the troops in, or attached to, his formation. He will not approve any unauthorized issues without reference to the A.D.O.S. corps.

16. Indents will be prepared by units on A.F. G 944 in duplicate if practicable, as laid down in Chapter IX. They will be collected by his brigade warrant officers daily (see Appendix II). They will show stores required by units as follows:—

- (a) To replace items in their war equipment and component parts thereof which have been expended, lost, or become unserviceable through the exigencies of the campaign.
- (b) As a first supply; for example, new stores authorized by general routine order or added to the A.F. G 1098 scale.

In the case of articles required under (a), no authority need be quoted, provided the articles are included in (or are component parts of articles included in) the appropriate A.F. G 1098 scale; but in the case of stores required as a first supply the G.R.O. or other authority must be quoted.

In urgent cases, telephone messages from units will be accepted, to be confirmed later by covering indents.

17. He will exercise a scrutiny of units' indents, and ensure that they are rendered at regular intervals and not kept back until the units require to be practically re-equipped. On the other hand, he will see that units do not accumulate stocks with a view to meeting future requirements.

The scrutiny of units' indents in the forward area will be a general one; that is, sufficient to ensure that the items are admissible and that quantities are not excessive. Indents will be technically checked for accuracy of part or catalogue numbers and designations at the base ordnance depot.

The prompt despatch of units' indents to the base ordnance depot is of prime importance.

The D.A.D.O.S. will avoid all superfluous checking of indents and ensure that there is no delay in his office.

18. He will pass the original indents, after they have been scrutinized, to the O.O. of the appropriate sub-depot (see Sec. 36, para. 3), and will retain the duplicate copies.

He will not mark up the indents when the corresponding vouchers pass through his hands. Instead he will transfer the indent to a completed pad when it has been met.

If an indent is partially met he will attach a copy of the issue voucher which will show the position at a glance. When a further part of the same indent is met, the latest

voucher will be substituted for the previous one (see Sec. 34, para.6).

The latest voucher always gives the latest information.

In cases of urgency, when the normal system of supply is not quick enough, he will arrange for "replacement" issues to be made from ordnance field parks of such stores as are held there, after obtaining any necessary authority in accordance with relevant G.R.Os.

In cases of exceptional emergency he may similarly arrange for issue from a field park section, which will normally be located alongside a mobile workshop, of any spare parts or assemblies which may be available there if such action will expedite supply; but this should be regarded as an abnormal procedure.

19. Normally, he will deal with all indents as "detail."

When specially ordered, however, indents for certain stores in general use (to be defined by the D.O.S.—see Table I) will be dealt with as "bulk." That is to say, units' indents for such stores will be bulked by D.A.D.O.S. before being forwarded weekly to the base on the days of the week appointed for the various natures of stores.

Note.—A divisional reserve of clothing and equipment is carried in lorries belonging to the R.A.S.C. petrol company.

20. He will keep a record of all such bulk indents and issues, and distribute any stores sent up in bulk according to known requirements.

21. When he renders consolidated indents for stores authorized on approved new scales under general routine orders or other authorities, he will furnish with the indents a statement in detail, showing the units for which the stores are required.

22. All outstanding indents will be reviewed frequently with a view to cancellation of any for stores no longer required. If indents are cancelled the units and the base ordnance depot will be informed.

23. Indents will normally be despatched to the base by despatch rider letter service unless the requirements are urgent, in which case they will be telegraphed. In many cases it is necessary that indents for such items as guns, carriages, etc., should be reported to the D.O.S. and other authorities, and special instructions on this point will be issued by G.H.Q.

24. To avoid possibility of double issue, indents will not be rendered for stores telegraphed for, but a confirmation copy of the telegram will be sent.

25. He or his representative will be present at bulk-breaking point whenever possible, and will render every assistance to the R.A.S.C. officers of supply columns in the

carrying out of their duties in connection therewith. When bulk issues are received, he will make such arrangements as may be necessary, with O.C. R.A.S.C. of the division, for delivery to himself and for subsequent delivery to units after bulk has been broken. Normally bulk ordnance stores will be broken at supply refilling point.

26. He will retain any residues left, after meeting units' requirements, for issue in satisfaction of indents which will be received the following week. He will keep a record of these stores in tally form. With this exception, he will refrain from accumulating stocks of ordnance stores, which might tend to impair mobility.

Section 11.—Ordnance Officer at Supply Railhead (R.O.O.).

1. A railhead ordnance officer at a supply railhead is responsible on all matters to the A.D.O.S. of the formation which the railhead serves. He will look to this officer for guidance concerning arrangements for supply in front of railhead.

2. His R.A.O.C. establishment is shown in Table VII.

3. Responsibility at railhead, as far as ordnance stores are concerned, is divided as follows:—

R.T.O. responsible for:—	R.O.O. responsible for:—
(a) Unloading trains.	(c) Executive control of unloading operations.
(b) Providing mechanical appliances (cranes, ramps, etc.).	(d) Control of labour engaged in unloading.
	(e) Reloading stores into lorries.

4. Before opening closed wagons, the R.O.O. will examine the seals to ascertain if they have been tampered with in transit. If any seals appear to have been tampered with, or if the wagons are found to have been broken into, he will at once inform the R.T.O.

5. The R.O.O. will be responsible for the safe custody of all ordnance stores arriving at his railhead until they are reconsigned.

6. He will keep a wagon register. (For specimen page, see Appendix V.)

This book will record the number of every wagon received with stores for a formation, the numbers and disposal of waybills (A.F. W5174) and any other useful information regarding the condition of seals, etc.

7. With each consignment of stores despatched from the base ordnance depot to railhead, waybills in triplicate will be forwarded by the C.O.O.

Package cards for each unit (see Sec. 37, para. 15 (X)) will accompany the respective waybills.

8. The R.O.O. will dispose of copies of waybills as follows:

No. 1—retain for record.

No. 2—receipt and return to the C.O.O. base depot.

No. 3—send to the D.A.D.O.S. concerned, as advance notification of the arrival of the stores.

He will deal in a similar manner with waybills for stores received from a regulating station, except that he will return the duplicate to the O.O. of the regulating station.

9. He will attach to all copies of the waybill a report on any deficiencies or damages.

10. He will ensure that, in the endorsing of inward waybills and the preparation of outward waybills, names of stations are not shown in clear. Code will be used.

11. He will ensure that all wagons containing ordnance stores, despatched from his railhead, bear labels showing the destination, the service (for example, "ordnance") and the code designation of the railhead, but not the name of the station.

12. He will do his utmost to avoid accumulation of stores at railhead, except in special cases authorized by higher authority. He will endeavour to ensure that stores which have to be despatched to the base or regulating station are sorted and despatched within 24 hours.

13. He will be responsible that waybills in duplicate accompany all consignments of stores despatched to the rear from railheads. These will be placed in the wagon where they can easily be seen; preferably tacked to the roof, immediately over one of the doors.

In cases where the stores are packages which have not been delivered owing to the move of the consignee, care will be taken that package cards are sent with the consignment.

14. He will consign full wagon loads of stores for one destination direct to that destination: but partially-loaded wagons, and wagons containing consignments for different destinations, will be sent for re-loading to the regulating station, where one exists.

He will notify all concerned by telegram.

15. He will keep a day book, showing stores received other than normal consignments to units served by his railhead.

This record, and also the waybill made out when the stores are despatched, will show the following:—

In detail:—

- (a) Stores sent from the base, or regulating stations, which on arrival at the railhead have to be reconsigned owing to the move of formations, and which cannot be consigned direct to the new railhead.
- (b) Stores sent from the base, and found on arrival at railhead to be not required.
- (c) Serviceable stores received from unknown sources.
- (d) Stores received from units for return to the base.
- (e) Important repairable stores.
- (f) Important unserviceable stores which must be returned, whatever their condition.
- (g) Captured stores (unless a controller of salvage is appointed).

In bulk:—

- (h) Miscellaneous stores and produce: for example, "ten sacks, accoutrements," or "five bundles, rags."

16. He will ensure that stores are roughly sorted and packed before despatch; for example, clothing, accoutrements, rifles, etc., will be packed in sacks or bundles, and all packages or separate items will be entered in the waybill.

17. If it is not convenient to despatch returned small arm ammunition through the normal ammunition channels, he will accept it and consign it to the base ordnance depot.

He will on no account, however, accept returned ammunition and explosives other than S.A.A. These will be dealt with exclusively at ammunition railheads.

18. (a) He will cause all machine guns, rifles, machine gun belts and magazines to be examined before despatch, to ensure that they do not contain live ammunition.

He will cause all rifles, from which ammunition cannot be extracted, to be labelled "dangerous." He will ensure that the fact is specially reported on the waybills, and in addition will notify the regulating station or ordnance depot concerned by telegram.

(b) He will cause all rifles and machine guns to be cleaned and oiled before despatch. He will see that great care is taken to prevent damage in transit: particularly that:—

- (i) Rifles are securely tied in bundles of three, two barrels one way, third barrel the reverse way (see Plate II).
- (ii) They are packed standing in the corner of the wagon.

- (iii) The stack is lashed in, or wedged by means of sacks of web equipment or other suitable soft packages.
- (iv) No heavy packages are placed on top of these stacks or in any position where they can press upon the stacks.

19. He will ensure that dirty or contaminated stores are so packed that they cannot cause damage to other stores in the same wagon.

20. He will see that units, etc., handing in stores which have been disinfected affix to each package a linen label bearing certificate of disinfection and the name of the unit.

21. He will cause valuable and delicate instruments such as watches, range-finders, binoculars, telescopes, dial sights, etc., to be carefully packed in boxes. Such boxes, before despatch, will, if practicable, be sealed or locked: in the latter case, the R.O.O. will retain one key, a duplicate key being held by the O.O., returned stores depot (see Sec. 39, para. 8).

22. He will receive through the A.D.O.S. Corps special instructions regarding the nature of the produce to be returned to the base.

Section 12.—Ordnance Officer in charge of Ammunition Railhead (O.O. i/c A.R.H.).

1. An ordnance officer, with a R.A.O.C. detachment, is provided at each ammunition railhead.

2. (a) He will be responsible to corps H.Q. (D.A. and Q.M.G.) for the issue of ammunition.

(i) In an emergency, any unit is to receive ammunition on demand from any echelon at hand which carries ammunition of the type required. (F.S.R., Vol I, Chapter XVII, Sec. 160, para. 9.)

The responsibility for declaring such an emergency is that of the demander.

Such an issue will be reported at once to corps H.Q.

(ii) The normal procedure is to replenish the corps ammunition park R.A.S.C.

If the normal procedure is to be varied, special instructions will be issued by corps H.Q.

(b) He will be responsible on questions of R.A.O.C. personnel, administration, discipline and all other matters to the A.D.O.S. corps.

(c) He will give effect to such technical instructions concerning the care of and storage of ammunition as may be issued, either direct or through corps.

3. The O.O. i/c A.R.H. will be responsible for:—

- (a) Executive control of the unloading of ammunition trains.
- (b) Distribution of ammunition to the lorries of the corps ammunition park.
- (c) Executive control of the labour provided for these two purposes (see Sec. 52, paras. 21 and 22).

4. He will conform to the requirements of the Movement Control, who will be responsible for the movement services.

He will also keep in touch with the O.C. corps ammunition park concerning replenishment of the ammunition lorries.

5. Upon his foresight and tact, in dealing with these officers, the successful working of the railhead will largely depend.

He will bear in mind, at all times, that the smooth and rapid issue of ammunition to the troops is the purpose of the organization under his control.

6. Should he be ordered to receive and hold a stock of ammunition, this will be held either in loaded railway wagons at, or close to, his railhead or in dumps in the vicinity.

In either event, he will be guided by Magazine Regulations, Part II, regarding the storage by "categories.."

He will make daily issues from this stock against demands, and will report daily by telegram to G.H.Q. (repeated to H.Q. corps) issues and stock in hand. (See F.S.R., Vol I, Sec. 161).

7. He will be continually on the alert to guard against danger from fire or explosion in or near his railhead.

He will at once bring to the notice of higher authority (corps H.Q.) any possible source of danger that he cannot himself remove; such as accumulations, in the neighbourhood, of inflammable stores (petrol, hay, dry timber, etc.), camp fires, camps, workshops or other possible sources from which a fire might spread.

8. When a railhead is established, his first duty is to get into touch, by telegraph and telephone, with the A.D.O.S. of the formation which his railhead serves.

9. He will be given the earliest possible intimation of any intended move of his railhead (secrecy being observed).

10. He will constantly be on the look-out for technical defects in the ammunition, packages, etc., passing through his hands, and will report any defects found, with full particulars.

11. In returning ammunition, ammunition empties and any other ordnance stores to the base, he will be responsible that they are packed and consigned in accordance with such instructions as may be issued.

12. He will see that large accumulations of empties are not formed at or near his railhead.

To this end he will take every opportunity of sending empties to the base. All empties, except those obviously beyond repair, will be so dealt with.

13. It is of special importance that "empties" should be really empty; that is to say, free from anything of an explosive nature. As returned from units, they will often be found to contain explosives and other things, or to be incorrectly packed.

He will, therefore, be responsible that:—

- (a) Those packed at his railhead contain no explosives in any form.
- (b) Packing and closing of packages is correctly carried out.
- (c) Packages are suitably marked to show that this has been done.

14. He will meet, on his own authority, demands for spare components, cartridges, fuzes, tubes, etc.

For this purpose he will maintain a small stock of components. He will demand on the C.O.O. base ammunition depot such quantities as he requires to maintain this stock.

Should demands on his stock become abnormal, he will refer to corps H.Q.

15. Apart from the foregoing, he will not put forward demands for ammunition upon the base.

He will, however, demand other ordnance stores for use at railhead, either direct from the base ordnance depot or through local R.A.O.C. channels as may be ordered.

16. He will take every opportunity, when the work of the railhead permits, of instructing the R.A.O.C. personnel under his command in all duties and operations connected with ammunition, with the object of fitting them for promotion and increased responsibility as the ammunition service expands.

Section 13.—Deputy Director of Ordnance Services for L. of C. Duties (D.D.O.S., L. of C.).

1. D.D.O.S., L. of C. forms part of D.O.S.'s staff.

He will be responsible to the D.O.S. for the administration and control of all ordnance depots on the L. of C.

2. He will visit all ordnance installations at the base and on the L. of C., and will supervise their organization, interior economy, accommodation, personnel and accounting; and also their co-ordination, in cases where more than one L. of C. installation is affected.

3. He will deal with personnel questions affecting D.A.Ds.O.S. of L. of C. sub-areas and base sub-areas (if such are appointed).

Section 14.—Assistant Director of Ordnance Services, Provision.

1. A.D.O.S., P. is responsible to the D.O.S. for the provision of all ordnance stores except ammunition and explosives. He will receive instructions from the D.O.S. as to the basis on which he is to provide.

2. His office will be situated within, or in close proximity to, a base ordnance depot. He will correspond direct with the D.O.S. on all matters connected with provision, and will be kept informed by him of all such changes in the conduct of the campaign as are likely to affect provision.

3. Under the instructions of the D.O.S., he will fix the base reserves to be maintained and the provision action figures.

4. He will organize provision work within base ordnance sub-depots under Os. i/c P. He will be responsible for the co-ordination of the work of all Os. i/c P.

5. He will communicate policy instructions through the C.O.O. base ordnance depot. He will communicate technical instructions to the Os. i/c P., direct.

6. He will receive, from D.A.Ds.O.S. of formations, triplicate copies of requisition receipt notes and will ensure that they are recorded in convenient form. He will also receive from them a monthly report of all local purchases effected by them.

Section 15.—Officer i/c Provision.

1. An O. i/c P. will be attached to each base ordnance sub-depot. He will be responsible to the A.D.O.S., P. for the provision of all ordnance stores in his vocabulary sections. He will also be responsible for taking note of abnormal indents in those sections, before they are passed to the storehouse for issue.

2. He will be assisted by a suitable staff of provision officers and other ranks R.A.O.C. (see Table VII).

3. His office will be situated within the sub-depot to which he is attached.

4. He will receive instructions from the A.D.O.S., P. as to the basis on which he is to provide stores.

5. He will correspond with the A.D.O.S., P. (or direct with the D.O.S., if so directed by the A.D.O.S., P.) on all matters connected with the provision of stores in his sections. He will be kept informed by the A.D.O.S., P. of all such changes in the conduct of the campaign as are likely to affect provision.

6. He will arrange for the supply of the stores in his sections by means of demands put forward direct to the home provision branch concerned, unless he is ordered to pass them through the A.D.O.S., P. and the D.O.S.

7. He will keep in close touch with Os. i/c P. at other base ordnance depots (if there is more than one base) with a view to utilizing any surplus stocks which they may have available. Similarly, he will keep them informed of any stocks surplus to his requirements.

8. He will ascertain from the O.O. sub-depot at frequent intervals what stores are under, and awaiting, repair at the workshops and returned stores depot, and will keep those installations informed of provision requirements in connection with these stores.

9. He will furnish to the D.O.S. provision position returns as may be ordered.

10. He will make local purchases of stores which are urgently required when time will not permit supply from home, or when supply from local sources is more advantageous, but will not exceed the financial powers delegated to him without prior reference to the A.D.O.S., P.

He will arrange with the O.O. sub-depot for the inspection of stores obtained by local purchase, before they are brought to account.

11. He will be responsible that all bills for stores purchased locally are passed for settlement without undue delay.

12. While D.A.Ds.O.S. of formations are responsible for scrutinizing indents to ensure that they are admissible and that quantities are not excessive, the O. i/c P. will arrange, through his provision officers, a check on the accuracy of part or catalogue numbers and designations in such indents before passing them for issue (see note to Sec. 37, para. 8).

In certain circumstances laid down by the D.O.S. or A.D.O.S., P. indents for items of vital importance, such as guns, machine guns, mechanical vehicles and certain items of bulk issues will be referred to G.H.Q. (or A.D.O.S., P.) for approval.

13. R.A.O.C. personnel for provision duties will be under his orders, except for general discipline and interior economy, for which they will be under the orders of the O.O. sub-depot.

**Section 16.—Assistant Director of Ordnance Services,
Ammunition (if appointed).**

Note.—In a great war, multiplication of lines of communication and of base ammunition depots may entail the appointment of an A.D.O.S. for ammunition duties only. He will be located where he can best carry out a general supervision (not necessarily at G.H.Q.). His duties are shown below.

In the early stages these duties will be the responsibility of the D.O.S., who will, according to the circumstances of the campaign, delegate to a C.O.O. of a base ammunition depot such of these duties as he can conveniently perform.

1. He will be directly responsible to the D.O.S. for making efficient arrangements for the receipt and issue of ammunition, and for the provision of component parts thereof (as distinct from complete rounds).

2. He will advise the D.O.S. on the development and layout of ammunition depots, the safety of ammunition, and generally on all technical questions concerning ammunition.

3. He will correspond direct, on matters connected with the supply and evacuation of ammunition, or the storage of ammunition stocks at railhead, with A.Ds.O.S. corps.

4. He will arrange for the distribution of ammunition landed at the base port or ports, so as to keep stocks at base ammunition depots evenly balanced.

5. He will watch the "daily ammunition statement" from each depot or railhead, in order to co-ordinate the flow of ammunition.

6. He will keep running records of stocks of ammunition in all depots, in order to facilitate the most satisfactory distribution of incoming ammunition.

7. He will inform depots what is being despatched to them, in complete rounds or otherwise, and furnish the necessary details regarding the association of fuzes, etc., with other components.

8. He will furnish C.O.Os., base depots, with such general instructions as may be necessary, governing the issue of components (not complete rounds) of ammunition, demolition explosives, and non-explosive ammunition stores such as tools, in response to demands from ordnance officers in forward areas (see footnote).

9. He will take provision action (similar to that taken by the A.D.O.S., P. (see Chap. III) to meet demands from I.O.Os., ammunition repair factories, etc., for ammunition components (but not complete rounds).

He will take similar provision action in the case of those types of ammunition for which standard stocks may be laid down by G.H.Q. (as opposed to the system of automatic replenishment on the basis of reported expenditure). Demolition explosives is a possible example.

10. He will organize the shipment home of ammunition empties of all types.

For this service it may be necessary to establish an ammunition empties depot in or near a base port, where empties can be inspected (to ensure freedom from explosives), packed and prepared for shipment (see Sec. 53).

This establishment will be administered as a sub-depot, under the C.O.O., base ammunition depot.

11. He will establish a school of instruction for the training of personnel in ammunition duties. This school will be designed to meet the rapidly growing demand for ammunition personnel, R.A.O.C., in forward areas and elsewhere, and to maintain a pool of such trained personnel ready for drafting as may be required.

As the work in forward areas is less regular, and more difficult to supervise than that in base depot, only thoroughly efficient and reliable men should be sent forward to serve in those areas.

Note.—The difference in the method of supply of different classes of ammunition stores should be noted:—

- (a) Complete rounds of gun ammunition, small arm ammunition and fireworks:—supply from base ammunition depot as ordered by G.H.Q.
- (b) Demolition explosives:—as (a) or (c), according to circumstances.
- (c) Components:—supplied on demand from the base ammunition depot: provision action by A.D.O.S., Amn.
- (d) Tools:—supplied on demand from base ordnance depot: provision action by the A.D.O.S., P.

Section 17.—Chief Ordnance Officer, Base Ordnance Depot.

1. The C.O.O. base ordnance depot will be responsible to:—

- (a) The D.O.S.—on all questions affecting the receipt, mode of storage and issue of stores; all technical matters.
- (b) The D.D.O.S. L. of C.—on all questions of personnel, lay-out, accommodation, interior economy.
- (c) The local area headquarters—on matters of local administration only, as defined in F.S.R., Vol. I.

2. He will receive from the D.O.S. and other ordnance officers concerned the earliest possible intimation as to movements of formations or units that affect the consignment of stores within his sphere of supply.

3. He will report to the D.D.O.S., L. of C. any technical defects that may come to notice in the stores passing through his hands, giving all relevant particulars.

4. He will correspond direct with the R.A.O.C. authorities at home on matters affecting the transit of ordnance stores between home depots and his own (and vice versa). He will not deal with matters that may affect depots other than his own without the authority of the D.D.O.S., L. of C.

5. He will make necessary recommendations to the D.D.O.S., L. of C. for increases or reductions of the establishment of R.A.O.C. personnel allotted to him, and will make timely reports to that officer if his strength falls below that establishment.

He will lay down establishments in detail by ranks for his various sub-depots, groups and branches. The initial establishments are laid down in Table VII, but he will be responsible for watching that the establishments of his sub-depots, groups and branches are varied to meet actual needs for normal work.

He will be responsible that the expert storemen allotted to each store company are employed as far as possible on the stores with which they are familiar. He will be responsible for the furnishing of R.A.O.C. reinforcements to all formations as may be ordered, from those employed under his orders.

6. In the event of his being unable to obtain such assistance or transport facilities as he considers essential for the efficiency of the services for which he is responsible, he will report the matter to the D.D.O.S. L. of C.

7. He will correspond direct with D.A.Ds.O.S. of formations, and ordnance officers at railheads or at regulating stations, on matters affecting the supply and transit of stores.

8. If it is found advisable he will circulate to D.A.Ds.O.S. of formations a fortnightly list of stores difficult to obtain. This will be prepared in collaboration with the A.D.O.S., P. Its purpose is to reduce routine hasteners, and to cause the troops to take extra care of such stores.

9. Under the general orders of the D.D.O.S. L. of C. he will issue instructions to R.A.O.C. representatives at regulating stations (see Sec. 21).

10. Should he be the commanding officer of the R.A.O.C. personnel at the base, he may delegate his regimental duties to an officer of field rank, as provided in Chapter II, Note (ii).

11. Should a D.A.D.O.S., base sub-area, not be appointed (see Sec. 2) he will act as the representative of the ordnance services at the headquarters of the base sub-area.

12. He will ensure that the A.D.O.S., P. is furnished with all information required by that officer as to stocks, dues out, and any other particulars in connection with provision.

13. He will bear in mind the possibility of the enlargement and development of his depot, and of its evacuation should need arise.

14. He will keep a detailed record of the available covered accommodation in his depot and make such arrangements as will enable him at short notice to ascertain what further stores can be accepted.

15. He will ensure that the accounting and dues records are kept up to date so that any item can be reviewed at any time.

16. He will institute a system of check and audit of accounts so that all postings, casts, etc., may be verified as soon as practicable after they are made, and so that errors found may be rectified without delay.

17. He will arrange that stock is taken of all items at suitable periods.

18. He will keep records of all correspondence affecting his depot.

19. He will maintain a census of A and B vehicles and spare major assemblies. This will be located at No. 1 (M.T.) sub-depot (see Appendix III).

20. He will issue as standing orders all orders of a permanent nature affecting the working of his depot. These will be amended as occasion arises.

21. He will keep copies of all orders, books, publications, etc., affecting the work of his depot, and cause them to be amended up to date.

22. He will watch for opportunities of saving labour and stationery by the preparation of printed or duplicated forms adapted to the special needs of his installations.

23. He will keep in close touch with the local shipping, rail and road traffic authorities so as to ensure, as far as possible, co-operation and smooth working in the movement of all ordnance stores.

24. He will arrange for the receipt, inspection, repair and bringing on charge when serviceable (see Sec. 38), of all ordnance stores (other than ammunition and explosives) that may be received at his depot, either from home, the troops, local resources or elsewhere. Non-serviceable stores sent home will be treated as in transit, an administrative record only being kept.

25. He will not make issues of stores other than those prescribed by regulations unless authorized by:—

(a) General Routine Orders.

(b) The D.O.S. or an officer to whom the D.O.S. may delegate his authority in this matter.

26. He will be responsible for the correct consignment of all stores sent to formations or units.

27. He will organize a returned stores depot for the receipt, sorting, inspection, repair (where this is practicable by unskilled labour), or re-conditioning of ordnance stores returned from the troops, and for dealing with captured stores returned to the base ordnance depot unless a controller of salvage is appointed.

28. He will be responsible for the sale or disposal of produce, or of any stores which are unserviceable or no longer required, which may accumulate at the base ordnance depot.

29. Local contracts may be made for certain classes of work of less urgent or important character, where this can be done with reasonable economy, or when the prospect of the work being done by R.A.O.C. workshops in sufficient time is doubtful.

30. If other base ordnance depots exist he will keep in close touch with them, so that the manufacturing and repairing plant at stores depots may be co-ordinated and unnecessary overlapping may be avoided.

Section 18.—Chief Ordnance Mechanical Engineer, Base Ordnance Workshops.

1. The C.O.M.E. of a base ordnance workshop will be responsible for the work and efficiency of the base ordnance workshop. He will ensure that only authorized work is carried out there.

2. All personnel employed in the workshops will carry out their duties under his immediate supervision.

3. He will be responsible that the repair, conversion, and manufacture of stores are effected in the most economical manner, consistent with efficiency, and that no work is done, nor materials supplied nor used, except for the public service.

4. A system of accounting, similar to that used by workshops in peace (except that costing will not be carried out) will be adopted (see Sec. 44).

5. He will be responsible for the recording of technical information as to stores passing through workshops, so that accurate particulars may be obtained as to the progressive wear of guns, vehicles, etc., and their components.

6. He will be responsible for the inspection of technical equipment and the preparation of detailed reports on technical defects in ordnance stores that may come to light as they are dealt with in the workshops.

7. He will keep in close touch with the A.D.O.S., P. with regard to the anticipation of future requirements of materials, components, assemblies, and spare parts.

8. Should he be the commanding officer of the R.A.O.C. personnel at the base, he may delegate his regimental duties to an officer of field rank, as provided in Chapter II (note ii).

Section 19.—Chief Ordnance Officer, Base Ammunition Depot.

Note.—If no A.D.O.S., Amn. is appointed, most of the duties laid down in Sec. 16 will be performed by the C.O.O. base ammunition depot, in addition to those detailed in the following paragraphs.

1. The C.O.O. base ammunition depot will be responsible:

- (a) To the A.D.O.S., Amn. (if appointed):—on all questions affecting the receipt, mode of storage, issue and repair of ammunition; all technical ammunition questions; training of personnel in ammunition duties; provision of components.
- (b) To the D.D.O.S., L. of C.:—on all questions of personnel, lay-out, accommodation, interior economy.
- (c) To the local area headquarters:—on matters of local administration only, as defined in F.S.R., Vol. I.

2. He will be responsible for the efficient performance of all R.A.O.C. duties in connection with the ammunition at his depot.

3. He will be responsible for the storage by “categories” and the custody of all ammunition and other ordnance stores at his depot, in accordance with Magazine Regulations, Part II.

4. He will receive orders direct from G.H.Q. for the issue of ammunition to railheads.

5. He will send daily to G.H.Q. a telegram giving details of all ammunition received, issued and remaining in hand at his depot. The information required for this purpose will be readily available from the “daily ammunition statement” (see Chap. VI).

A copy of this telegram will be sent to the A.D.O.S., Amn. (if appointed).

6. He will maintain a detailed current record of all accommodation for ammunition available in his depot, and will be prepared to give full information upon this point at any time.

7. He will be responsible that none but serviceable ammunition is issued from this depot for the use of troops.

He will make arrangements to ensure that each consignment, and successive consignments, of each nature of ammunition to each railhead which he supplies, consist of uniform ammunition.

8. Under instructions from the A.D.O.S., Amn. he will arrange for the training of the R.A.O.C. personnel under him in all duties connected with ammunition (see Sec. 61 (iii)).

Section 20.—C.O.O. Ammunition Repair Factory, L. of C. (if formed).

1. The C.O.O. repair factory will require a wide technical knowledge of ammunition and of the methods by which it can be repaired.

2. He will be responsible to the A.D.O.S., Amn. for the safety and for the efficiency of the factory under his charge.

3. He will advise the A.D.O.S., Amn. regarding the layout and general arrangements of his factory.

In selecting a site he will be guided by the considerations governing the sites of ammunition depots. It is desirable to provide ample room for possible future expansion, and for storing large quantities of ammunition awaiting repair.

4. He will organize his factory so as to make the best use of the facilities at his disposal for the inspection and repair of defective ammunition. He will bring to the notice of the A.D.O.S., Amn. any changes that are necessary for the safe and efficient working of the factory.

5. As the work of the factory cannot be altogether free from danger, he will pay particular attention to safeguarding his personnel. To this end he will take all practicable steps to confine the effect of any explosion, and to ensure that the number of persons exposed to any such accident is kept as small as is consistent with efficiency.

6. When it is necessary to store quantities of ammunition sent to his factory for repair, he will, as far as practicable, arrange the ammunition in small stacks, set well apart and separated by substantial traverses.

7. He will see that all technical operations are carried out in accordance with existing regulations governing such work. Where the regulations do not cover the work to be done, he will prepare detailed written instructions governing the operations, and in doing this he will not depart from the spirit of the regulations already in existence.

8. He will be furnished with all available technical information bearing upon the work carried out in his factory, and this he will keep up to date, and in an accessible form.

9. As a general rule it is as important to provide cover for ammunition awaiting repair as it is for serviceable ammunition.

10. Ammunition that has been repaired and made serviceable will be despatched to ammunition depots without delay, and will not be allowed to accumulate.

11. In deciding upon what natures of ammunition to take in hand for repair, he will consult with the A.D.O.S., Amn. and lay before him the technical considerations affecting the work. The A.D.O.S., Amn., who is informed of the provision side of the matter, will then decide upon what repairs should be taken in hand.

In arriving at this decision it should be borne in mind that changes in the routine work of the factory waste time and diminish output, and that technically difficult and slow repairs should only be taken in hand when the ammunition to be repaired is urgently wanted, or when there are no simpler or more profitable repairs to be carried out.

12. He will take every opportunity to train his personnel in the technical work of the factory. His trained personnel should not be moved if this can be avoided, as such changes reduce output and may entail unnecessary dangers in the working of the factory.

13. He will prepare full technical reports and forward them to the A.D.O.S., Amn. on any defects in ammunition that may come to his notice and that may be attributed to faulty design or manufacture.

He will report, as far as practicable, defects due to incorrect use in the field.

14. He will keep a record of the quantities and natures of ammunition dealt with in the factory.

Section 21.—Ordnance Officer at Regulating Station.

1. An ordnance officer or warrant officer will be attached to the Movement Control at each regulating station (see Manual of Movement (War), Secs. 68 and 83).

2. He will be provided with a staff of R.A.O.C. personnel (see Table VII), and will apply to the local administrative commandant for such labour, etc., as he may require.

3. He will be under the general orders of the D.D.O.S., L. of C. Under the instructions of the movement control he will carry out any unloading, sorting and reloading of

ordnance stores that may be necessary owing to changes in destination since the wagon left the base depot, and will safeguard such stores while they are out of wagons.

4. He will be responsible that stores reconsigned from one railhead to another are transferred, at the regulation station, to their correct destination, so as to obviate their return to base for reconsignment.

5. He will make the necessary arrangements with the Movement Control for the sealing and labelling of wagons and for their despatch.

6. He will keep a wagon register showing the action taken on all wagons received (for specimen page, see Appendix V).

7. He will ensure that waybills (A.F. W5174) are dealt with as follows:—

(a) **From railhead** (received in duplicate):—

(i) The checker will make a summary of contents on A.B. 108.

Each waybill will be summarized on a separate folio (or folios) of A.B. 108.

(ii) Action taken will be noted on the summary: example:—

transferred from wagon . . . to wagon . . . repacked.

to shed (to wait until full wagon can be made up).

(iii) When a wagon is cleared, one copy of the waybill will be returned to the R.O.O. signed, with a note of any discrepancies.

(iv) Entry will then be made in the wagon register of the action taken.

(v) The waybill and checker's note will be filed.

(b) **From the regulating station to the base** (made out in triplicate):—

(i) Two copies will be sent to base, tacked on the inside of the wagon: if practicable to the roof, immediately over one of the doors. One of these copies will be returned from the base, receipted.

(ii) The third copy will be retained.

(c) **From the regulating station to the railhead** (made out in quadruplicate):—

(i) Three copies will be sent to the R.O.O. for action as laid down in Sec. 11.

(ii) The fourth copy will be retained.

(iii) Each consignment will be accompanied by the relevant package cards.

(d) **Waybills for stores from railhead, for reconsignment by M.F.O.** (received in triplicate):—

- (i) Two copies will be handed over, with the stores, to M.F.O.
- (ii) Third copy will be returned signed, showing the number of the wagon in which the stores are reconsigned.
- (iii) Note of the wagon number will be made in the wagon register.

8. He will ensure that verification is made of any stores, intended for issue on payment, which have for any reason to be reconsigned.

He will see that the enclosed voucher is signed by himself or his representative as evidence of re-checking.

He will cause the number of the wagon, in which they are despatched to their destination, to be entered in the wagon register.

9. He will bear in mind, for information and guidance, the instructions contained in Sec. 11.

Section 22.—Ordnance Officer attached to the Docks Service (O.O. Docks).

1. An ordnance officer will be attached to H.Q. docks group at each overseas port, in an advisory capacity.

2. He will be responsible for advice upon ordnance matters in connection with the transit of all ordnance stores from ships to their next destination. (As regards ammunition, see Sec. 48).

3. He will be present, or will be represented by one of his R.A.O.C. subordinates, at each berth at which ammunition is being unloaded.

4. As long as ships are being loaded or off-loaded with ordnance stores, the O.O. should not permit his time to be occupied by performing, or supervising, clerical duties. These should be delegated, under his general direction, to a warrant officer or senior N.C.O.

5. He will receive instructions on all matters concerning ordnance services and requirements from the C.O.O. base ordnance depot and the C.O.O. base ammunition depot respectively.

6. He will not be responsible for the following functions, which belong to the docks service:—

- (a) Checking receipts off bills of lading.

- (b) Notifying to base ordnance depot any deficiencies of packages.
- (c) Unloading ships.
- (d) Despatch of ordnance stores to the depots concerned.

7. He will, however, hold his staff available for such executive ordnance work as may be delegated to him by the docks service—for example, the preparation of way-bills (A.F. W.5174)—in order to facilitate the work of unloading the wagons at the base ordnance and ammunition depots.

8. He will prepare a separate waybill or convoy note for each wagon or lorry.

He will see that these bear the name of the ship in which the stores were received, and the bill of lading number.

9. He will obtain early notification of the arrival of ships containing ordnance stores and of their contents, and will keep C.O.Os. base ordnance and ammunition depots constantly informed as to the arrival of ships and despatch of stores and ammunition to their depots.

Guided by the instructions of those officers, he will advise the docks service regarding the priority of despatch and such other arrangements as may affect off-loading at base depots.

10. He will arrange for stores to be loaded into wagons as far as possible by vocabulary sections, or at least by store groups, so as to avoid their having to be sent for resorting to the traffic centre of the base ordnance depot, with consequent double handling.

Note.—Packages containing ordnance stores (other than ammunition) will be marked in two or more places with a 6-inch green disc, with a further mark denoting the sub-depot for which they are intended (see Chap X).

11. He will ensure that wagons are loaded with the same natures of ammunition as far as possible.

12. He will arrange despatch, to the service concerned, of stores which have been provided in bulk by the R.A.O.C. at home on behalf of another (user) service: for example, bulk sandbags or barbed wire for R.E. base park.

Such stores will be marked with the consignee's distinctive symbol.

They will not pass through the base ordnance depot's accounts, but will be despatched, as arranged by the O.O. docks, direct to the service concerned.

13. He will take timely action with the port authority concerned, when stores of exceptional weight or size are expected (such as heavy guns and their carriages) to ensure that special arrangements are made beforehand for unloading.

14. If necessary he will assist the Movement Control to establish a small workshop of carpenters and tinsmiths for the repairs of packages, especially in connection with ammunition; the necessary personnel being provided by the C.O.O. base ordnance depot.

15. In the shipment of material home he will act generally on the lines indicated in the foregoing, and in instructions for port ordnance officers (home) (see Chap. X), as far as these are applicable.

16. He will act in close liaison with the O.M.E. commanding the port workshop detachment R.A.O.C. (see Sec. 44), so that aid may be furnished at once to any unit requiring it during the process of disembarkation.

**Section 23.—Officer i/c R.A.O.C. Section, D.A.G.'s
Office at the Base (G.H.Q. 2nd Echelon).**

1. Under the orders of the D.A.G. (G.H.Q. 2nd Echelon) and the general instructions of the D.O.S., he will notify the War Office as to the strength and composition of the drafts required to be sent out from home to replace casualties, and arrange for the distribution of these drafts upon their arrival in the country.

Reinforcements will be asked for in detail by ranks, grades, and trades, and not by complete ordnance companies.

Drafts intended for depots in advance of the base depots on the lines of communication will, if they do not proceed at once to their destination, be sent to the base depots, and will be temporarily attached to one of the units located there.

2. He will deal with all correspondence on record matters, orders issued from Officer i/c R.A.O.C. Records, and with official and private inquiries concerning R.A.O.C. personnel.

3. He will keep nominal rolls of all soldiers of the Corps engaged in the campaign. These rolls will show the date of their arrival in, or departure from, the theatre of operations, together with any postings and dates of transfer.

4. He will be responsible for the custody and upkeep of the documents, and for the entry therein of all particulars derived from copies of Part II Orders received from companies and detachments.

He will complete, if necessary, any confidential reports received from the officers concerned and will transmit them, with copies of Part II Orders, to the Officer i/c R.A.O.C. Records at home.

5. He will communicate to the base paymaster and to officers commanding R.A.O.C. companies and detachments concerned, Corps Orders relating to promotion or other casualties affecting R.A.O.C. personnel.

He will act as the channel of correspondence between the Officer i/c Records at home and R.A.O.C. units in the field.

6. A full detail of returns to be rendered, documents to be kept, records to be maintained and various other duties will be found in the chapter in F.S.R., Vol I, and Appendices dealing with the duties of D.A.G. at the base (G.H.Q. 2nd Echelon).

CHAPTER III.

PROVISION IN WAR.

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Note.—This chapter should be read in conjunction with Sections 37 and 38.

Section 24.—General.

1. This chapter is intended to be a brief outline of the system to replenish the stocks of the base ordnance depots overseas.

2. The details of the organization and procedure, so far as they affect action by the store groups under the C.O.O. base ordnance depot and the provision branches under the A.D.O.S., P., will not be regarded as hard and fast rules.

They contain merely sufficient instructions to all concerned to enable provision action to begin as soon as the depot is formed. Such modifications as are found necessary can be introduced as the campaign proceeds.

3. Too great a stress cannot be laid on the importance of provision work being set in motion at the earliest possible moment, and of the staffs being made thoroughly conversant at the outset with the simple machinery for reviewing stocks.

The Manual of Movement (War), Chapter I, Sec. 1, emphasizes the fact that the degree of mobility possessed by a force is governed by the facilities for adequate maintenance of personnel and material.

4. No golden rules can be laid down to ensure good provision. Even maintenance figures will be found to lag behind requirements unless imagination, in addition to foresight, is possessed by provision officers.

Issues of certain classes of stores occasionally increase out of all proportion to previous demands. Such increases can often be foreseen and explained by the ordnance officers attached to formations; particularly by D.A.Ds.O.S. of divisions. Such officers should, while observing all precautions regarding secrecy, keep provision officers informed. They are authorized to communicate with them direct on such subjects.

5. These warnings may supplement, to good purpose, the information communicated to directors (see F.S.R., Vol. I, Chapter XI, Sec. 59) concerning the intention of the general staff in regard to the nature of operations and anticipated developments.

6. The D.O.S. of the field force will arrange for estimates from the D.G.E.S. for such field works stores as are an ordnance supply. Such estimates should clearly differentiate between requirements for initial or special services and those that are recurring. A two months' estimate of the latter should be furnished if practicable.

The D.O.S. will also confer with the other directors concerned to ascertain whether the forecasts in the shipping programme (see Manual of Movement (War), Chapter XI, Sec. 71), regarding the quantities of stores required for transportation, works and signal services are adequate.

Section 25.—Organization.

1. The responsibility for providing ordnance stores required by an army in the field rests with the D.O.S. The duties in connection with this responsibility, except as regards ammunition and explosives (see Chapter VI), devolve on the A.D.O.S., P., who is directly responsible to the D.O.S., and acts under his instructions.

2. On arrival in the theatre of war, a provision office will be established in each group, under a provision officer. All the provision offices in each sub-depot will be under control of an O. i/c P., who will be responsible to the A.D.O.S., P. on all provision matters.

3. Provision review forms will be prepared in peace from war reserve schedules, for each item to be despatched overseas from the war reserves. A copy of the war reserve schedules is in the war box of each O. i/c P.

4. The D.O.S. will ensure that the A.D.O.S., P. is supplied with all routine orders and other information affecting provision, particularly:—

- (a) notice of likely changes in the conduct of the campaign;
- (b) proposed moves of units to or from the field force;

- (c) increases and decreases in number of units, strengths of personnel and scale of mechanical vehicles;
- (d) composition of new units or formations, and their war equipment tables.

The A.D.O.S., P. will pass this information to provision officers, who will note such information as is not of a secret nature on the provision review forms of all stores concerned; and will take such information into account when making reviews.

5. The offices of the A.D.O.S., P. and the C.O.O. will act in the closest co-operation for the benefit of the ordnance service as a whole.

The officers and staff of the A.D.O.S., P. will be afforded facility for direct access to group officers and officers i/c workshops, their records and storehouses, for the purpose of exchanging information with regard to the position and condition of stocks, dues in and dues out, etc.

6. Os. i/c P. will frame instructions for the guidance of store groups and workshops on all matters affecting provision procedure and, after concurrence, these instructions will be published as depot standing orders by the C.O.O.

7. The provision office will be organized into branches corresponding with the arrangement of the sub-depots (see Sec. 37).

Each branch will be located in the sub-depot which it serves. It will be divided into sections corresponding with groups. Each section will comprise indent checkers and provision clerks (see note to Sec. 37, para. 8).

The ultimate responsibility for review and maintenance of adequate stocks will rest with the provision officer in charge of the sections concerned. The office of the officer i/c P. will be located close to that of the O.O. sub-depot.

The organization of the provision offices is shown in Table VII.

8. The war establishment of the provision office is included in that of the base ordnance depot.

9. For purposes of discipline and regimental administration the personnel of the provision office will be merged with the R.A.O.C. establishment of the base ordnance depot, under the orders of the officer detailed to command the R.A.O.C. allotted to the base depot. The A.D.O.S., P. will, however, have absolute control over his staff in all matters affecting departmental duty.

The hours of work of the provision office will normally conform to those laid down by the C.O.O. for the base ordnance depot.

Section 26.—Stocks and Base Reserves.**(i) Initial provision.**

1. The base ordnance sub-depots will be stocked initially from war reserves held in peace for the maintenance of the field force.

2. The initial stock will be sent out without demand, and will be replenished without demand, in the manner indicated below, until actual requirements can be more definitely foreseen.

3. To ensure the availability of the initial stocks required for immediate despatch overseas, reserves of certain stores are held in peace. These are shown in the war reserve schedules.

They are intended to cover overseas needs until post-mobilization production overtakes demand.

They are calculated at the War Office on the basis of war experience and estimated expenditure in terms of monthly wastage percentages.

4. At the beginning of a war—that is to say, until overseas provision begins to function—shipment of stores from war reserves will be arranged on the following lines:—

- (a) the initial amount of stores and equipment sent out will be dependent on whether a short or long sea voyage is involved.
- (b) for a short sea voyage, an initial supply of one month's stores will be shipped.
- (c) for a long sea voyage, an initial supply of two or three months' stores will be shipped.
- (d) in addition, in each case, one month's estimated maintenance stock will be sent initially and will follow each successive month, until receipt of demands from overseas.

5. In order that these receipts from home may be watched provision officers will be supplied with:—

- (a) copies of the war reserve schedules;
- (b) the shipping schedule for the despatch of stores;
- (c) a list of the stores representing one month's supply for a division (limited to clothing, camp and personal equipment).

From these documents provision officers will know what stores are on the way at any moment.

6. As soon as provision officers have acquired such experience of the needs of the field force and such information concerning the future development of the campaign as will enable them to forecast expenditure, they will make their first demands.

Thenceforward the system of automatic supply from home will cease (but see below), and replenishment will be made only on demand from provision officers.

The sole exception to this rule is that, with each contingent subsequently added to the field force, one month's initial stock and one or more months' supply for the initial store margin and interim period requirements will be sent.

7. First demands from overseas will state the date up to which the provision officer concerned assumes stores to have been despatched according to schedule.

8. The change-over from automatic supply to supply on demand will not normally be made at once over the whole range of ordnance stores but will take place in successive steps.

9. As a normal rule, one complete vocabulary section at a time will be changed over from the basis of automatic supply to that of supply on demand.

10. When necessity arises, however, a provision officer, if the facts at his disposal justify such a course, will not hesitate to place individual items on the demand basis without waiting until a whole vocabulary section can be so treated.

11. It is the foremost duty of provision officers to acquire, at the earliest possible moment, information regarding wastage and future requirements of all ordnance stores: so that the system of automatic supply, based on past experience, may give place to the system of demand, based on the actual needs of the campaign.

In this connection Table XI gives an estimate of the clothing required for 1,000 men and Table XII gives the proportion of sizes of that clothing.

(ii) Maintenance stocks.

12. Overseas requirements are assessed by the War Office in peace on the basis of "base reserves" and "working stocks."

As soon as practicable after arrival overseas the proportions required under these two heads will be reassessed in the light of the information then available. That is to say, the D.Q.M.G., advised by the D.O.S., Field Force, will decide what nature and quantity of base reserves are to be held; basing his decision on the factors mentioned in (iii) below.

All stores not designated as "base reserves" will become maintenance stocks.

13. The requirements for the liability period, as in peace, are built up of three elements—the interim period (I.P.), the store margin (S.M.), and the maintenance figure (M.F.).

14. The maintenance figure, in war, will normally be the estimated requirements of the field force, or that portion of it supplied from the depot concerned, for a maintenance period of one month.

15. It will be necessary for D.O.S., with the approval of the D.Q.M.G., to decide on the I.P. and the S.M. at the earliest practicable date.

The I.P. is the number of months between the submission of a demand by ordinary post and the date of receipt of the stores from home.

This will normally be:—

- (a) for a short sea voyage, one month;
- (b) for a long sea voyage, two months.

The S.M. is also affected by the distance from home, and will normally be assessed at the same number of months as the I.P.

16. Thus stocks (excluding any earmarks) plus dues-in will theoretically fluctuate between:—

S.M. plus I.P. plus M.F. = (a) 3 months' (b) 5 months'
and

S.M. plus I.P. = (a) 2 months' (b) 4 months'

Theoretically, immediately the lower figure (which constitutes the provision action figure) is reached, a fresh demand is submitted for such a quantity as will bring stocks plus dues-in up to the higher figure.

Meanwhile the stores on the last demand or the last demand but one should arrive, thus preventing stocks plus dues-in from falling below provision action figure, and the actual stock from falling below the S.M.

17. (a) The stocks, in the case of a short sea voyage, will theoretically fluctuate between

S.M. plus M.F. = 2 months'
and

S.M. = 1 month's

(b) For a long sea voyage, stocks will theoretically decline, during the first month, from

S.M. plus I.P. = 4 months'
to

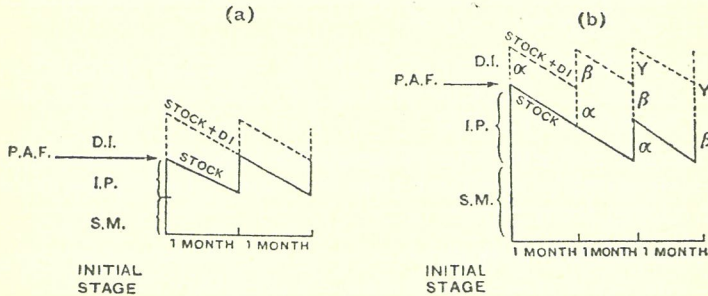
S.M. plus M.F. = 3 months'

Thereafter, stocks will fluctuate between

S.M. plus M.F. = 3 months'
and

S.M. = 2 months'

(c) The following diagram will help to make this clear :—



$\alpha, \alpha, \alpha, \beta, \beta, \beta$ show rise in stock as dues-in materialize.

(iii) Base reserves.

18. As early in the campaign as practicable, D.O.S. will advise D.Q.M.G. on the subject of base reserves of selected important items to be held as a safeguard, and to be maintained intact at the disposal of G.H.Q. at the base ordnance depot.

He will communicate his decision to A.D.O.S., P., usually in terms of monthly wastage—for example, “base reserve of 1 month’s (or x days) wastage will be held”—or in terms of a percentage of the total equipments to be served—for example, “base reserve of x per cent. of tanks will be held.”

The war box of D.O.S. contains a list of percentages laid down by the War Office in peace.

19. If the reassessment of a “base reserve” of any item reduces the quantity held (apart from that base reserve) below the provision action figure (see Sec. 28 (iv)), a demand will be sent home forthwith.

In the case of items other than the selected important ones of which a base reserve is specifically ordered to be held, maintenance stocks only will be held.

20. The main considerations governing the size of the base reserve, and of the store margin, will be:—

- (a) the distance from the source of supply, and hence the time taken to get replenishments from home;
- (b) vulnerability of the sea communications; that is, whether they are likely to be interrupted;
- (c) the nature of fighting to be expected; for example, whether heavy losses of equipment are likely;
- (d) nature of the country in which operations are taking place;

- (e) importance of the item with regard to fighting efficiency;
- (f) liability to abnormal wear or wastage during intensive operations—for example, gun liners; particularly those of which maintenance requirements are normally small.

21. Besides the base reserve, other prior charges may be established, including:—

Appropriations: Stores set aside for issue to individual units in certain cases—for example, units in process of formation; or units whose armament is about to be changed.

Deposits: For example, stores withdrawn from individual units, but set aside for re-issue later.

The whole of such prior charges are lumped together under the heading “earmarks.” (See Sec. 38, para. 32).

22. Once a quantity of stores has been set aside as an earmark it will, if practicable, be physically separated from the remainder of the stock. If this is not practicable, some other method may be used to indicate that is segregated—such as lines marked on the floor or coloured battens inserted in a stack.

It will also be removed (by transfer voucher) from the main account into a special “earmarks” account. (See Sec. 37, para. 15 (vi).)

It will not be taken into account in provision calculations.

Therefore, when the words “account” or “balance” appear in the following pages, they will not refer to the earmarks account or earmarks balance unless a specific indication to that effect is given.

Section 27.—Local Purchase.

1. Local purchase or requisitioning of stores will normally be initiated and carried out by the A.D.O.S., P.

2. The inspection of stores obtained in this manner will be effected on behalf of the C.O.O. by the group officer or, where an expert technical opinion is required, an O.M.E.

3. Instructions regarding delegation of financial responsibility for local purchase will be published in General Routine Orders and these will permit purchases being effected both by the A.D.O.S., P. and the C.O.O.

To avoid overlapping of responsibility, it is better that the C.O.O. should not purchase or obtain stores without the intervention of the A.D.O.S., P., but in special circumstances the former officer must have limited powers in this respect.

If in any circumstances the C.O.O. effects purchase independently, he will inform the A.D.O.S., P. of the action taken.

The A.D.O.S., P. will keep a record of all requisitions and local purchases made by ordnance officers other than C.O.Os.

4. Lists of firms of repute, with the class of stores that they are able to supply, and list of stores with the firms that are able to supply them, will be maintained, as in peace, on the card index system. Consuls and local chambers of commerce can be asked to assist in their compilation.

5. Small quantities of stores purchased may be conveniently delivered direct to a L.P. receipt store of the local purchase office, but large quantities should go direct to the group.

6. The regulations for the purchase of stores by competitive tender will be adhered to as far as practicable. Forms may require to be simplified and printed in the vernacular, and an interpreter permanently posted to the local purchase office.

Section 28.—Principles of Provision.

(i) General.

1. Provision in war is conducted on the same general principles as provision in peace.

There are, however, certain important differences:—

(a) The maintenance figure in war represents one month's requirements instead of (for most stores) one year's.

(b) Under-provision in war is more dangerous than in peace, because operations may be affected.

Over provision, however, is undesirable. Although owing to the more rapid rate of consumption in war surpluses can be absorbed more readily, over-provision leads to over-production at home, and waste. It may also involve serious congestion in store.

(ii) Maintenance figure.

2. The maintenance figure, as in peace, is the basis of provision.

It is assessed, for each item, by a provision officer. It represents the troops' anticipated requirements for one month (see para 1 (a)).

It is calculated on the trend of past normal issues, modified by such known factors as:—

(a) information from the D.O.S. (see Sec. 25);

(b) information from indent clerks or D.A.Ds.O.S. of formations (see Sec. 10, para. 5);

(c) climatic changes which may affect consumption of stores—for example, approach of winter, with consequent demands for winter clothing.

3. At the beginning of a campaign, maintenance figures based on past issues will not be available.

Estimated figures, based on estimated war wastage as calculated in war reserves schedules, will be used instead.

Provision officers will modify these figures at their discretion, according to their information regarding the situation and the varying requirements of the troops, until sufficient figures of actual issues are available to form a basis of calculation.

4. Any change in the factors mentioned above (para. 2) or any notable change in the trend of issues may necessitate a revision of the maintenance figure.

(iii) Interim Period and Store Margin.

5. It has been explained above that, at the beginning of the campaign, the D.O.S. decides on the interim period and the store margin.

These two factors can only be based upon the estimates of wastage prepared by the War Office.

6. As soon, however, as it is possible for a provision officer to arrive at a maintenance figure, this becomes the basis for the interim period and store margin factors. They are always multiples of the maintenance figure.

Thus, in a campaign involving a long sea voyage (see Sec. 26), the interim period would be $MF \times 2$ and the store margin normally would be $M.F. \times 2$ also.

7. It follows therefore that, as in peace, whenever the maintenance figure is altered the quantity of stores required for the I.P. and S.M. will also be changed.

(iv) Provision Action Figure.

8. The sum of the I.P. and S.M. is the total below which it is not safe to allow stocks to fall without taking action to replenish them.

This total is called the Provision Action figure.

9. When the balance as shown on the account card (see Sec. 37, para. 15 (vi)) reaches that figure, it is necessary to bring this fact to the notice of the provision branch (see Sec. 38, para. 44), and thus initiate a review (see (vi)).

(v) First Provision Signal.

10. It will be found on active service that certain stores require special attention from the provision point of view; either because normal issues fluctuate violently or because provision officers have reason to foresee that they may do so, in consequence of the factors mentioned in para. 2.

Provision officers will therefore indicate to their staffs (by means of a "flag" or mark on the account card. See Sec. 37, para. 15 (vi)) that, with regard to these items, a warning earlier than the P.A.F. is essential.

This takes the form of the First Provision Signal (F.P.S.) given when the balance as shown on the account card reaches the total of P.A.F. and $\frac{1}{2}$ M.F.

As the M.F. represents the **anticipated** total normal issues for a month (para. 1) it follows that, when half of these are exhausted, the total normal issues (T.N.I.) will equal $\frac{1}{2}$ M.F.

(Note.—T.N.I. is recorded from one review to the next: the only information required being the issues since the item last came up for review.)

Therefore the moment for the F.P.S. is when the balance falls to P.A.F. plus T.N.I. (both of which figures are recorded on the account card).

The method by which the F.P.S. is given is described in Sec. 38, para. 45.

If, after the passing of the F.P.S., delay in the replenishment of stocks causes the balance to fall to the P.A.F., this fact is notified in the manner described in para. 9.

(vi) Review.

11. The purpose of a review is to ascertain the quantity to be demanded, to bring the balance plus dues in up to the total requirements for the liability period (see Sec. 26, para. 13).

12. It must be remembered, however, that the review may be the occasion for the fixing of new maintenance figures (see para. 4). The P.A.F. is adjusted accordingly. The method of notifying a new P.A.F. is shown in Sec. 38, para. 45.

13. The facts necessary to enable a provision officer to carry out a review are presented to him on the provision review form (P.R.F.)—A.F. G 920. It contains an up-to-date record of receipts and the latest dues in. P.R.Fs. will be kept by vocabulary sections in order of part or catalogue number.

14. The liabilities are ascertained by multiplying the maintenance figure by the liability period.

15. The assets are ascertained by adding the balance and dues-in.

16. The difference is the quantity to be demanded.

17. Two examples of a review are given below.

In these examples it is assumed that D.O.S. has fixed the interim period at 2 months and the store margin at 2

months. As explained above, the maintenance period in war is always 1 month. The liability period therefore is 5 (months).

It is assumed that a maintenance figure of 200 has been laid down for the item under review. The provision action figure (I.P. plus S.M.) is therefore 800.

On the date in question the balance has fallen to 650. As this is below the P.A.F. a review is called for.

EXAMPLE (i).

The provision officer, reviewing the trend of recent issues and the latest information in his possession, decides that the maintenance figure of 200 is adequate.

Liabilities (maintenance figure × liability period: that is 200×5)	1,000
Assets	
balance 650	
dues in 110	
—	
to be demanded	240
	760

EXAMPLE (ii).

The provision officer, reviewing the trend of recent issues and the latest information in his possession, decides to raise the M.F. to 300.

Liabilities (300×5)	1,500
Assets	760
	740

18. In theory, if a review is called for directly P.A.F. has been reached; if consumption has been normal; and if M.F. has been accurately fixed, the quantity to be demanded should be one month's supply.

Conversely, if consumption has been normal, if earmarks have remained constant, and if M.F. has been accurately fixed, the P.A.F. will be reached just one month after the date of the last review.

19. In practice, however, fluctuations of issues, and the consequent fluctuations in the total requirement for the liability period, often necessitate a demand larger than the M.F.

20. Demands for less than the M.F. will not be submitted. Even though the quantity required is less than this, a full month's M.F. will be demanded.

21. It will be seen that the necessity for a review may arise in several ways:—

- (a) by reduction of the balance to or below P.A.F.
- (b) by a sharp upward trend of issues, even though the P.A.F. has not yet been reached.

The F.P.S. (first provision signal) is expressly designed to deal with such a case. It calls for a special review. This will, where necessary, lead to a revision of the M.F., as a result of which the balance will be found to be below the new P.A.F.

- (c) by receipt of instructions from D.O.S. or information from other sources regarding anticipated heavy wastage, or increases in scales of equipment.

22. In order to ensure that no items are overlooked, and to bring to light any surplus or obsolete stocks, provision officers will periodically scrutinize all items which have not been reviewed for three months. If in doubt they will initiate a review.

23. Reviews will always be initiated when an order is received authorizing the issue of a new pattern of store or an increase in scale of existing equipment.

This will be a "special" issue, and the resulting demand on home must be marked "special" accordingly.

Care must be taken to prevent such "special" issues being included when the maintenance figure is being calculated (see para. 2).

Any subsidiary connected stores or spare parts must be reviewed at the same time.

24. It is particularly necessary to watch the provision of materials and components demanded either for the first time, or in unusually large quantities, for unexpected repairs or conversion owing to any part of an equipment becoming defective.

It may be that such components and materials may be used extensively for a short period and then the service may cease. Over-provision may result if the question is not watched and issues dealt with as "special."

25. When a special review is initiated by a provision section the provision clerk concerned will extract the information for review from the account card himself. The account card clerk will not be required to provide this information. Otherwise his output would be slowed down.

Section 29.—Co-ordination.

1. If the main stocks of stores controlled by A.D.O.S., P. are located in more than one depot, he will take steps to co-ordinate provision of important items as may be necessary.

2. At any local depot that may be opened in the L. of C. area, there will be a provision branch in which demands on Os. i/c P. will be prepared, and provision review forms will be used, as in the base ordnance depot.

Reviews will be initiated on the same basis as base ordnance depot reviews.

Demands from such local depots will be sent to the O. i/c P. direct, and be approved for issue by him. The reason for this is that he requires to have immediate information of large demands, and he may need to apportion supplies when stocks are low.

Section 30.—Provision Position Returns.

1. For stores of vital importance, such as guns, machine guns, mechanical vehicles and certain items of bulk issues, it may be necessary that the provision position be clearly and regularly watched no matter what the stock position may be.

At stated times, provision clerks will extract review information for these items from the account cards on to their P.R.F's. and will submit these to provision officers in order that they may consider whether further provision action or hastening action is to be taken.

2. When necessary A.F. G918 (provision position return) will be submitted to A.D.O.S., P. for special action. A provision position return will be used once only.

Section 31.—Demands on Home.

1. When the quantity to be demanded has been decided upon (which quantity will be a multiple of the numbers packed in standard packages when this applies) provision officers will formulate their demands on home.

These will be made out on A.F. G 984, the designation and quantities being filled in from the completed review forms.

In addition to this the maintenance figure will be shown against each item, so that the A.P.O.O. at home, by using this figure, can stock the central depots at home in anticipation.

2. The demand on home will be given a control number (see Sec. 37, para. 15 (i)); entered on the receipt control sheet and despatched by post or telegram according to the urgency. When demands have been telegraphed, A.F. G 984 will be posted in confirmation.

Five copies of demands will probably be required. The distribution will be as follows:—

3 direct to the A.P.O.O. concerned, at the relative central ordnance depot;

1 to the D.O.S. (if he so directs);

1 put away by provision clerk in order of control number.

The A.P.O.O. concerned will send one copy to the M.G.O. branch concerned for information and record, and will order issue except in the following cases:

(a) any abnormal demand;

(b) a demand for major items of equipment.

In these cases, the copy of the demand referred to the War Office will be stamped "Referred for decision. No issue action taken."

3. Should D.O.S. order stores from home by letter or telegram, which may occur when new issues or extended scales of issue are authorized, the provision officer concerned will send home a demand clearly marked in red, "Covering demand, see D.O.S. letter", and will take care that the dues-in entries are not duplicated.

Covering demands will also be necessary when demands are sent by telegram, as mentioned in para. 2 above.

Section 32.—Receipt of Stores.

1. The provision clerks will receive the vouchers from home depots (see Sec. 68), so that they (i) may avoid hastening articles already despatched, (ii) may be in a position to inform D.O.S. when necessary of the state of supply, and (iii) may be able to mark up their own records on the provision review forms.

Under active service conditions:—

(a) vouchers and stores may arrive simultaneously;

(b) vouchers may arrive before the stores;

(c) stores may arrive before the vouchers.

Thus in case (b), if vouchers were posted in the account card and recorded in the provision review form, the position of stocks and dues in would be incorrectly shown.

2. These varying conditions will be met by the following procedure:—

(i) Receipt vouchers will not be posted on bin cards until the items have been received into the storehouse.

(ii) The provision clerk will give each receipt voucher a sub-number, indicating whether it is the first (second, etc.) supply against the demand concerned.

He will enter on his copy of the demand the sub-numbers he has given to successive vouchers.

He will sort the vouchers into vocabulary sections, and post them in pencil in the appropriate P.R.Fs. This posting will not be con-

firmed in ink until he has received notification of the actual arrival of the stores (see Sec. 38, para. 66).

- (iii) When stores are received without vouchers, they will at once be taken on charge by certificate receipt voucher, and the provision clerk will be notified as laid down in Sec. 38, para. 57.

3. Local purchase orders will be numbered in the same way as demands.

If delivery direct to group is ordered (see Sec. 27, para. 5) a copy of the local purchase order will be sent to the storehouse. This serves as an advance notification, by means of which the receipt storeman can identify supplies as they are received from the contractor.

If delivery to a local purchase receipt store is ordered, the copy of the local purchase order will be sent to the storehouse concerned with the goods.

4. Inspection Note (A.F. G 1026) will be made out (3 copies) in the local purchase office, quoting the local purchase order.

Inspection will take place in the group.

After inspection, copy No. 3 will be passed to the provision clerk concerned. He will post the relative P.R.F. in pencil and give the inspection note a sub-number indicating whether it represents the first (second, etc.) supply on the local purchase order concerned. (See Sec. 38, para. 52). He will mark the inspection note for the final supply "completion." He will return No. 3 copy to the storehouse.

The accounting procedure in connection with inspection notes is described in Sec. 38, para. 55.

Section 33.—Provision at an Advanced Ordnance Depot. (If formed.)

1. The D.O.S. will instruct the A.D.O.S., P. and the C.O.O. advanced ordnance depot what store margin is to be held.

2. Os. i/c P. will stock the depot without demand and will prepare a provision review form for each item sent, showing the provision action figure, store margin and interim period.

3. When stocking the depot, in order to give provision a fair start, Os. i/c P. should send forward sufficient stocks to cover the store margin, plus the interim period, plus the predetermined maintenance figure, so that when the depot begins to function reviews will be initiated at the proper time.

4. The procedure will be the same as that laid down for the base ordnance depot except that demands to replenish stock will be submitted to Os. i/c P. at sub-depots of the base ordnance depot.

CHAPTER IV.

SUPPLY OF ORDNANCE STORES
(OTHER THAN AMMUNITION).

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Section 34.—System of Supply—General.

1. Efficient maintenance of the war equipments of units depends upon:—

- (a) Proper care and maintenance of their equipment by units' own personnel. This includes not only taking normal precautions to prevent deterioration but also, on the "stitch in time" principle, undertaking replacement of unserviceable components and minor or first line repairs (see Sec. 41).
- (b) Rapid action by the R.A.O.C. to replace lost and unserviceable equipment and to repair or replace equipment when the repairs are beyond the resources of the unit (see Chapter V).

2. Stores required by units will be supplied direct from base ordnance depot in response to detailed indents, which will be prepared by units on A.F. G 994, in duplicate, if practicable (or on any piece of paper). Brigade warrant officers will collect indents daily and submit them to D.A.D.O.S. for scrutiny. In urgent cases, telephone messages or telegrams will be accepted.

3. The indents will normally be despatched by the D.A.D.O.S. to the O.O. of the appropriate sub-depot at the base ordnance depot, for supply through the normal channel (see Plate I). A.Ds.O.S., corps will issue instructions, varying according to the circumstances of the campaign,

whereby urgent demands for complete vehicles and certain other stores (see Sec. 35) may be passed to ordnance field parks for immediate issue by them.

4. The stores will be sent up by the daily pack train from the base ordnance depot in separate parcels or packages addressed to individual units (except in the case of stores addressed in bulk to the D.A.D.O.S.).

The packages for the units of each division or similar formation will be loaded into separate wagons on a brigade group basis. It may be practicable to institute a system of marking the four brigade groups' stores with splashes of different colours to facilitate identification and sorting at railhead.

In each wagon there will be placed three copies of the waybill and a package card for each unit (see Sec. 37, para. 15 (x)).

5. On arrival at railhead the stores will be off-loaded by the R.O.O's. staff, and the waybills will be cleared.

Waybills will be dealt with as follows:—

No. 1:—retained by the R.O.O.

No. 2:—receipted and returned to the base ordnance depot; any damages or deficiencies being noted thereon.

No. 3:—sent to the D.A.D.O.S. concerned, as advance notification of the arrival of the stores.

The stores will be loaded by the R.O.O's. staff into the R.A.S.C. supply companies lorries allotted for ordnance stores, the packages for the units of each brigade group being put into separate lorries. R.A.O.C. personnel attached to the R.A.S.C. companies will accompany lorries to bulk-breaking point or points, taking the package cards for the units for his brigade group.

6. At bulk-breaking point or points, where the R.A.S.C. supply lorries are re-loaded on a unit basis, R.A.O.C. personnel will distribute the packages and package cards to each of the unit lorries, and will hand them over to the R.A.S.C. loaders, to be taken forward for final delivery to units at the various delivery points.

On arrival the R.A.S.C. loaders will obtain receipts from units' representatives on the package card. These receipts will be collected under R.A.S.C. arrangements and handed to R.O.O. at the earliest opportunity.

Both copies of the voucher will be receipted by the unit after the stores have been checked in detail, and handed to the D.A.D.O.S. or his representative at the first practicable opportunity.

D.A.D.O.S. will attach No. 4 copy to his indent. He will despatch No. 3 copy to the sub-depot concerned.

7. The three receipts thus obtained serve the following purposes:—

- (i) The waybill gives the traffic centre of the base ordnance depot a receipt for the contents of the wagons sent to the railhead.
- (ii) The consolidated package card gives, successively, the R.A.S.C. loader, the R.O.O. and the traffic centre of the base ordnance depot a general receipt for the whole of the stores consigned to an individual unit on one pack train.

Owing to the conditions of active service—which may involve handing over in the dark, in any weather conditions, and possible interruptions by air attack—no more detailed receipt can be expected during the actual transit of stores.

- (iii) The voucher—which can be scanned under better conditions and returned to the base ordnance depot by post or D.R.L.S.—provides the B.O.D. with a detailed receipt for individual items.

Thus the complete set of documents which serve to clear the account of the subdepot comprise—

(i) No. 1 (retention) copy of the voucher.

(ii) Package card.

(iii) No. 3 (unit's receipt) copy of the voucher.

and the aim will be to present these three, linked together, for audit purposes.

If, owing to the exigencies of active service, items (ii) and (iii) should not reach the base ordnance depot within a reasonable time, item (i) linked with the appropriate waybill will, in default of better evidence, be accepted as a clearance to the account.

8. The procedure in the last three paragraphs applies essentially to stores which are not too big to be carried in lorries. Stores such as complete guns and carriages, or vehicles, will be collected by units from railhead, if unit drivers and tractors are available; if not, R.A.S.C. will make special arrangements for delivery to the unit.

9. Stores which, on delivery to a unit, are not required will be handed over to the D.A.D.O.S. of the formation for issue to other units or to be reconsigned to the base.

Packages so returned, and packages reconsigned to the base owing to a unit having moved out of the area, will always be accompanied by package cards.

Section 35.—Ordnance Field Parks.**(i) Organization**

1. Ordnance field parks, which are semi-mobile units, provide:—

- (a) advanced holdings of certain “A” and “B” vehicles for replacement purposes;
- (b) assemblies and spare parts of “A” and “B” vehicles and equipments such as are normally required by mobile workshops for repair purposes. From these, urgent indents from units can be met.

They are organized on the following basis:—

Headquarters and Reserve Section. The replacement vehicles held by each reserve section are organized into three convoys for purposes of movement.

Two sections, each supplying the field workshop allocated to a division, and associated corps troops.

Two sections, each supplying a divisional workshop.

Certain ordnance field park sections will operate independently, catering for—

G.H.Q. troops workshop.

Each mobile division workshop.

2. The initial holdings of an O.F.P. reserve section will be on the following lines:—

(a) Complete vehicles.

A percentage of “A” and “B” vehicles for replacement purposes.

(b) Assemblies and stores:—

- (i) Complete armament if ordered by G.H.Q.
- (ii) Complete wireless sets and other signalling equipment. Reserve of cable.
- (iii) Any other stores specially ordered by G.H.Q.

These holdings constitute a forward portion of the stocks of the base ordnance depot, and will be modified as a result of experience as the campaign progresses.

They are primarily intended to meet normal workshop requirements in the field and units' really urgent requirements of certain classes of stores, which cannot be met sufficiently rapidly through the normal channel of supply.

In certain circumstances, however (for example, if stores have been accumulated at parks to meet anticipated heavy and urgent requirements), the A.D.O.S. corps may instruct D.A.Ds.O.S. of divisions to demand direct on the park.

In such a case the A.D.O.S. may retain control of the issue of any items where he considers such action necessary.

With few exceptions, such as wireless vehicles and field artillery tractors, the vehicles held in the O.F.P. reserve section are load-carrying non-technical vehicles. The numbers of technical vehicles are too small and the types too diverse to justify their being held. A non-technical vehicle can be issued in lieu as a temporary measure.

3. The location of the O.F.P. reserve section will be necessarily well back, for reasons of security; probably in the vicinity of railhead.

4. O.F.P. sections, including the special sections for G.H.Q. troops and mobile divisions, will be located normally alongside their formation workshops and will move with them.

Their holdings will consist of assemblies and spare parts of the vehicles, armament, etc., operating in the area served by their formation workshops.

Their primary function is to supply the formation workshops with assemblies and spare parts but their stocks are also available to meet really urgent indents from units and L.A.Ds. which the D.A.D.O.S. considers cannot be met in sufficient time through the normal channel of supply.

5. In addition, certain O.F.P. sections carry stocks of charged secondary batteries, and are provided with auxiliary charging sets carried in lorries.

The secondary battery charging and store lorries are fitted with shelves and bus bars to which the terminals of the batteries can be temporarily connected, so that the batteries can be charged without moving them and can travel without special preparation or further packing.

(ii) Procedure.

6. All field park stocks will be replenished from the base ordnance depot, through the normal channel of supply, by means of demands submitted direct to the base ordnance depot.

7. Normally units will send their own drivers or transport to the O.F.P. section for what they require, but the O.F.P. sections have drivers and transport available for delivery of stores to units, either through bulk-breaking points or direct to delivery points, as may be convenient.

Full use, however, should be made of the R.A.S.C. transport organization for the delivery of stores to units, on the same lines as delivery from railhead.

Indents for complete vehicles will state whether a driver is being sent to take over the vehicle.

8. All vehicles and stores issued initially to ordnance field parks by a base ordnance depot will be vouchered on single item field vouchers (A.F. G 1060). Subsequent demands will show whether they are initial or replacement requirements.

A.F. G 1060 will serve the field park for all accounting purposes. No. 2 copy, bound in a loose-leaf binder, will become the stock record. On it will also be recorded the dues in and dues out.

When No. 2 copy is filled, entries will be carried on to A.F. G 1060a (continuation sheet).

Storemen in charge of lorries will keep their own stock records. As soon as possible, they will obtain the bin and shelf references for every item in their lorries, and insert them in the stock records as location references.

9. Replacements for issues of important items such as vehicles and stores in the following list will be demanded at once, but initially, a P.A.F. of half the quantity originally authorized will suffice for other stores:—

- (i) Artillery:—recuperators, loose liners, directors, sights and fire directing instruments.
- (ii) "A" and "B" vehicles:—engines, gear boxes, front and rear axles, springs, radiators, ignition assemblies, wheels and secondary batteries.
- (iii) Signals:—wireless sets, valves, accumulators, generators, fullerphones, and their component parts, cable and other air-line stores.

10. Issues of vehicles and assemblies will be reported direct by wire (repeated to G.H.Q. census branch) to the census branch at the base ordnance depot. At the base these wires will be passed to the provision section concerned and used as demands for replacements.

11. Each O.F.P. section will carry in its office truck:—

- (a) Parts lists.
- (b) Location index consisting of No. 5 copy of A.F. G 1060 filed in numerical sequence of part numbers by sections. The lorry in which each item is packed will be shown in the index.
- (c) Control register containing only one series of numbers for both receipts and issues.
- (d) Guard book for receipt and issue vouchers.

12. Indents in duplicate will be brought to the office truck, registered, checked and located to the lorry concerned.

13. The storemen in the lorry will make the issue, post the indent in his account and obtain a receipt for the stores on a copy of the indent which will be returned to the office truck and filed in the guard book.

14. When stock reaches P.A.F. the storeman will insert the initials "P.A.F." on the copy of the indent sent to the office truck; at the same time "flagging" the A.F. G 1060 concerned. Once a day a provision clerk from the office truck will inspect all binders, taking with him the marked indents, and will take particulars, from each flagged folio, to guide provision action.

The clerks in the office truck will then submit indents on the base ordnance sub-depots direct.

Section 36.—Base Ordnance Depot—Siting and Lay-out.

(i) General.

1. An outline of the general arrangements of a base ordnance depot is given in this and the following sections.

It refers particularly to a depot having railway and road facilities, and in touch with shipping services.

It can only be taken as a general indication of the lines on which a base ordnance depot will be organized. Considerable variations may be necessary to meet local conditions.

2. In view of the probability of air attack, the base ordnance depot will be subdivided.

The method of subdivision will depend upon numerous factors, including:—

- (a) Nature of terrain: for example, whether it is broken by hills, rivers, etc.
- (b) Railway facilities which are, or may become, available.

3. A typical lay-out will be as follows:—

- (a) The central office of the Chief Ordnance Officer including that of A.D.O.S., P.
- (b) No. 1 (M.T.) sub-depot divided into:—
 - (i) M.T. stores group.
 - (ii) Vehicle group.
 - (iii) Returned vehicle park, which normally will be located alongside the M.T. portion of the base workshop.
- (c) No. 2 (general stores and clothing) sub-depot, divided into two groups.
- (d) No. 3 (vote 9 stores except M.T.) sub-depot, divided into two groups including a gun park in one of them.
- (e) Returned stores depot (see Sec. 39) which will include the following:—
 - Textile repair shop.
 - Boot repair shop.
 - Anti-gas repair shop.

(f) Workshops (see Sec. 44). The base ordnance workshop will be subdivided into sections corresponding with (b) and (d). These will be located in the neighbourhood of the sub-depots they serve.

(g) Traffic centre.

4. It may be found possible and desirable, when reviewing the factors mentioned in para. 2, to place the C.O.O.'s office, and that of the A.D.O.S., P., alongside one of the sub-depots. Similarly, the traffic centre may be located alongside whichever sub-depot is likely, according to the nature of the campaign, to issue either the largest quantities of stores, or the heaviest loads; or it may be sited centrally.

5. Normally, at the beginning of the campaign, the workshop attached to No. 3 sub-depot will also carry out such workshop repairs as are necessary for No. 2 sub-depot. Should considerations of distance, or volume of repairs, make this impracticable, it will be necessary for a workshop to be established for, and alongside, No. 2 sub-depot.

6. The C.O.O. will be responsible for the general organization and control of the base ordnance depot as a whole. He will be assisted by a D.C.O.O.

7. Each sub-depot will be under a separate O.O., who will be assisted by a suitable staff of officers and other ranks R.A.O.C. (see Table VIII).

Details of the suggested method of allotting this personnel to various duties are given in the war box of the C.O.O.

Labour and guards as required will be obtained under the direction of the local commander.

Particulars of the covered accommodation required for certain forces will be found in Table V.

8. Each sub-depot will be self-contained as regards accounting, and will have its own control organization which may be sub-divided as regards certain functions.

9. If an advanced depot should be instituted (see Chapter I, Sec. 1), it will be governed by the same principles and details, as far as applicable, as are laid down for the base ordnance depot.

Orders will be published when the advanced depot is opened as to the extent to which it will take over the detailed functions of the base depot.

10. If it should be necessary to establish other ordnance depots on the L. of C., they will be organized and worked on the same lines as base ordnance depots, as far as local circumstances permit.

(ii) **Siting and Lay-out.**

11. The procedure for selecting the site upon which a permanent base ordnance depot is to be built is laid down in the Manual of Movement (War), Sec. 58. The following factors govern the choice of a suitable site:—

- (a) The ground must be reasonably level and must not be subject to flood.
- (b) Ample room for subsequent expansion must be allowed in and around the sub-depots from the beginning.
- (c) Convenience of railway construction and working must be ensured.

It may be necessary to site a permanent depot several miles away from the docks. It must not in any case be established within the docks area (see Manual of Movement (War)).

- (d) Freedom from interruption by the working of other services is essential.

12. The completion of a base depot will involve extensive constructional operations by the works and transportation services.

To cover the needs of the actual embarkation period, it may be necessary to use some of the sheds in the docks area for the initial maintenance of troops.

This, however, will be avoided if possible, as it must add to the inevitable congestion of the docks area.

13. A temporary site may be taken over at the beginning of the campaign, for use until work is far enough advanced for the permanent base depot to function.

In such a case, most of the stores will have to be stored in the open, with waterproof covers as necessary.

Existing buildings, huts or tents will be essential to provide cover for offices and for the detail work of groups; that is, for packing space, and for racks for small stores and remainders of such packages as may be opened in making detail issues.

14. Every effort will, however, be made to avoid the establishment of a temporary depot, and to establish a base ordnance depot at once on its permanent site, even though this involves, for a time, the use of temporary and improvised accommodation.

15. The following points affect the planning of the permanent ordnance base depot:—

(a) **General.**

- (i) Room for expansion of each sub-depot is of the highest importance.

The original lay-out should be such that expansion to the maximum that can be expected will be made, without upsetting the organization and efficiency of the lay-out.

Dispersal of stores, to minimize the risk of total destruction by air attack, is an important factor in planning the lay-out (see Sec. 57, para. 21).

- (ii) The normal flow of work should be in one direction only, so that work does not traverse the same route twice. For example, work should flow:—

From the receipt side of a storehouse, to the stack, to the packing place, to the issue bay, to the issue side of the storehouse.

In the returned stores depot, from the receipt shed to the sorting shed, to the repair shops and so on to the issue side of the R.S.D., for transit to the stores group concerned.

In the workshops the same principle applies.

- (iii) Storage in tents is expensive and inefficient. It will only be undertaken when huts and buildings cannot be obtained.

Stores which will not be handled daily are better stacked on good dunnage with waterproof covers.

- (iv) Lighting must be liberally provided; but special precautions are necessary to secure concealment from the air (see Chapter VII).

If the lighting is electric, alternatives for emergency use must be provided on a liberal scale.

(b) **Transit.**

- (v) The division of the base ordnance depot into sub-depots necessitates special transit arrangements to ensure that each pack wagon sent forward daily to the front shall be completely filled.

Normally, it is unlikely that any sub-depot, by itself, will issue sufficient stores to units of one formation to fill a pack wagon. Pack wagons will therefore have to be finally loaded, or reloaded, at a common traffic centre under the O.O. in charge of traffic duties. This may be situated alongside one of the sub-depots.

It is essential that this work should be done by the base ordnance depot, and not left to a regulating station, where much smaller resources in personnel, etc., are available, and where loss of a day may occur owing to the pack train going forward while stores are being reloaded.

The method adopted will depend upon:—

The situation of the sub-depots as regards railway facilities.

The number of wagons likely to be available.

The quantity of road transport available for purely ordnance purposes.

- (vi) One of the following alternatives will probably be adopted:—

Each sub-depot will load one wagon for each formation as far as possible. The part wagon loads will be amalgamated at traffic centre into complete wagon loads.

Each sub-depot will send its consignments by road to the traffic centre, which will then make up complete wagon loads.

It is, therefore, of primary importance that there should be short and easy access from issue and packing bays to the daily pack wagons and/or to a roadway.

- (vii) Space for open storage of miscellaneous stores which are frequently loaded should be available near each group, and near the pack-wagon issue line and roadway.

Open storage for bulky stores which are frequently loaded in complete wagon loads can be comparatively remote, on a parallel railway line.

- (viii) The length of railway lines, either at sub-depots or at the traffic centres, will be designed according to the number of wagons likely to be loaded or unloaded simultaneously.

The length of an average railway wagon can be taken, for this purpose, as 30 feet; although wagons at home are only about 20 feet long.

- (ix) Crossing lines of traffic will be avoided as far as possible.

- (x) A transit strip, from 30 feet to 10 feet wide according to circumstances, should be kept entirely free from stacks and stores alongside each working line.

Stores will on no account be stacked within 5 feet of any running line.

- (xi) Ramps, side and end loading, should be provided for the vehicle and gun parks.

- (xii) Lines for cranes to work upon, without blocking loading lines, are highly advisable.
- (xiii) Roads must be good and sound.
- (xiv) Internal traffic pathways should be as smooth as possible.
- (xv) Wherever a regular flow of traffic along fixed lines within a sub-depot is anticipated, a system of narrow-gauge tramways should be installed.

This can be supplemented by gravity rollers.

(c) Air and Fire Precautions.

- (xvi) Two factors are of paramount importance in the lay-out of a depot.

The first is to secure ease and speed of working. The second is to minimize the results of air attack.

- (xvii) Detailed instructions for securing the second objective will be found in Chapter VII.
- (xviii) Water supply for fire fighting must be ample.
- (xix) "Fire Orders" and "Standing Orders for Air Raid Protection" (see Sec. 56) require to be carefully co-ordinated.

(d) Offices.

- (xx) Offices will be placed as near as possible to the storehouses with which they have to work.
- (xxi) It is important that, wherever possible, offices should be located in permanent buildings or hutments, so as to secure freedom from wind and dust.

Ample cupboard accommodation should be provided for the systematic arrangement of records.

Rooms or marquees should be well equipped with chairs and tables, and lighted electrically: alternative lighting being provided as mentioned in (a) above.

Every effort should be made to obviate cramping and liability to interruption by inclement weather, and to secure such conditions as will promote office efficiency.

(e) Personnel.

- (xxii) The camp for the R.A.O.C. of each sub-depot should be as close as possible to their place of employment, so that time may not be wasted in going to and fro. Recreation grounds should be considered.

Normally the officer deputed to command the R.A.O.C. at a base depot (see Chapter II, Note (ii)) will be located, with his administrative staff, at the largest camp.

If of field rank, the officer will exercise the disciplinary powers of a commanding officer as defined in King's Regulations.

- (xxiii) It is most desirable in the interests of efficiency to have labour camps alongside each R.A.O.C. camp to accommodate the minimum daily ordnance requirements.

Section 37.—Base Ordnance Depot:

Organization and Accounting.

(i) Organization.

1. In the following paragraphs a system of organization and working for a base ordnance depot is indicated in outline, but experience must be relied upon to devise the more detailed arrangements required to meet local circumstances and difficulties that cannot be foreseen.

The initial establishments laid down are similarly tentative, and will be modified to meet actual requirements.

2. The base ordnance depot will be divided into sub-depots (see Sec. 36). These may be several miles apart. Each sub-depot will have its own O.O.

The whole depot will be centrally controlled from the C.O.O's. office.

3. The general organization of the depot headquarters will be on the following lines.

- (i) Office of the C.O.O. and D.C.O.O.
- (ii) Cash and Establishments Branch.
- (iii) Traffic centre.

The case and establishments branch will arrange, on behalf of the C.O.O. for the transfer of personnel—military and civilian—between the sub-depots as required, and will pay any civilian personnel who may be engaged. This branch will also undertake cash transactions in respect of any local purchases made by the C.O.O. (see Sec. 27).

The functions of the traffic centre are detailed in Sec. 38 beginning at para. 81.

4. Each sub-depot will be organized on the following lines:—

- (i) Office of the O.O. and O. i/c P.
- (ii) Two groups.
- (iii) Transit branch.

Each group will contain several sub-groups, under store-holders. Each sub-group will consist of one or more vocabulary sections.

5. The initial grouping will be as follows:—

Sub-depot.	Group.	Vocabulary Sections.	Nature of Stores.
No. 1. (M.T.) Mechanical vehicles and spares.	I }	All L.V. and M.T. Sections.	Vehicles.
	II }		Vehicle spares and misc. M.T. stores.
No. 2. Camp and general stores and clothing.	III	All clothing sections.	Clothing and personal equipment.
	IV	A. D. E.3, 4, 5 F. G. H. J, K.	Miscellaneous general stores. Camp stores, etc.
No. 3. Vote 9 stores, except M.T.	V	M to P. Q.2 to U. (non-expl.) V.1. E.1.	Artillery stores and H.T. vehicles.
	VI	V.2 to Z. B. and C. E.2.	R.E. and R. Sigs. stores; small arms, bridging.

6. Groups will be organized on the following lines:—

- (i) Group office.
- (ii) Control (including indent and provision personnel).
- (iii) Storehouses arranged in sub-groups.

The group officer will have under him a control officer and in some groups a stores officer. He will also have a chief clerk. Provision officers will be located in the control office.

Each sub-group will be under a storeholder and will consist of one or more vocabulary sections.

7. The personnel of the control office will be divided as follows:—

- Registry clerks.
- Account card posting clerks.
- R. and I. clerks.
- Progress clerks.
- Voucher preparation clerks, and checkers.
- Stocktakers.
- Amendment clerks (where necessary in technical stores groups).

Each control office will be self-contained. It will have its own account with separate series of control numbers; and its own indent and provision staff.

8. The provision staff attached to each control office will be divided as follows:—

- Indent checkers.
- Provision clerks.
- Local purchase clerks.

(Note.—The functions of the indent checker are not part of the provision procedure, but belong to control. He is, however, located with the provision staff because the records which he and the review clerks alike require—parts lists, vocabulary, etc.—are so complex and subject to such frequent amendment that it would not be economical to keep them up to date in two separate branches.

Moreover, it is essential for the review clerk, by close liaison with the indent checker, to receive prompt intimation of abnormal indents.)

9. The personnel of each sub-group will be divided as follows:—

- “To follow” registry storemen.
- Receipt storemen.
- Selectors.
- Binners or stackers.
- Packers.
- Maintenance storemen.

Each separate function mentioned above will be supervised by a storeholder or a foreman responsible to the storeholders in charge of the sub-group.

A storehouse will not contain more than one sub-group; but a sub-group may be allotted more than one storehouse.

10. The sequence of the functions described in paras. 7, 8 and 9 will be seen in para. 16 and in Sec. 38.

11. The vehicle group (No. I) of No. 1 (M.T.) sub-depot is organized in a slightly different way from all the other groups, inasmuch as the location of stocks and their despatch are governed direct from the control office.

For this purpose the group is organized as follows:—

(i) Control, responsible for:—

Accounts.

Distribution of incoming vehicles into vehicle parks.

Allocation of vehicles for issue.

Despatch of outgoing vehicles in convoy.

(ii) Convoy section.

(iii) Vehicle parks:—equivalent in some degree to the storehouse side of other groups—concerned with the care, protection and equipment of all the vehicles in stock.

The vehicle park differs, however, from the storehouse side of other groups in that the location of stock is determined in the control office and the despatch of stock is undertaken by the convoy section.

Vehicle parks will keep no accounting records.

12. The convoy section is responsible for the actual collection and delivery of vehicles as instructed by control.

13. Each vehicle park will be controlled by an officer, assisted by a storeholder.

The personnel of each park will be divided to perform the following separate functions:—

Office duties.

Battery charging.

Receipts.

Maintenance.

Issues.

Driving.

(ii) **Apparatus and Documents.**

14. Each group requires, for the working of its control and issue system, the documents and apparatus shown below.

A detailed description of each item is given in para. 15.

(i) An automatic numbering machine, which gives one number to all the documents concerned in one transaction.

(ii) Receipt vouchers which bring stores to account on receipt in the depot.

- (iii) Receipt control sheet which registers, and shows the progress of, each voucher.
- (iv) Location index showing the location of each store in one vocabulary section.
- (v) Bin card—a record of the stock kept in the storehouse.
- (vi) Account card—a record of all transactions concerning a given item of stores.
- (vii) Posting slip—by means of which entries are made on the account card.
- (viii) Indent—a demand from a unit for ordnance stores.
- (ix) Issue control sheet—which registers and shows the progress of each indent and its resultant issue voucher.
- (x) Package card—showing all the packages for one unit.
- (xi) Issue voucher—addressed to the unit concerned on which the stores are written off charge.
- (xii) “To follow” card—a card record of items demanded by units which the depot is unable, at the moment, to supply.
- (xiii) Provision review form—which gives a current record of assets as compared with liabilities.
- (xiv) Demand—on which stores, in replenishment of the depot’s stock, are ordered from home.

15. Detailed descriptions of the documents and apparatus are given below. Those marked * will be prepared as far as possible by central ordnance depots in peace.

- (i) The automatic numbering machine merely prints numbers on the documents passed through it. A trip mechanism enables the same number to be repeated, so that all copies of all documents concerned in one transaction receive the same number.

The number so printed is called, throughout the transaction, the Control Number.

- (ii) Receipt voucher. A.F. G 982. This shows, among other details:—
 - Vocabulary section.
 - Part or catalogue number.
 - Designation.
 - Quantity.
 - Source of supply.

- (iii) *Receipt control sheet. A.F. G 880A.

This is kept in a loose leaf binder, in sequence of control numbers. It shows:—

Control number given by the *receiving* depot (see (i)); consigner and *his* control number.

Vocabulary section.

Number of items on the receipt voucher.

Record of the successive receipts arising out of each individual demand. (Hence, as each demand—see (xiv)—is put forward, it is entered on the receipt control sheet, in readiness for the successive supply of stores against that demand to be recorded.)

- (iv) *Location index. This consists of a number of detachable panels, holding separate slips, one for each item, arranged in order of part or catalogue number.

Each slip shows the number, designation and location of the item concerned.

It may only be possible in the initial stages to show location by buildings. As the depot becomes organized, further details will be added.

In No. I (Vehicles) sub-group only, the comparable information is kept in the form of a location *card* index; one index per vehicle park—one card per vehicle, filed by makes and types, in order of W.D. numbers.

- (v) *Bin card. Each stack or bin has its own bin card. It shows:—

Vocabulary section.

Part or catalogue number.

Designation.

Control number of each transaction, showing the quantity involved (whether receipt or issue) and the actual stock in the stack or bin concerned.

Thus for one item of stock there may be several bin cards. Each bin card will contain an indication that there is further stock elsewhere, the position of which can be found from the location index.

- (vi) *Account card. This shows:—

Vocabulary section.

Part or catalogue number.

Designation.

Each receipt and issue with control number and date.

Balance—that is actual stock less dues out.
Total number issued since last review (T.N.I.).
Provision action figure.

The account card is filed in such a manner that the first three items of information are always visible.

The account card will bear a “flag” or special mark in the case of items for which a First Provision Signal is required (see Sec. 28, para. 10).

In addition a coloured “flag” will be fixed to the account card, or a special mark made, to indicate that provision action has been taken (see Sec. 38, para. 37).

Separate account cards are used for earmarks. These may be of a different colour from those for the stock account.

Each “earmark” account card will be kept behind the “stock” account card for the item concerned.

(vii) Posting slip is carbon backed.

Each individual issue or receipt is posted on the account card through the posting slip.

Posting slips for issue and receipt transactions are distinguished by being in different colours.

After a transaction is posted, the posting slip is attached to the voucher concerned.

It thus enables the checker to verify the calculations on the account card, and to ensure that the entries on the account card and the voucher correspond.

It also serves as a means of notifying the provision branch that a provision review is necessary.

(viii) Indent. A.F. G 994 is the authorized form but a request for stores in any form, verbal or written, telegraphed or telephoned, will be accepted in case of need.

The indent, however, must give the most exact description which the circumstances allow of the item required; that is wherever possible the designation and mark both of the item required and the article of which it is a part: the vocabulary section and the part or catalogue number. In the case of M.T. items the make, type and W.D. number of the vehicle concerned should also be stated wherever possible.

In default of these particulars the most exact description possible should be given of the nature and function of the article required, which the ordnance officer concerned will then translate into the official designation.

The indent must also state:—

The unit.

Whether the store is required to replace an item expended, lost or rendered unserviceable owing to the exigencies of the service; or whether it is demanded as a first supply.

(ix) *Issue Control Sheet. A.F. G 880.

This is kept in the same manner as the Control Receipt Sheet. It shows:—

Unit.

Unit's indent number.

Issuing depot's control number.

Vocabulary section.

Number of items on the issue voucher.

Record of successive issues arising out of each individual indent. (Hence, as each indent is received, it is entered on the Issue Control Sheet, in readiness for the successive issues of stores against that indent to be recorded.)

(x) Package card.

These are of two kinds; (a) group package card and (b) consolidated package card.

Both give particulars of the packages addressed to one unit.

(a) The group package card bears a number (in group series). This becomes the package number. If there is more than one package on a card, sub-numbers will be given.

It shows unit; control number of the voucher concerned; description of package weight and date (as stamped by sub-depot *transit branch*).

The original is retained in the group as the basis for the certificate issue voucher writing off the packages.

The duplicate goes to the traffic centre where all the cards from different groups addressed to one unit are summarized on the consolidated package card.

(b) The consolidated package card is prepared in duplicate. It shows unit; pack-

age numbers: description of package, wagon number and date of despatch (as stamped by *traffic centre*).

The original is retained in the traffic centre with the relevant group package cards attached to it.

The duplicate goes to railhead (see Sec. 34, para. 6).

There it is taken over by the R.A.O.C. personnel attached to the R.A.S.C. supply column. At bulk breaking point they hand it, with the packages, to the R.A.S.C. loader detailed for the unit concerned.

At the delivery point the R.A.S.C. loader obtains on this card the unit representative's receipt (for packages only).

The cards are then collected, under R.A.S.C. arrangements, and handed at the first available opportunity to the R.O.O. at railhead, who returns them to the traffic centre of the base ordnance depot.

(xi) Issue Voucher. A.F. G 982. It shows:—

Issuing depot's control number.

Unit.

Vocabulary section.

Designation and part or catalogue numbers.

Quantity required.

Quantity to follow.

Whether the issue is "normal" or "special," together with particulars of packing and despatch.

Issue vouchers are designated "Part 1, 2, 3," etc., to indicate whether the issue which they record is the first issue against the indent concerned, or a subsequent issue made in accordance with the "to follow" procedure (see Sec. 38, para. 74).

Only Part I of any voucher is passed to the account card clerk.

Each issue voucher bears the word "FULL" or "COMPLETION."

If the whole indent is met on Part I of the voucher the word "completion" is erased.

If a further part issue is made, which still does not complete the transaction, both words are erased.

When one or more part issues have been made, the word "full" on the voucher for the final issue, is erased.

(xii) "To Follow" Card.

It is kept by vocabulary sections, in order of part or catalogue number. It shows:—

Vocabulary section.
Part or catalogue number.
Quantity due out on each individual indent.
Control number of the indent concerned.
Unit to which the stores are due.
Degree of urgency.

(xiii) *Provision Review Form. A.F. G 920.

It is kept by vocabulary section in order of part or catalogue number. It shows:—

Vocabulary section.
Designation and part or catalogue number.
Date of review.
Total normal issues since last review.
Anticipated normal monthly requirements.
Earmarks in detail.
Provision action figure.
Assets, including stores due in.
Quantities demanded as the result of each successive review.
Details of successive receipts.
Any special instructions affecting provision (see Sec. 28, para. 2).

(xiv.) Demand. A.F. G 984.

It is kept in order of control numbers. It shows:—

Vocabulary section.
Designation of stores with part or catalogue number.
Number of sheets and sheet numbers.
Whether a "normal" or "special" demand.
Maintenance figure.
Unappropriated stock including dues in.
Dues out (that is, when the stock shown is a minus quantity).
Whether local purchase is advocated.
Quantity required.
Quantity reported or received and date.

(iii) **Division of duties**

16. The apparatus and documents described in para. 14 and 15 are dealt with by the following personnel (see paras. 7, 8 and 9).

I. Control.

(a) **Registry clerk.**

- (i) Automatic numbering machine.
- (ii) Receipt voucher.
- (iii) Receipt control sheet.
- (viii) Indent.
- (ix) Issue control sheet.
- (xiv) Demand.

(b) **Account Card Posting clerk.**

- (ii) Receipt voucher.
- (vi) Account card.
- (vii) Posting slip.
- (xi) Issue voucher.

(c) **R. & I. clerk.**

- (ii) Receipt voucher.
- (x) Issue voucher (in case of discrepancies).

(d) **Progress clerk.**

- (ii) Receipt voucher.
- (iii) Receipt control sheet.
- (viii) Indent.
- (ix) Issue control sheet.
- (xi) Issue voucher.
- (xiv) Demand.

(e) **Voucher Preparation clerk.**

- (viii) Indent.
- (xi) Issue Voucher.

(f) **Amendments clerk.**

- (ii) Receipt Voucher.
- (iii) Receipt control sheet.
- (iv) Location index.
- (v) Bin card.
- (vi) Account card.
- (ix) Issue control sheet.
- (xi) Issue Voucher.
- (xii) "To follow" card.
- (xiii) Provision review form.

II. Provision.

(g) **Indent checker.**

- (viii) Indent.

- (h) **Review clerk.**
 - (ii) Receipt voucher.
 - (vii) Posting slip.
 - (xiii) Provision review form.
 - (xiv) Demand.
- (j) **Local purchaser clerk.**
 - (xiii) Provision review form.

III. Storehouse.

- (k) **"To follow" registry storeman.**
 - (ii) Receipt voucher.
 - (xi) Issue voucher.
 - (xii) "To follow" card.
- (l) **Receipt storeman.**
 - (ii) Receipt voucher.
- (m) **Selector.**
 - (iv) Location index.
 - (v) Bin card.
 - (xi) Issue voucher.
- (n) **Binner or Stacker.**
 - (ii) Receipt voucher.
 - (iv) Location index.
 - (v) Bin card.
- (o) **Packer.**
 - (x) Package card.
 - (xi) Issue voucher.

(iv) Storehouse organization.

(a) General.

17. Stocks will be arranged so that those most frequently handled are most easily accessible, and stores in which there are fewer transactions will be placed in the less convenient parts of the storehouse.

The issue bay of each storehouse will be placed near the door giving on to the line where the daily pack train for the front is loaded, and on an internal roadway.

Next will be the packing space, round which will be arranged the racks containing the small stores in most constant demand by units.

Ample space must be allowed for gangways.

18. Normally in view of air raid risks (see Sec. 57. para. 21) stores will be distributed within a group so as to minimize the likelihood of the entire stock of any item being destroyed.

For example, in the case of stores normally stacked, several stacks will be formed. From one (where the bin card will be located) current detail issues will be made.

Either this or another stack may take current receipts. If different stacks are used for issues and receipts, they may be recorded on a sub-bin card at the receiving stack, but it is essential that each receipt should also be recorded without delay on the main-bin card.

The main bin card will show total stocks (less earmarks which will always be shown on a separate bin card). It will also show the location of the other stacks. On each stack, the location of the bin card will be indicated.

As one stack is exhausted, issue will be made from another, while the original stack is replenished.

This dispersion should be so arranged as to secure, at the same time, the segregation of earmarked stock.

Should this not be feasible it will generally be advisable to indicate the earmarked stock by a physical line of demarcation, such as a chalk mark, a strip of canvas inserted in stack, or a separate bundle of small stores in a bin. In such cases quantity earmarked will be shown on the "stock" bin card.

19. The location system requires careful preparation before stores are binned or stacked initially. It will be based on reference to racks, shelves and vertical sections of the racks, stacks and sections of stacks.

Diagrams for planning the lay-out of racking and the method of erecting racks to conform to a location system are given in the publication "Steel adjustable racking (Ordnance Services)" contained in war boxes.

20. Whenever possible a central packing bay will be provided for a number of sub-groups or storehouses.

(b) M.T. Vehicles.

21. Mechanical vehicles forming part of ordnance stocks will, on arrival at the port of disembarkation, be taken over at the ship's side by a convoy section (see Sec. 37, para. 11 (ii)).

The convoy section, on arrival at the ship, will obtain from the Movement Control the vehicle shipment cards (see Sec. 70 (vi)) brought overseas by the master of the ship.

The vehicles having been disembarked, the convoy section will present the cards again to the Movement Control, drawing in exchange the authorized number of filled spare 2-gall. petrol cans which have been carried by the ship as deck cargo.

Each vehicle on landing will be pushed clear of the ship's side, inspected for damage and deficiencies and

prepared for movement to the marshalling park in accordance with the pamphlet "Preparation of Mechanical Vehicles for Transport by Rail and Sea and Subsequent Movement."

The petrol tank of each vehicle will receive the contents of one (or more if required) spare 2-gall. petrol cans to enable the vehicle to be driven to the marshalling park. Bulk petrol may be issued in 4-gall. tins by the Movement Control at the docks or at the marshalling park.

At the marshalling park vehicles will be completely refilled and finally prepared for movement to the vehicle park at the base ordnance depot (see Sec. 37, para. 11(iii)).

22. Batteries belonging to vehicles stored in the vehicle park will be removed and recharged once a month or earlier if necessary.

The personnel responsible for maintaining batteries will operate continuously along lines of vehicles, testing, topping up, cleaning, greasing and where necessary exchanging batteries and recharging the displaced batteries. The charging plant consists of an auxiliary charging set carried in a three-ton lorry which is provided with shelves to carry the batteries under charge, and with bus bars, to which the poles of batteries can be temporarily connected. In addition, 5 per cent. spare batteries with a minimum of 5 of each type will be held by each vehicle park.

23. Vehicle kits will be boxed and kept in the vehicles.

24. A daily return of receipts and issues of vehicles will be furnished to the census branch, with a copy to G.H.Q. census.

(v) Accounting.

25. All accounts will be open to inspection by representatives of the Financial Adviser.

26. Audit will be current. The account will not be closed until the depot is closed.

27. The method of obtaining articles in use and returning them to store will be the same as in peace, but one record only (on account cards) will be kept—by the group or office holding the store.

28. In the event of an advanced base depot being formed, it will be stocked initially from the base ordnance depot. The stores will be issued on A.F. G 1060. No. 2 copy of the voucher, filed in numerical sequence of part numbers by sections, will be used as the stock record pending the organization of groups and control office.

Should A.F.s. G 1060 be used by the base ordnance depot as issue vouchers for further part consignments, they will be dealt with as normal receipt vouchers, the receipts being posted in the A.F. G 1060 initially received.

(VI) Stocktaking.

29. Stock will be taken daily, by stocktakers, of items in sub-depot. The programme will be so arranged that the stock of each item is taken if practicable not less than once in twelve months.
Special arrangements will be made for the stocktaking of small and valuable or attractive articles.

30. The stocktaker will deal with about 10 items at a time. Before counting stock, he will proceed to the "to follow" registry and will insert in the stock sheet the quantity of any item (or the batch with which he is dealing) due out. 31. After counting stock he will again check the same "to follow" cards in case transactions have taken place during the interval.

32. Immediately prior to counting stock the stocktaker will stamp the bin card as follows.

Stock counted on	|	|	Stock sheet serial No.
------------------	--	--	--------------------------------

33. The object of this is to assist reconciliation. Vouchers for items received or issued on the day in question, subsequent to the stocktaking, will be marked by the selector as follows:—

*After stocktaking	|	|	Stock sheet serial No.
--------------------	--	--	--------------------------------

An asterisk will be inserted in the voucher by the selector for opposite the item concerned.

34. The stocktaker will draw a single line across the account card, to indicate the moment of stocktaking. He will leave space above the line for adjusting vouchers.

Immediately above the line he will insert:—

- (i) In the column headed "T.N.I.":—the actual stock.
- (ii) In the column headed "P.A.F.":—the dues out.
- (iii) In the column headed "Balance":—the difference between (i) and (ii): which should agree with the latest balance shown on the account card.

35. The account card clerk will post below the "stock-taking" line any vouchers marked in the manner described in para 33.

Section 38.—Base Ordnance Depot:—Procedure.

Note:—The system of accounting for stores in war, at base ordnance depots, is in general the same as that designed for command ordnance depots in time of peace. There are, however, certain differences, which make it advisable to explain the war system in detail below.

(i) Introduction.

1. The keynote of the control system of accounting is the fact that immediately an indent for an item is received at an ordnance depot the entire quantity required on the indent is regarded as removed from stock and no longer available.

2. Hence the balance is amended to show the whole quantity demanded as having been issued.

3. All earmarks are accounted for separately, on special account cards (see para. 32).

4. Hence the balance shown on the ordinary (stock) account card is the stock less dues out. It can be used as the basis of provision without the necessity for reckoning either dues out or earmarks.

5. The whole of the stores demanded on an indent may not in fact have been issued, actual stocks not being available. In that case, however, any quantity not at the moment available (by means of the "to follow" system). All further action in connection with subsequent issues is the responsibility of the storehouse.

6. Thus the balance shown on the account card is net.

(ii) Issues—indent and voucher.

7. The first phase of the working of a base ordnance depot must necessarily be the receipt of its initial stocks from home.

To produce a clear picture of the routine, however, it is more convenient, first, to follow an issue transaction through its successive stages.

8. Indents should arrive at the base addressed to the O.O.s. of the various sub-depots concerned, as shown in Sec. 37, para. 5.

However addressed, indents should immediately be passed, by whoever receives them, to these destinations.

The correct address to which indents will be sent should be indicated in General Routine Orders as early as possible after the establishment of the sub-depots.

9. An indent on arrival at the sub-depot will be passed by the O.O.'s staff to the registry clerk of the sub-depot (or, if control is decentralized—see Sec. 36, para. 8—to the registry clerk of the group concerned).

10. The registry clerk will give it a control number by means of the automatic numbering machine, and register it on the issue control sheet, A.F. G 880.

11. The registry clerk will pass sheets of A.F. G 880 as they are filled to the progress clerk.

12. The registry clerk will now pass the indent itself to the indent checker who deals with the particular vocabulary section concerned.

13. He will check the indent for—
correct section part and catalogue numbers;
designation;
and confirm that the unit is authorized to hold the store demanded.

(Note.—The indent checker is enumerated among the provision staff, although his function is actually part of the control procedure. The reason for this is given in note to Sec. 37, para. 8.)

In the case of an abnormal demand, the indent checker will bring the indent to the immediate notice of the provision clerk, who will institute a review if necessary (see Sec. 28, para. 21).

14. He will pass the indent, after check, to the voucher preparation clerk, who will prepare vouchers (6 copies) showing quantities required.

The voucher will be checked against the indent for correct transcription.

The voucher preparation clerk will rule through the indent, diagonally, to show that vouchers have been prepared, and initial the indent. He will then pass all six copies of the voucher to the foreman selector in the store-house.

The uses of the copies of the voucher are as follows:—

No. 1. Account card posting copy.

No. 2. "To follow" registry copy. After registration it is returned to control for preparation of further part vouchers.

Note (1).—Copies Nos. 1 and 2 do not bear particulars and packages and despatch.

No. 3. Unit's receipt to the base ordnance depot.

No. 4. Unit's receipt to D.A.D.O.S.

No. 5. Transit copy.

Note (2).—This copy, retained at the B.O.D., does give particulars of packages and despatch.

No. 6. Used in peace as packing Note.

Note (3).—Copy No. 6 of the voucher has no function in war. It is retained so that the same stationery can be used in war as in peace; and is available if, for any purpose, a spare copy of the voucher is required.

15. Only the vouchers will be sent to the storehouse. The voucher preparation clerk will send the indent to the progress clerk, who will tick his issue control sheet opposite the control number concerned, in the column headed "voucher to storehouse." He will put away the indent, in order of control number.

(iii) Issues—selection of stores.

16. The following procedure is now carried out in the storehouse:—

(1) "Stuff" the voucher: that is, interleave with carbon sheets.

(2) Insert on the voucher the location of the stores, from the location index.

(3) Select: that is, remove the stores: enter in the "issued" column of the voucher the number actually removed for issue, and in the "to follow" column any quantities not available. Post the bin card with the quantities issued only: initial and date the voucher.

If the installation is sufficiently large each of these functions will be performed by separate personnel. In a small depot, the selector may perform them all.

Note (1).—The selector will label one specimen of each article to be issued, with its part or catalogue number. Thus the unit will be able in case of doubt to ascertain the designation of any store supplied, by reference to the voucher, on which the same part, etc., number appears.

Note (2).—If no item on a voucher is available, the voucher still passes through the processes described below, with a "nil" entry in the "issued" column and the whole of the quantity required entered in "to follow" column.

In such a case (as there is no package in which the voucher can be enclosed) it is posted to the unit by the transit branch. (See note to para. 24, below.)

17. Cases will arise in which:—

- (i) Quantities issued are in excess of those required (for example, to avoid breaking standard packages).
- (ii) Quantities issued are less than those required (for example, when there is only a negligible shortage).
- (iii) An alternative item is issued in lieu of the item demanded.

selector:—

- (i) Enter on the voucher actual quantity issued with an explanatory remark: (for example, "complete package" or "to avoid cutting").
- (ii) Enter on the voucher the actual quantity issued with the remark "in satisfaction."
- (iii) Amend the voucher as necessary, with the remark "in lieu."

(As regards amendments on "to follow" vouchers, see para. 76.)

18. When the action described in paras. 16 and 17 has been completed, the process divides into:—

- (i) Action by storehouse and transit branch (described in paras. 19-26 and 41).
- (ii) Action by control and provision (described in paras. 37 and 44).

19. The selector will pass No. 1 copy of the voucher to the progress clerk.

The progress clerk will tick the issue control sheet (A.F. G 880) in the column "stores despatched."

If the "to follow" column of the voucher contains any entry he will tick the column "further part required."

He will then pass No. 1 copy of the voucher to the account card clerk for posting (see para. 37).

20. The selector will pass No. 2 copy of the voucher to the "to follow" registry storeman.

This storeman will record any quantities shown in the "to follow" column on the "to follow" card for the item concerned.

He will then pass No. 2 copy of the voucher to the voucher preparation clerk, who will prepare "to follow" vouchers.

21. When the "to follow" vouchers have been checked with No. 2 copy, the voucher preparation clerk will pass No. 2 copy to the progress clerk.

The progress clerk will tick the column "Part..... vouchers to storehouse."

He will then attach No. 2 copy of the voucher to the indent (see para. 15).

22. The voucher preparation clerk will pass the "to follow" vouchers to the "to follow" registry storeman, for filing by vocabulary sections in order of control numbers.

23. The selector will place Nos. 3, 4, 5 and 6 copies of the vouchers with the stores in the packing bay.

24. Here the packer will collect the stores for one unit into one or more packages, numbered according to the package card.

He will enter on copies Nos. 3, 4, 5 and 6 of the voucher, against the items concerned, the package numbers (from the group package card). He will initial and date these copies of the voucher, and insert copies Nos. 3 and 4 in the package.

He will complete both copies of the group package card with the unit, control numbers of the vouchers concerned, description of the packages and their weight.

He will stencil legibly on all packages—

(1) Package number.

(ii) Consignee's designation.

(iii) General description of contents—for example, "M.T."

(iv) If practicable, a distinctive coloured mark for each brigade group to facilitate identification and sorting at raihhead and bulk breaking point.

This will not be required for bulk issues.

The packer will pass No. 5 and 6 copies of the voucher to the progress clerk, who will put them away with the indent and No. 2 copy.

Note.—When no item on a voucher is available (see note (ii) to para. 16 above) copies Nos. 3 and 4 are still sent to the unit; the entry in the "to follow" column serving as an indication that the indent has been noted for supply when stores become available. As in this case there is no package in which to enclose the voucher, the copies are collected by the transit branch and posted by them to the unit.

25. A representative of the sub-depot transit branch will collect packages from all groups, daily or at intervals as arranged by O. O. sub-depot.

He will stamp both copies of group package card with the date of collection.

He will pin together by units the group package cards, from the groups of his sub-depot, and transmit them with the packages, by road or rail as circumstances necessitate, to the traffic centre of the base ordnance depot.

The procedure after arrival at the traffic centre is described in paras. 81 onwards.

26. In the case of a unit drawing direct, a receipt (for the package, if the stores are packed) will be taken on No. 5 copy of the voucher.

This copy, marked with particulars of despatch, will be passed to the progress clerk. He will record the issue on the issue control sheet by a tick in the "stores despatched" column, and will put away the voucher with the indent. Copies No. 3 and 4 of the voucher will be handed over to the unit with the stores. The unit will receipt No. 3 copy and return it.

(iv) Cancellation of indents.

27. Detail indents (see para. 34) from units, on which stores are still outstanding, will be considered cancelled two months after receipt at the base Ordnance depot.

A notice informing units that this will be done will be inserted periodically in G.R.O.s.

28. The whole of the stores concerned will have been posted on the account card as issued (see para. 37), and "to follow" voucher will already have been prepared for these items. It is therefore necessary:—

- (i) To cancel the "to follow" vouchers.
- (ii) To bring the stores back on charge (see note to para. 31).

29. The first action to effect cancellation of indents will be taken by the progress clerk. At the end of each month he will schedule, by vocabulary schemes, the control numbers of units' indents which are more than two months old.

30. Each schedule will be passed to the "to follow" store-man concerned, who will extract the relative "to follow" vouchers and delete the entries on his "to follow" cards.

He will return these to the progress clerk, who will mark the vouchers "cancelled" and cancel also the relative entries in the issue control sheet.

31. The progress clerk will then pass the vouchers to the account card clerk, who will post them as a receipt, using the original control number with the abbreviation "CAN" in the "issue" column of the card.

No. 1 copy of the voucher will be detached and passed for pre-audit. The remainder will be put away with the indent.

Note.—The cancellation of indents described above will automatically affect the Total Normal Issue figure.

The T.N.I., however, is only reckoned from the last review.

In theory (see Sec. 28) the last review should have taken place not more than a month previously—whereas the indent cancelled is two months old. It is therefore not practicable to amend the T.N.I. figures accurately. Any provision action based upon them will, in any case, have been completed.

Nevertheless, for the information of provision officers all posting slips bringing on stores as a result of cancelled indents will be marked "Can" and passed to the provision clerk.

(v) **Earmarks.**

32. Instructions for stores to be set aside as an appropriation, deposit or reserve (see Sec. 26, para. 21) will be communicated in the first place, by the provision officer concerned, to the indent clerk.

The indent clerk will prepare a T.V. (A.F. G 1049) transferring the "earmark" to separate account (see para. 3). Action will then be taken as in Sec. 37, para. 18.

33. Release of an "earmark" will be effected by passing an issue order (in the case of "appropriation" or "deposit" stores to be issued direct to a unit) or a transfer voucher (in the case of reserves, etc., returned to general stock). The issue order or T.V. will be made out by the indent clerk, on instructions from the provision officer concerned.

(vi) **Bulk and detail stores.**

34. Normally in mobile warfare it will be necessary to consign all stores for units in forward areas in detail, that is, to units themselves. When, however, the bulk system is ordered by the D.O.S., bulk issues will be consigned to the D.A.D.O.S., who will arrange distribution to units (see Sec. 10, para. 19 note).

Days of the week will be allotted for the issue of the various natures of bulk stores (see Table I), with a view to equalizing the amount of bulk issues to be loaded at the base ordnance depot each day.

35. A bulk indent will be considered cancelled when it has been met as far as stocks admit on the day of issue. No entry will be made in the account card of any items which could not be met in full; nor will the "to follow" procedure (see para. 74) apply.

36. When detail stores of one nature are due to several units of a formation, as may occur when supplies of a store in common use suddenly become available after a shortage, the following system may be practicable during rest periods:—

The stores may be assigned and charged to the D.A.D.O.S. of the formation on a "distribution voucher." This will show the distribution to units, and units' indent numbers, in the body of the voucher.

If there are large numbers of small articles, or the task of division may cause inconvenience to the D.A.D.O.S., the articles will be parcelled up for units within the main package addressed to the D.A.D.O.S.

(vii) Issues—Posting of Voucher.

37. On receipt of No. 1 copy of the voucher (first part only) from the progress clerk (see para. 14) the account card clerk will enter, in the "issues" column of the account card, the number shown in the "quantities required" column of the voucher.

He will make this posting through the carbon portion of the posting slip. Having done so, he will initial the voucher in the space provided.

At the same time he will copy, on the unpacked portion of the posting slip, the following information from the account card:—

Previous balance.

Previous total normal issues (T.N.I.).

Vocabulary section.

If provision action is necessary (see Sec. 28, para. 10) he will mark the posting slip with the letter "P;" He will also insert on the account card a coloured "flag" or special mark (see Sec. 37, para. 15 (vi)) indicating that provision branch have been notified. He will also draw a line under the latest T.N.I. figure and begin entries in this column afresh.

When all the postings from one voucher have been completed the account card clerk will pin all the relevant posting slips to the voucher and pass it to the voucher checker. 38. The voucher checker will check that the entries on the posting slip agree with the voucher, and that the pre-sent balance and T.N.I. have been correctly calculated, and initial the voucher. If the posting slip bears the letter "P" showing that provision action is necessary (see para. 37) the voucher checker will tear off the posting slip, and pass it to the provision clerk. He will then return the voucher to the progress clerk, who will prepare for audit (see para. 39).

If provision action is not necessary the voucher checker will pass the voucher with the posting slip attached to the progress clerk.

(viii) Preparation for audit.

39. As soon as No. 3 copy of a voucher marked "Completion," bearing the unit's receipt, reaches the progress clerk, this will serve as a notification that all the transactions depending on the particular indent are complete. He will, therefore, extract copies Nos. 1 and 3 of all the vouchers related to this indent. He will check them to ensure completion and correct signature, and will then pass them, with a schedule giving their control numbers, to the auditor.

40. The progress clerk will make the following marks on the issue control sheet to indicate the progress of the transaction.

Stage.	Mark.	Column.	How voucher is disposed of.
Indent from voucher preparation clerk. (See para. 15.)	Tick.	"Full or Part I Vouchers to Storehouse."	Put away in control no. sequence.
No. 1 Copy (Full or Part I) from storehouse. (See para. 19.)	Tick.	"Full or Part I Stores despatched."	Pass to account card clerk.
No. 1 Copy (Part II, III, etc.) from storehouse. (See para. 74.)	Tick.	"Part . . . Stores shown. If any 'to follows' 'Further part req.' if any 'to follows' shown.	Put away in cabinet marked "Vouchers for Audit."
No. 2 Copy from voucher preparation clerk. (See para. 75.)	Tick.	"Part . . . voucher to storehouse."	
No. 5 and 6 copies from storehouse. (See para. 24.)	—	—	Put away behind relevant indent.
No. 3 Copy from unit. (See para. 39.)	Cross tick.	"Stores despatched" in appropriate col. according to part of voucher.	Put away behind relevant No. 1 copy in cabinet marked "Vouchers for Audit."
Nos. 1 and 3 copies to audit. (See para. 39.)	Tick.	"Control number."	

(ix) Issues—Collection of stores.

41. A representative of the sub-depot transit branch will collect packages from all groups, daily or at intervals as arranged by O.O. sub-depot.

He will stamp both copies of the group package card with the date of collection.

He will pin together by units the group package cards from the groups of his sub-depot.

He will load the packages into wagons, one wagon per formation, in accordance with the distribution of units into formations (see para. 86).

42. If any one sub-depot transit branch can fill a wagon with ordnance stores for one formation, this wagon when it arrives at the traffic centre will be attached, without further handling, to the formation pack train. Part loaded wagons from sub-depots will be re-loaded at the traffic centre, so that fully loaded wagons only go forward to railhead.

In either case, however, the traffic centre is responsible for summarizing group package cards on consolidated package cards.

Further action in connection with the conveyance of stores to the consignee unit is detailed in paras. 81 onwards.

43. The procedure so far described shows the method by which stores actually available to meet indents are issued. There remains the action to be taken, in the office and the storehouse respectively, for the replenishment of stocks and subsequent issue of any stores demanded by the unit but not at the moment available.

(x) Provision action.

44. Provision action may be rendered necessary (see Sec. 28) by one of four cases:—

(1) Balance falling to R.P.S.

(ii) Balance falling to P.A.F.

(iii) Indent for a store not hitherto held.

(iv) Abnormal indents.

45. Cases (i) and (ii) are automatically indicated on the posting slip, passed by the voucher checker (see para. 38) to the provision clerk.

In case (iii) the first indication that the item demanded has never been held comes from the selector (see para. 16). He having ascertained that the item does not appear on his bin cards or location list, will know that no account card can exist for this item. He will therefore prepare a

bin card and a blank slip for his location index, and will mark the voucher, against the item concerned, "N.C.;" When the voucher reaches the account card clerk, he will check that there is no account card for the item and will make out a fresh card.

This card—as there is no stock—will automatically show a minus balance. There will of course be no P.A.F. The account card clerk will therefore mark the posting slip "N.C.;" and it will be passed by the voucher checker to the provision clerk.

In case (iv) the fact will already have been reported by the indent checker to the provision clerk (see para. 13 above).

46. In cases (i), (ii) and (iii) above, receipt by the provision clerk of the posting slip is the intimation that provision action may be necessary.

He will carry out a review as described in Chapter III, and if a new P.A.F. is fixed will notify this to the account card clerk by passing back to him the posting slip with the new P.A.F. entered upon it.

(xi) Receipts—Office procedure.

47. Vouchers for stores comprising the initial stock of a group (see Sec. 26) will be given a control number by the automatic numbering machine.

48. Each voucher for the initial stock will then be dealt with as if it had been made out in consequence of a separate demand.

49. The first intimation that stores are on their way to a base ordnance depot in response to a demand from overseas will probably be the receipt by post, by the O.O. of the sub-depot concerned, of Nos. 3 and 4 copies of the issue voucher from the home depot which is making the issue. Note.—No. 6 copy, used as a packing note in peace, does not perform this function of war.

It is not required in issues from the base ordnance depot to forward organizations and to the troops, because copies Nos. 3 and 4 are enclosed in packages with the stores.

Its use, in transactions between home and the base ordnance depot, is not usually practicable or necessary for the following reasons:—

(i) Each consignment will comprise many packages of one item (as not less than one month's supply—M.F.—may be demanded at a time—Sec. 28, para. 20). Time would not permit searching among a large number of packages to discover the one containing the packing note.

(ii) Wherever possible these packages will be standard. In many cases they will have been packed in time of peace. To open packages for the insertion of packing note would involve waste of time.

(iii) Urgent supplies may be delivered direct from manufacturers to port: the vouchers in such a case being prepared at the home depot concerned.

It may be employed, however, in certain cases, where various articles are enclosed in the same package. It is retained so that the same stationery can be used in war as in peace: and is available if, for any purpose, a spare copy of the voucher is required.

50. O. O. sub-depot will pass both copies of the voucher to the provision officer concerned, as an intimation that the stores have been despatched from home. The provision officer will post his provision review form in pencil.

51. The voucher will already bear the control number—that is, the control number of the demand against which the stores were sent.

52. The provision clerk will add to this a sub-number indicating whether it is the first (second, etc.) supply against that demand, and if it is the final supply he will mark it "completion."

53. He will pass the vouchers to the progress clerk. Against the particulars of the demand already entered in the receipt control sheet (see Sec. 31, para. 2) the progress clerk will enter a tick in the column marked "Part....." to storehouse."

54. He will then pass copy No. 3 to the R. & I. clerk and copy No. 4 to the receipt storeman in the storehouse.

55. Vouchers for other receipts—such as inspection notes, certificate vouchers for stores received from workshops or the R.S.D.—will be made out in the store-house (2 copies) and sent to the registry clerk for numbering.

56. When circumstances permit, stores purchased locally will be brought to account by means of an inspection note (A.F. G 1026) bearing the control number of the purchase order (see Sec. 32). In the case of small cash transactions, however, the stores may be brought on charge by certificate receipt voucher.

57. The registry clerk will number the C.R.V. and enter particulars on the receipt control sheet, and tick the column "to storehouse."

He will pass the C.R.V. to the provision clerk to note (see Sec. 32, para. 2 (iii)). The provision clerk will return the C.R.V. (both copies) to the storehouse for posting on the bin cards.

58. As receipt control sheets are filled, registry clerk will pass them to the progress clerk.

59. After the stores have been received and placed in the bin, and the vouchers corrected in the storehouse if necessary (for storehouse procedure, see para. 70) receipt foreman will pass No. 4 copy of the voucher to the "to follow" registry in the storehouse. (For "to follow" procedure, see para. 74).

60. The "to follow" registry storeman, having dealt with the voucher, will return it to the progress clerk who will tick the column "Part..... to R. & I." in his receipt control sheet and pass the voucher to the account card clerk. 61. The account card clerk will post on the appropriate account card the actual quantity of stores received, as shown by the storeman, and adjust the balance.

If the account card, before this posting, bore a "flag" or mark indicating the balance was below either F.P.S. or P.A.F. and the new receipt brings the balance above that level, the account card clerk will remove the mark concerned.

Should the balance after this receipt be above P.A.F. but still below F.P.S., the F.P.S. "flag" or mark will be substituted for the P.A.F. "flag" or mark.

62. Only Serviceable stores will be taken into stock in the base or ordnance depot.

Any stores received in damaged condition will be noted as such on the voucher, by the receipt storeman. Such stores, however, will be sent by him direct to the R.S.D. or workshop concerned for repair. A.B. 108 will be used, quoting the voucher on which the damaged stores were received.

When they are returned in a serviceable condition, they will be accompanied by A.B. 108, and brought on charge by C.R.V.

Every effort will be made to link up the A.B. 108, and eventually the C.R.V., with the voucher on which the stores concerned were originally charged from home.

63. Stores manufactured in workshops will be transferred to group on A.B. 108 and brought to account by C.R.V.

64. The number of the workshop indent on which stores were repaired or manufactured will in each case be entered on the A.B. 108.

65. The account card clerk having initialled the voucher will pin the relative posting slips to the voucher and pass

it to the voucher checker, who will check the posting slip with the voucher and verify the calculation of the new balance.

In the case of a C.R.V. the account card clerk will mark the posting slip "C.R.V."

66. The voucher checker, having initialised the voucher, will tear off the posting slips and pass them to the provision clerk who will now confirm in ink the pencil posting on the P.R.F. concerned (see para. 50) and destroy the posting slip.

In the case of a C.R.V. the wording will indicate whether it is in respect of stores from the R.S.D. or stores received from home without vouchers. In the latter case only he will post the item in pencil against his oldest demand, correcting, if necessary, on subsequent receipt of the voucher.

67. The voucher checker will pass the voucher to the R. & I. clerk who will amend No. 3 copy if necessary to agree with No. 4, prepare it for signature and despatch it to the home depot by post (to be linked up there with No. 1 copy and the bill of lading (see Sec. 69)).

R. & I. clerk will at the same time price losses occurring between the home port and the receiving depot overseas, as shown by comparison of the vouchers with No. 1 copy of the bill of lading.

68. Discrepancy reports will not generally be submitted by the base ordnance depot to home issuing depots, except in the case of packages received intact which prove to contain quantities of stores differing from those shown on the package itself, on the voucher or on the packing note. It is the function of the Movement Control (which has custody of stores from their despatch until their receipt overseas) to check at each stage of the journey.

Serious discrepancies between stores charged on voucher and those actually received will be referred (through D.O.S. if he so directs) to the Movement Control. 69. The R. & I. clerk will pass No. 4 copy of the voucher to the pre-audit clerk. When the last transaction on the control number concerned has been completed—which is indicated by receipt of a voucher marked "completion"—the pre-audit clerk will pass the voucher (all parts) for audit.

(xii) Receipts—storehouse procedure.

70. On receipt of No. 4 copy of the voucher from the progress clerk (see para. 54) the receipt storeman will mark upon it the location of the stores, taken from the location index.

If any of these items has not previously been held in stock he will prepare a slip for the location index, on which he will enter the location now given to the store.

71. He will now check the stores against the voucher, amending the voucher as necessary.

He will place serviceable stores in the appropriate bin or stack, posting the bin card.

He will not place in the bin or stack, or post on the bin card, any stores received in other than a serviceable condition, but in such a case will follow the procedure described in para. 62 above.

72. He will initial and date the voucher, and pass it to the "to follow" registry storeman.

73. He will keep a daily receipt sheet recording package numbers.

(xiii) **"To follow" procedure.**

74. The "to follow" registry storeman will ascertain whether he has a "to follow" for any item shown on the receipt voucher (see para. 20).

If so, he will extract the "to follow" vouchers (see para. 22) and pass them to the selector for ordinary issue action (see para. 16). He will mark the card against the control numbers of each "to follow" voucher, to indicate (for the guidance of stocktakers) that this voucher is in process of issue.

75. On receipt of No. 2 copy of the "to follow" voucher (see para. 20) he will delete it from his "to follow" card. If it is not completely met—that is, if a further "to follow" is necessary—he will make a fresh entry for the quantity still outstanding: passing the voucher concerned for the preparation of a further "to follow" voucher.

76. Should a "to follow" voucher require amendment as shown in para. 17, the progress clerk will ensure that No. 1 copy is passed to the account card clerk, who will amend the relative posting as necessary.

77. On receipt of information from the D.A.D.O.S. of a formation that any unit or formation is to be transferred to the area of supply of another depot (see Sec. 10, para. 8) the progress clerk will prepare, from the issue control register, lists (one for each vocabulary section) showing the control numbers of any "to follow" still due to the unit.

He will pass these lists to the "to follow" registry storeman, who will extract the relative "to follow" vouchers and return them to the progress clerk.

78. The progress clerk will cancel the entries in the issue control sheets concerned, and will pass the vouchers to the account card clerk.

79. The account card clerk will rectify his balance by posting, as a receipt, any quantity shown as outstanding on a "to follow" voucher.

80. The vouchers and a schedule enumerating them will be sent to the new depot of supply. Another copy of the schedule will be sent to the D.A.D.O.S. of the formation concerned so that he may verify his records.

The vouchers will be renumbered at the new depot and used for the issue of the stores.

(xiv) **Traffic.**

(a) **General.**

81. The ordnance officer in charge of the traffic centre will be directly responsible to the C.O.O. base ordnance depot. His function is to supervise, co-ordinate, and expedite issues.

82. He will arrange with the Movement Control for the supply of all rail or other transport required for the despatch of stores and for depot use.

He will ascertain from groups (usually by means of a forecast return made the previous afternoon) their requirements as to wagons or vehicles needed for making issues, and will arrange for the wagons, etc., to be placed in suitable positions by the Movement Control, notifying groups accordingly.

83. He will notify the Movement Control whenever ordnance or vehicles or exceptionally heavy consignments of stores are about to be sent forward so that special transport arrangements may be made at railhead.

84. He will keep a wagon register in which will be recorded the wagon numbers, destinations, contents (generally), and any other particulars that may be required in connection with the tracing of wagons.

85. This wagon register will serve several purposes:

- (a) Entering the wagon numbers immediately they are allotted will prevent individual wagons being allotted for more than one purpose.
- (b) A tick, made when loading of each wagon is completed will enable the state of the yard to be furnished at any time to the Movement Control.
- (c) A system of ticks and cross ticks will ensure that waybills have been prepared and sent out with package cards, to be placed in the wagons.
- (d) Entering the estimated dead weight tonnage loaded daily into wagons will provide a ready means of compiling reports of tonnage loaded, for statistical records.

The wagon checker is responsible for estimating the tonnage loaded in wagons.

This estimate is also used for holding back wagons (not containing stores urgently required) that are too light to be despatched that day.

(b) **Transfer of units.**

86. The O.O. i/c Traffic will ensure that stores are consigned in accordance with the latest information as regards moves of units, even if this involves removing stores from wagons already loaded.

The distribution of units among formations and the railheads allotted to the various formations will be notified by the C.O.O. to the O.Os. of each sub-depot and to the O.O. i/c Traffic as each change occurs.

87. This information is secret. Distribution of units among formations will be notified for the information of loaders both at transit branches and at the traffic centre, by means of unit loading boards (Plate IV). Then boards will be locked away when not in use.

The railheads allotted to the various formations will be notified by code only.

(c) **Packing cards.**

88. When the packages and group package cards from the various sub-depots arrive at the traffic centre (see para. 25) both will be sorted into consignments for the formation railheads serving the units concerned (see para. 86).

89. All group package cards for one unit will be summarized by the traffic centre staff on the consolidated package card for the unit concerned (see Sec. 37, para. 15 (x)).

The traffic centre, having made up the consignments for each formation into one or more pack wagons, will stamp on the consolidated package card (both copies) the wagon number and date of despatch.

The group package cards will be pinned to No. 1 copy of the consolidated package card, which will be put away in order of date.

No. 2 copies of the consolidated package cards will be placed in an envelope, tacked in a conspicuous position in the wagon: if practicable to the roof immediately over one of the doors.

90. When No. 2 copy of the consolidated package card bearing the unit's receipt, is returned by R.O.O. to the traffic centre it will be attached to No. 1 copy.

(d) **Loading of pack wagons.**

91. O.O. i/c traffic centre will, in conjunction with the Movement Control, make the following arrangements for issues to the front:—

(i) Wagons will be allotted daily to sub-depots (or groups) in accordance with estimated requirements notified by sub-depot transit branches on the previous day.

(ii) They will be placed, as far as practicable, where required by groups.

(iii) Each wagon (whether finally loaded at a sub-depot—see Sec. 36, para. 15 (b)—or re-loaded at the traffic centre) will be placed in charge of a R.A.O.C. checker.

During the temporary absence of checkers, wagons will be locked if possible and guarded to avoid pilfering.

(iv) If there is a bulk issue of heavy stores to be despatched, these will be loaded first if this can be arranged.

(v) When loading wagons for divisions, checkers will keep both the stores and the package cards for each brigade group separate as far as possible. (As to distinctive marking, see Sec. 34, para. 4.)

92. To expedite loading, to reduce entries in waybills, and more particularly to expedite checking during off-loading at railhead, sub-depot transit branches will, through each day, collect their small parcels for each formation into sacks.

Before the sack is loaded into the wagon, a list of the parcels will be made out on a package card (2 copies) or A.B. 108. The addresses on this list will be checked in the traffic centre. The card or list will then be placed in the sack, and the sack will then be sealed if necessary.

The sack will be addressed to the D.A.D.O.S. of the formation.

It will then be loaded as one consignment and be given its serial number, and will be waybilled as "1 sack parcels."

This system will not be used for less than five parcels a sack.

93. Wagons will be sealed on both sides, after the waybills and package cards have been fixed inside. Any windows, etc., through which entrance to the wagon could be effected, will be secured from the inside or, failing that possibility, will be sealed.

This procedure will not be carried out in those exceptional cases when it is necessary to send convoy men in wagons.

94. Small consignments for the L. of C. may be despatched through the military forwarding service (see Manual of Movement (War)).

95. If stores have to be despatched from a sub-depot by ship or barge, the sub-depot transit branch will furnish the traffic centre with the necessary details of the stores (number and nature of packages, tonnage, etc.).

The traffic centre will get in to touch with the Movement Control and as soon as a vessel is available will arrange for the shipment of the stores by some system similar to the above, and will prepare such documents as may be required by the shipping authorities.

(e) **Inward stores.**

96. In order to save double handling, stores will be delivered direct to groups, and not to the traffic centre, whenever possible.

97. Should the receipt and sorting, at the traffic centre, of mixed wagon-loads of stores be unavoidable, the process will be facilitated by the green discs and sub-depot signs marked on all ordnance packages (see Sec. 69).

Section 39.—Returned Stores Depot.

(i) **General.**

1. In order to relieve the groups of the stores depot of any dealings with non-serviceable stores, all stores returned from the front will be received in the returned stores depot.

Returned vehicles will be dealt with as in (v) below.

The R.S.D. will include:—

- (a) A textile repair shop.
- (b) A boot repair shop.
- (c) An anti-gas repair shop.

The ordnance officer in charge R.S.D. will be directly responsible to the C.O.O. that returned stores are dealt with in the most effective and economical manner.

He will be assisted by suitable technical R.A.O.C. personnel, and will keep in close touch with A.D.O.S., P., and Os. i/c P., with the C.O.M.E., and with group officers in the stores depot, so that priority may be given to stores which are urgently required.

He will apply to the C.O.M.E. for any special technical assistance that he may require.

2. The main functions of the returned stores depot will be to receive and deal quickly with stores and clothing returned from the front.

Such stores will be checked out from the wagons against the waybills, sorted, conditioned, disinfected where necessary, dried and cleaned.

Minor repairs will also be carried out by the returned stores depot as far as practicable.

By the use of unskilled labour, probably local female labour if available, under skilled supervision, the workshops will be greatly relieved, and economy will be served.

Civilian labour will be paid on a piece-work basis as far as possible.

3. Serviceable stores will be sent to the group concerned.

Repairable and doubtful stores which cannot be made serviceable on the spot will be sent to the appropriate repair shops or workshops (see Sec. 36, para. 3 (e) and (f)).

Unserviceable stores, unless they are of greater value in their whole state, will be broken down and brought to produce, components fit for further use being recovered as may be required.

4. Care will be taken to avoid excessive accumulations of stores. If they cannot be dealt with promptly, special arrangements for their storage, etc., will be necessary. Delay is apt to lead to serious deterioration of the stores.

(ii) Records.

5. It is of primary importance that stores received from the front must not be brought on charge by C.R.V. before they have been sorted and reconditioned; and also that stores must be kept physically separate from group stocks until they have been made serviceable.

6. The despatch of all stores to groups or workshops will be recorded in A.B. 108.

The forms will be prepared under serial numbers, a separate series for each group and workshop.

They will be made out in triplicate, one copy remaining in the book, one copy being retained by the consignee, and one copy being receipted and returned to the returned stores depot, where it will be filed.

The copy sent to workshops will be treated as the basis of a repair indent, without further approval by the C.O.O.

The copy sent to the group will be treated as a basis for a certificate receipt voucher.

Thus no stores received from troops will be brought on charge in the base ordnance depot account until they are serviceable.

7. The War Office will keep G.H.Q. informed concerning the various natures of produce which should be sent home. Everything else will be disposed of locally.

Produce will not be brought on charge in the store account, but a special record in tally form will be kept in the returned stores depot.

Non-ferrous metals will be entered daily in Stationery Office Book 124.

Other produce, if there is no market for it, will be dumped or destroyed. If there is a market for it, it will be collected and recorded as most convenient. The procedure for this will be referred to the Financial Adviser for his concurrence.

Non-serviceable stores sold, or sent home from the returned stores depot, will not be brought on charge, but a suitable administrative record in loose-leaf ledger form will be kept.

The record will quote the issue vouchers, waybills, or sale vouchers concerned.

8. Normally stores will be roughly sorted and packed at railheads before despatch; for example, clothing, accoutrements, rifles, etc., will be packed in sacks or bundles, and all packages or separate items will be entered in the waybill.

Valuable and attractive stores (see Sec. 11, para. 21) will be packed in locked or sealed receptacles, and will be accompanied by a memo voucher under cover forwarded with the waybill.

The original key of the locked receptacle will be held by the R.O.O. and the duplicate key by the O.O. i/c returned stores depot.

Valuable and attractive stores will be checked into the locked receptacle by the R.O.O. and checked out by the O.O. i/c R.S.D. or other officer deputed by him.

9. A record will be kept at the R.S.D. of all valuable and attractive stores received, and how they have been disposed of.

This record will be supported by copies of waybills, and by receipts from groups or workshops. The record will be open to inspection by the representatives of the Financial Adviser.

Registered numbers of all valuable and attractive stores which have them will be entered in the record, and such numbers will be quoted on A.B. 108 when sent to workshops or groups.

10. Unless a controller of salvage is appointed, a special record, in the form of a journal account, will be kept of captured stores, showing those claimed by units, with any registered numbers. This record will show receipts and issues and to whom such stores were issued. A serial number will be given to every item.

A considerable area of open storage may be needed for these.

11. In the lay-out of a R.S.D., special attention will be paid to the receipt platform, which should be at wagon

floor level if possible, and of sufficient depth and length to avoid congestion.

It is important that this platform be kept clear of accumulations of stores, which should be removed at once to the sorting and conditioning shed.

In the process of this removal a first rough sorting can be done, provided no delay is caused thereby.

12. The lay-out of the salvage and repairing sheds must be carefully thought out to avoid congestion and the handling of the stores backwards against the flow of work.

13. Much hot water is required in the R.S.D., and advantage should be taken of the boiler used for the disinfectant. Pipes leading from the boiler into the bottom of the tanks will convey the steam for heating the water. A large tank for heating water can also be placed alongside the incinerator.

The fuel for heating water can sometimes profitably be provided by burning unserviceable and bloodstained stores and other rubbish; any useful metal components, such as brass furniture of web equipment, being afterwards sifted out from the ashes.

An ample supply of disinfectant is necessary in connection with some of the processes of washing, etc.

14. A diagram showing a typical lay-out is given in Plate V.

The establishment for the returned stores depot is included in Table VII.

(iii) Functions.

15. The following are some of the operations which may be undertaken with advantage by the returned stores depot:—

- (i) Clothing and equipment—decontamination.
- (ii) Clothing, bedding, etc.—disinfecting, washing and repairing.
- (iii) Oilskin clothing—redressing.
- (iv) Boots—sorting, cleaning, conditioning and repairing.
- (v) Armlets, etc.—manufacture.
- (vi) Equipment—breaking down, sorting and conditioning.
- (vii) Equipment, etc.—brushing by mechanically-driven rotary brushes, to remove mud and dirt.
- (viii) Steel helmets—relining and repainting: dusting with sand, while paint is wet, to prevent reflection of light, if this is found necessary.
- (ix) Water bottles—stripping of felt, testing, reforming and recovering.

- (x) Mess tins—scouring and retinning.
- (xi) Ground sheets, etc.—dry brushing, or washing, and repairing.
- (xii) Respirators—inspection, conditioning and re-assembling serviceable face-pieces and containers.
- (xiii) Intrenching tools—sharpening heads and scouring helves.
- (xiv) Knives, forks, spoons—cleaning.
- (xv) Blankets—washing and repairing.
- (xvi) Harness and saddlery—breaking down into component parts, recovering buckles, etc., cleaning and dubbing.
- (xvii) Tents—drying and repairing.
- (xviii) Camp kettles—cleaning and repairing.
- (xix) Oil drums—cleaning and repairing.
- (xx) Small arms—sorting and repacking.
- (xxi) S.A.A. and fired cases—sorting and repacking.
- (xxii) De-rusting.
- (xxiii) Polishing in rumbler.
- (xxiv) Produce—preparation for sale or disposal.
- (xxv) Breaking down unserviceable stores to obtain needed components—for example, buttons from clothing before this is dealt with as rags.
- (xxvi) Repairs by replacement of components—for example, pull throughs.
- (xxvii) Recovery of solder and tin from old tins.
- (xxviii) Laundry, if ordered (see Appendix I).

(iv) **Methods.**

16. The following is an outline showing how some of the processes can be carried out with advantage. (The same reference numbers are used.)

- (i) Clothing and equipment will be decontaminated in a special plant,* under precautions to prevent personnel from being contaminated, skilled personnel are required only for supervision. The remainder can be unskilled (see Appendix XIV).
- (ii) One side of the disinfectant* must be kept for the dirty in-coming stores, and the other for the clean stores, whence they go to the respective conditioning and repairing sheds.

The disinfectant should be of the high-pressure type to ensure the killing of louse eggs. Information as to the louse can be obtained from the Army Manual of Hygiene.

* Drawings, and, where necessary, descriptions of these plants can be obtained on application to the War Office. One set is in the war box of H.Q. base ordnance workshops.

It will probably not be possible to remove all the dead louse eggs from garments before reissue. In this event it will have to be explained that this, though regrettable, is not insanitary, and that the recipient should remove them by hand.

Leather work should not be put into the disinfectant as the leather would perish.

Numnahs and pannels should be placed in a sealed chamber and disinfected by sulphur, and afterwards brushed.

*Fur clothing may require a special dry-cleaning plant, with revolving drums, etc.

- (iii) Oilskin clothing must not be left in heaps, whether awaiting conditioning or repair, or serviceable; it must be hung up at once to minimize the danger of spontaneous combustion and to prevent the garments from sticking together.
- (iv) *It will probably not be found profitable to attempt to sort, into pairs, boots which have been received not tied up in pairs.
Gum boots can be dried by being suspended over tubes ejecting hot air.
- (vii) *The brushing plant consists of a long shafting to which are connected revolving brushes of the type of a dandy brush.
Special protection is needed for the fingers, and rests upon which to support the work. Caps and gauze respirators should be provided.
Some packs and haversacks will need washing and treatment with drab blanco, also repair; for example, darning with a darning machine.
- (ix) Water bottles should be stripped of the covers, washed in soda solution and again in clean water. When dry they should be tested and examined internally with a small electric lamp,* reformed if necessary in a reforming press, and recovered.
- (x) Any mess tins that are not rusted through can be salvaged. A retinning plant* will be necessary.
- (xiii) Emery wheels are needed for sharpening tools. men employed on sharpening tools should use goggles.

* See footnote on p. 125.

Mittens should be supplied to men handling iron in cold weather. These can be improvised by using the serviceable parts of un-serviceable canvas stretchers for the palms and the old covers from water bottles for the backs of the mittens. The canvas and covers should be disinfected first.

(xvi) Whether serviceable or repairable, harness and saddlery should be cleaned and dubbed.

(xvii) *An outside tent drying ground is essential and a tent drying shed is almost as essential.

The tent conditioning and repairing shed must have a high roof capable of bearing the weight of tents slung up to it with pulleys. Where female labour is employed, a few men must be provided for hauling up the heavy tents.

Serviceable parts of un-serviceable tents can be used in the repair of tentage. Hooks, runners, buttons, dees, etc., should be recovered from un-serviceable tents.

Much time is saved by conditioning wet tentage whilst it is pitched or hung up for drying.

(xviii) Camp kettles, etc., will be boiled out in hot caustic soda solution. After being boiled clean, the camp kettles, etc., will be greased with mineral jelly.

(xix) Arrangements for cleaning oil drums will be necessary. Un-serviceable oil drums can be pierced for use as braziers and fitted with hooks for the suspension of mess tins.

(xx) Rifles awaiting conditioning and overhaul should be stacked muzzle downwards.

(xxi) S.A.A., after being sorted out from fired cases, etc., will be sent to the ammunition repair factory or base ammunition depot.

S.A.A. will normally be returned through the ammunition channels, but this will not always be practicable; for example, it is frequently found in returned accoutrements.

(xxii) *De-rusting needs a special electrolytic or sand-blasting plant.

(xxiv) A lock-up will be provided for non-ferrous metals, and a careful record kept thereof.

* See footnote on Page 125.

(v) **Mechanical vehicles.**

17. Mechanical vehicles will not be dealt with by the returned stores depot. They will be returned to the returned vehicle park located alongside the M.T. section of the base ordnance workshops.

Section 40.—Salvage.

1. The D.Q.M.G.'s branch of the staff is responsible for salvage. As operations proceed it is probable that a special controller of salvage will be appointed (see F.S.R., Vol. I, Sec. 137, para. 4), but until then the D.O.S. will be responsible for the salvage of ordnance stores.

2. Salvage will be collected under unit, division or corps arrangements. Material which can be utilized in whole or in part for re-issue to the troops, and material which has an intrinsic value, will be returned to railhead for evacuation, and will thereafter be dealt with by the services concerned with supply. Ordnance stores of this category received at railhead will be dealt with by the R.O.O.

Orders will be issued from G.H.Q. to denote material of intrinsic value to the state (see F.S.R., Vol. I, Sec. 136, para. 2).

Stores of no value will be destroyed locally.

3. The arms, equipment, and clothing of British personnel, whether dead, wounded or sick, will be sent to the base ordnance depot (but see Sec. 10, para. 12).

4. D.A.Ds.O.S. of formations may take into their charge any salvaged ordnance stores in diminution of indents upon the base.

5. Empty ammunition cases and packages which are of British pattern will be evacuated through ammunition supply channels.

6. "A" and "B" vehicles beyond field repair will be returned to the returned vehicle park located alongside the M.T. portion of the base ordnance workshops.

CHAPTER V.

REPAIR AND RECOVERY.

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Section 41.—Workshop Organization—General.

1. The division of responsibility between units and the R.A.O.C. for repairs to the various articles of units' war equipment is laid down in F.S.R., Vol. I, as follows:—

- (a) Units are responsible for carrying out first line repairs.*
- (b) The R.A.O.C. are responsible for all repairs beyond the capacity of units. These are sub-divided into:
 - (i) Second line repairs.*
 - (ii) L. of C. repairs.*

2. Similarly, the duties of recovery and evacuation of "A" and "B" vehicles* are shared between units and the R.A.O.C. as follows:—

- (a) Units are responsible for carrying out first-line recovery.*
- (b) The R.A.O.C. are responsible for all other recovery action. This is sub-divided into:—
 - (i) Second line recovery.*
 - (ii) L. of C. recovery.*

Unit drivers will, if practicable, drive or accompany disabled vehicles to the workshop, railhead or advanced ordnance depot as the case may be, so that they can take back the vehicles after repair or the vehicles issued to replace them.

Failing unit drivers, the R.A.O.C. will provide drivers.

3. These repair and recovery responsibilities necessitate the provision in the field of the following R.A.O.C. organization (which is described in detail in Sec. 42 to 44):—

- (a) *Light aid detachments*, permanently attached to certain formations and units, in order to assist them with first line repairs and recovery.

*See Definitions.

- (b) *Mobile workshop units*, allotted as divisional, corps or G.H.Q. troops to certain formations, for the purpose of carrying out second line repairs and recovery, to minimize the evacuation of quickly repairable stores to the L. of C.
- (c) *Stationary workshops*, established at the base (and advanced base if formed), to carry out L. of C. repairs and overhauls of units' equipment evacuated from the forward areas, and also to undertake certain manufacturing work in emergency.

4. Whenever practicable, equipments will be made serviceable at once by replacing the defective assembly or component. Spare assemblies and components are held in war equipments of units and ordnance field park sections for this purpose. Defective assemblies will be returned subsequently to the base workshops for repair.

This procedure not only insures that the equipment is put back into action as rapidly as possible, but also minimizes the evacuation of complete equipments to the mobile or base workshop for repair.

5. D.O.S. will lay down a time factor for repairs for L.A.Ds. and each type of mobile workshop: as for example:

L.A.Ds. ....	.....	4 working hours.
Divisional Workshop ....	.....	12 working hours.
Army Field Workshop ....	.....	48 working hours.

He will issue instructions that, in case of repairs estimated to take longer than these periods, the vehicle for repair will be sent to the next rearward repair organization. He will also lay down at what stage a vehicle will be automatically replaced; for example, when the repair is beyond the capacity of Army Field Workshop.

6. The recovery system must essentially be elastic, and exceptional measures are required in exceptional cases, but the normal procedure is as follows:—

- (a) *First line recovery*.—L.A.Ds. assist units to get disabled vehicles out of the way of other vehicles and troops, and to collect them at a first line recovery post if practicable. The location of any derelicts which cannot be moved will be notified to the second line recovery post either direct or through formation headquarters. In such cases the following information will be given:—

- (i) Name of unit.
- (ii) Map location of the vehicle, and any additional details which may help to locate it.

- (iii) Type of vehicle.
 - (iv) A short description of the damage or difficulty.
 - (v) Whether the vehicle is towable.
- (b) *Second line recovery.*—The recovery detachments of formation workshops will operate forward to undertake second line recovery of disabled vehicles from the various first line recovery posts (if formed), or from the actual location of the derelict, and their evacuation to a workshop or railhead.
- (c) *L. of C. recovery.*—The L. of C. recovery sections of G.H.Q. troops workshop normally operate from railhead (or from advanced ordnance workshop, if formed).

They evacuate vehicles requiring L. of C. repairs from army field workshops to railhead (or to advanced ordnance depot).

After an advance, they carry out systematic recovery in an area.

In certain circumstances—for example, before a heavy action—the L. of C. recovery sections may be moved forward to operate from formation workshops, and to assist with recovery as above.

A diagram of the recovery system is given in Plate VI.

7. When operating in a corps area, L. of C. recovery sections will come under the administration of H.Q., corps.

8. It is essential that every reasonable precaution should be taken to prevent damage to, or destruction of workshops by, enemy action.

Their prompt replacement, which would be vital to the continued efficiency of the fighting units which they serve, might be a great difficulty in time of war.

The tactical defence of mobile workshops is the responsibility of the formation administering them. They are provided with a small number of A.T. rifles and light automatics for the defence of the shop by workshop personnel.

9. Sites will be selected by the headquarters of the formations or L. of C. to which workshops are allotted, and will be in a protected area. Good road access and hard ground are essential.

Sites specially liable to bombing by aircraft or to long-range shell fire (such as important railheads, bridges, cross roads, docks and dumps) should be avoided.

10. Detection and recognition by hostile aircraft must be obviated as far as possible by camouflage, and care must be taken to minimize the effect of shadows.

Yards or open spaces in towns or villages off main roads are likely to provide suitable sites for mobile workshops.

The utilization of woods as sites should be adopted with caution, as such woods, unless extensive, form obvious targets for enemy aircraft. On the other hand, if there are numerous other copses in the locality, a site in a copse is likely to escape detection.

11. An efficient look-out system will be maintained and, at a pre-arranged signal, all lights will be extinguished and all movement cease.

12. No sign-boards or direction posts should be put out, nor should any other indication of the site, likely to betray its position, be given.

If necessary, men should be posted as guides at suitable spots. In most cases the protection detachments (see para. 8) will be able to combine this with their other duties.

Section 42.—First line repair and recovery.

1. Units are primarily responsible for first line repairs and recovery, as well as for the maintenance of their equipment.*

They are provided with tradesmen or other skilled personnel, and with hand tools and a limited quantity of spare assemblies, components, and materials required for minor repairs and replacements.

It is important that units should undertake all first line repairs up to the limit of their capacity, and if they have been encouraged to do so as a peace routine, they will in war be able, on the "stitch in time" principle, to avoid much unnecessary repair work.

2. In order to assist units with their first line repair and recovery work, and also to provide expert diagnosis and technical experience, light aid detachments are permanently attached to certain formations and units, for example:—

Artillery regiments (except A.A. Regts. R.A.—see Sec. 43).

Cavalry regiments and Tank battalions, Royal Armoured Corps.

Infantry brigades.

Machine-gun battalions.

Tank battalions.

R.E. field parks.

Divisional signals.

* Except that Royal Corps of Signals units are responsible for carrying out first line repairs to telephones, wireless sets, etc., held by all units in their formation.

The L.A.Ds. attached to R.E. field parks and to divisional signals (whose establishments of vehicles are comparatively small) are required to look after other small mechanized units not provided with L.A.Ds.

3. The personnel of a L.A.D. consists of an O.M.E., an armament artificer (fitter), an electrician, and a few fitters, and the necessary storemen, driver mechanics, drivers, etc., for their vehicles. Its transport usually consists of two lorries (one store and one breakdown), a car and a motor cycle.

4. Its functions are:—

- (a) To advise units how best to keep their equipment and vehicles in a state of mechanical efficiency; to help them to detect the causes of any failures or breakdowns; and to assist them in carrying out first line repairs up to their full capacity.
- (b) To assist units with first line recovery of breakdowns.
- (c) To maintain a close liaison between the unit and formation workshop.

During rest periods L.A.Ds. may be able to carry out more extensive repairs. If the time is available, the necessary parts and material can be brought up from the ordnance field park to enable them to carry out jobs which would normally be beyond their capacity when on the move.

In such circumstances, repair detachments of recovery sections may be brought up to assist them (see Sec. 43).

5. L.A.Ds. do not form part of the workshops in any sense. They are definitely an integral part of "B" echelon of the unit to which they are attached, and the O.M.E. is directly under the orders of O.C. unit, in the same way as the regimental medical officer.

The O.C. unit is the accounting officer for the vehicles and stores of the L.A.D.

When an L.A.D. serves more than one unit, as in the case of an infantry brigade, the O.M.E. is the accounting officer for all purposes.

6. A record of stores held will be kept in tally form on No. 2 copy of the field R. & I. voucher and stock record, A.F. G 1060.

Receipts and issues of stores will be recorded.

When stocks fall to 50 per cent. of the quantity authorized to be held they will be replenished by submitting indents direct to the base ordnance depot.

Section 43.—Second line repair and recovery.

1. Mobile workshop units are organized to carry out second line repairs and to undertake recovery.

The composition of these units varies with the formations which they are designed to serve, but generally they consist of a number of O.M.Es., armament artificers and tradesmen of the requisite trades.

They are equipped with machinery lorries of various types, breakdown vehicles, and store lorries to carry tools, equipment, and materials required for repair.

They will obtain major and minor assemblies, spare parts and miscellaneous M.T. stores for replacement purposes from the ordnance field park sections which will be located alongside them.

2. Mobile workshop units are formed by the combination of one or more of the following units:—

Main Shop;

Recovery Sections.

except in the case of an A.A. brigade workshop (see para. 10).

Each recovery section consists of two distinct detachments.

(a) A recovery detachment, equipped with breakdown vehicles and trailers.

(b) A repair detachment, equipped with machinery lorries.

Flexibility is the keynote of all ordnance workshop organization.

3. Mobile workshop units are provided as follows:—

(a) *To Serve units in the forward areas.*

Divisional workshops administered as divisional troops are provided on a scale of one for each division.

These will be formed, when C.O.M.E. corps so directs, by detaching from the army field workshop one or more of its recovery sections.

(b) *To serve corps and divisional units.*—Army field workshops R.A.O.C., administered as corps troops, are provided on a scale of one for each division, to serve both the divisional troops and also certain corps troops normally allotted on a divisional basis (for example, army field regiments, R.A., medium regiments, R.A., and tank battalions).

Thus all troops normally operating in divisional areas will be served by one of these workshops.

(c) *To serve G.H.Q. formations and units.*—Separate workshops are provided as G.H.Q. troops as follows:—

For a mobile division: a mobile division workshop, R.A.O.C.

For each anti-aircraft brigade: an anti-aircraft brigade workshop, R.A.O.C.

For all other G.H.Q. troops: a G.H.Q. troops workshop, R.A.O.C.

4. A *divisional workshop* consists of one or more recovery sections; as laid down by C.O.M.E. corps.

Its function is to deal with the "A" and "B" vehicles, armament and other equipment of divisional units and troops in the forward areas.

It is a light workshop. Its sections, or their component detachments, may be detached and located in forward areas.

It will obtain most of its requirements of stores and spares from the section of the ordnance field park located alongside it. (See Sec. 35, para. 1.)

It will not undertake extensive repair. All work beyond its capacity will be sent back to army field workshops.

Its recovery detachments will operate forward (see Sec. 41, para. 6 (b)).

A divisional workshop will be administered by H.Q. division. The formation to which it belongs will be responsible for its location and protection.

5. An *army field workshop* consists of a main shop to which may be attached from one to three recovery sections.

If all three recovery sections are detached to form a divisional workshop (see para. 3 above) recovery *detachments* will be formed, breakdown vehicles and personnel being withdrawn as necessary.

It will carry out the bulk of second line repairs. It will be located as far forward as the tactical situation permits; but it has to be remembered that easy access is of great importance. It will obtain most of its requirements of stores and spares from the section of the ordnance field park located alongside it (see Sec. 35, para. 1).

It will be administered by H.Q. corps, which will be responsible for its location and protection.

6. Machinery lorries held by divisional and army field workshops are equipped for the charging of M.T. secondary batteries.

Batteries requiring re-charging will be sent to the appropriate divisional workshop, which will replace them from a stock of charged batteries maintained by the ordnance field park section located alongside.

7. An army field workshop will whenever possible be moved as a whole. In a two-division corps, this principle can be carried out by arranging for one of the two army field workshops to go forward, leaving the second to complete the outstanding work.

An advance party will proceed to the new site, where all new jobs will be accepted by No. 1 shop on arrival. The map reference will be published in formation orders, so that there shall be a definite location to which all communications may be addressed.

Work in hand at the old site will be completed by No. 2 shop as far as possible. Before this shop moves forward, a report of any material left behind will be made to H.Q. corps, who will arrange for rearward services to take over.

8. In a rapid advance or retreat the two shops can be leap-frogged in a similar manner. No. 1 shop will go forward in one bound, and in the next bound No. 2 shop will go forward to a site well in advance of No. 1, which in turn will leap-frog No. 2's site at the third bound; and so on.

In this way the number of moves of each shop will be reduced as much as possible, and the maximum time for work in any one site will be obtained.

9. A *mobile division workshop* consists of a main workshop and three workshop or recovery sections, one for each of the two cavalry brigades and the third (slightly augmented) for the tank brigade. They are organized on similar lines to army field workshops.

Their functions are the same. Their establishments include recovery detachments.

For a rapid mobile action the repair detachments of the workshop or recovery sections may be kept back with the main shop and the recovery detachments only may be advanced.

They will obtain most of their requirements of stores and spares from the O.F.P. section located alongside the main workshop.

10. An *anti-aircraft brigade workshop* is a small shop equipped specially to deal with height finders, fire control and other instruments. One is allotted to each A.A. brigade, to which it is permanently attached.

In view of the fact that this workshop only serves the one formation, a simpler organization has been adopted, consisting of a small headquarters and two self-contained sections, one for each A.A. regiment R.A. (no separate recovery sections being necessary).

The headquarters consist of a small staff attached to H.Q., A.A. brigade, for co-ordinating purposes. The O.M.E. performs duties similar to those of the C.O.M.E. of a corps by acting as technical adviser.

The two A.A. regiment sections are, in effect, augmented L.A.Ds. permanently attached to each A.A. regiment R.A. They contain sufficient personnel, machinery, store and breakdown lorries to enable them to carry out all second

line repairs and recovery for the A.A. regiment and searchlight and R. Signals units. For repairs to guns and vehicles, beyond the scope of their sections, the units will depend upon the nearest formation or L. of C. shop.

They will obtain most of their requirements of stores and spares from the O.F.P. section located alongside the nearest formation workshop.

11. The *G.H.Q. troops workshop* serves the remainder of G.H.Q. troops for which provision has not been made above. These consist mainly of R.A. regiments (field, medium and heavy) and various R.E. and R. Signals units, etc.

When these troops go forward into corps areas, they will be served by the nearest formation workshop.

In such cases the G.H.Q. troops workshop may become a reserve shop, available to reinforce any of the army field workshops as required.

Its organization includes a main shop, similar to that of the army field workshop, and a number of L. of C. recovery sections, which are equipped with heavy transporters as well as ordinary breakdown tractors and lorries.

These sections undertake L. of C. recovery; that is, evacuation of vehicles back to railhead (or to advanced ordnance workshop, if formed).

The main shop and the L. of C. recovery sections will obtain most of their requirements of stores and spares from the O.F.P. section which normally will be located alongside the main shop.

All workshops and some O.F.P. sections are equipped for charging secondary batteries. In addition O.F.P. sections carry stocks of charged batteries of all standard sizes.

12. In all these shops, documents will be reduced to a minimum, and neither workshop indents nor expense vouchers will be used.

Temporary receipts will be given for equipments brought in for repair.

If, on examination, it is found to be impracticable to repair a store, a serviceable one will be issued without indent. The equipment will be entered up in a "mobile workshop journal," to facilitate the preparation of periodical return (on A.F. G 841) which will be required for the information of G.H.Q.

13. A simple record of all work done will be kept in journal form as follows:—

Serial No.	Cate-gory	Equip-ment or store	Nature of Ser-vice	Begun	Com-pleted	No. of items handled	Staff em-ployed
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The categories (which will be kept separate in recording the work performed) are as follow:—

- (a) Armament.
- (b) Tanks and armoured cars (excluding armament, which would be shown in (a)).
- (c) Other "A" vehicles.
- (d) "B" vehicles.
- (e) Other vehicles.
- (f) Range-finders, dial sights, telescopes, binoculars, directors, etc.
- (g) Wireless stores.
- (h) Miscellaneous.

The object of this journal is to provide statistics.

14. A record of expense stores and material will be kept in A.F. G 1060 (field R. & I. voucher and stock record). Action to complete stocks will be taken by submitting indents when stocks fall to 50 per cent. of the scale authorized.

15. Requirements of assemblies and spare parts will be communicated to O.F.P. sections on A.F. G 108 marked with the serial number of the journal entry for the job concerned.

16. A weekly engine return (Appendix VI) will be rendered to G.H.Q. direct by all Os. i/c mobile and stationary workshops.

Section 44.—L. of C. repair and recovery.

(i) General.

1. Stationary base ordnance workshops of considerable size, equipped with heavy power-driven machine tools, will be established to undertake repairs which are too extensive for the mobile workshops.

These workshops will be sub-divided as shown below:—

- (a) M.T. shop, sited in the neighbourhood of No. 1 sub-depot (see Sec. 36).
- (b) Armament and general shop, sited in the neighbourhood of No. 3 sub-depot (see Sec. 36).

2. The principal functions of the base ordnance workshop will be:—

- (i) L. of C. repairs to artillery equipments, vehicles, small arms, wireless and other instruments and to other ordnance stores evacuated from forward areas.
- (ii) Complete overhauls of vehicles, wireless sets, and other similar stores requiring periodical overhaul.

- (iii) Manufacture or reconditioning on a limited scale of spare parts for guns, vehicles, etc., to meet urgent requirements owing to temporary shortage of supplies from home.
- (iv) Manufacture of stores of an experimental nature or non-service pattern when specially required.
- (v) Assistance to units during the disembarkation of their mechanical vehicles. This will be rendered through the medium of the port workshop detachment; which at the end of the disembarkation phase becomes merged in the base ordnance workshop (see Sec. 22, para. 16).

3. The installation of a workshop of this nature will take a considerable time. During the early stage of a campaign, therefore, temporary arrangements will have to be made. For this purpose the advanced section of the advanced ordnance workshop is provided in war establishments, and will be sent overseas with one workshop company as early as possible.

This echelon is equipped with special machinery lorries fitted with 24 K.W. generators, and can provide power (110 volts D.C.) for the initial batch of machinery to be sent out, as a temporary measure.

Thus a nucleus of a base ordnance workshop—subdivided as shown in para. 1—can be formed immediately the force disembarks; but only a very limited amount of L. of C. repairs can be undertaken at first, and during this period all major repairs beyond the capacity of these installations will be sent home.

4. The permanent base ordnance workshops will be developed as rapidly as possible.

The actual number of companies required depends on the size of the force, and is calculated on the estimated amount of L. of C. repairs likely to be required to the guns, vehicles and other stores contained in the war equipments of units of the field force.

5. An advanced ordnance workshop will only be sent forward if specially ordered by G.H.Q.; for example, on account of undue length or vulnerability of the lines of communication from the base to the front.

6. It must be recognized that conditions of warfare are liable to considerable variation and it is conceivable, if an advanced base is sent forward under G.H.Q. orders, that the larger workshop may have to be situated in a more forward position on the L. of C. than the smaller shop.

It will be the duty of the D.O.S. in the field to vary the composition and organization of the stationary workshops as circumstances may demand, having regard to the length of the L. of C. and the general transport facilities.

7. Shops for the repair of textiles, boots and anti-gas equipment are dealt with under the heading "Returned Stores Depot."

(ii) Lay-out.

8. A base ordnance workshop will be sited with due regard to future expansion. A dry site is necessary with a dry hard road approach for vehicles. It should be connected with the railway system.

Provision will be made for a proper circuit and standing ground for in-coming and out-going guns and vehicles, and ample parking ground for guns and vehicles awaiting repair.

Careful consideration will be given to water supply, lighting and heating, fire fighting and air-raid precautions (see Chap. VII).

Camps for workshop personnel will be located close to the respective workshops, to avoid loss of time in marching to and fro.

9. The lay-out will depend upon the number of workshop companies grouped together. A typical lay-out for the base ordnance workshop is given in Plate VII.

10. In order that modification of an initial lay-out shall not be rendered difficult:—

- (a) Partitions in the workshop sheds will be reduced to the minimum.
- (b) Partitions required to segregate stores will be of expanded metal on easily movable supports.
- (c) All machines will be independent motor driven.
- (d) Separate foundations for machines will be restricted to power hammers, engines and precision grinders.

Even for heavy lathes, planing and slotting machines, circular saws, etc., foundations may be deferred till the position has stabilized.

11. The base workshop will be erected on a unit scheme of construction.

Trades involving a fire risk or necessitating an uptake through the roof will, as far as possible, be accommodated in separate sheds.

12. Each workshop will require its own offices. An office for the C.O.M.E. will be located near that of the C.O.O.

Each workshop will require its own:—

- (a) Receipt store (see para. 24).
- (b) Expense store (see para. 27).
- (c) Tool store (see para. 33).
- (d) Issue store (see para. 34).

The M.T. shop will require, in addition, an assembly store.

13. It may be necessary to establish an optical instrument repair shop and a wireless repair shop separate from the workshops, either at the base or at the advanced base workshop if operating separately. Establishment at the advanced base might save repaired instruments from getting out of adjustment by excessive travelling and repeated handling.

In order to avoid the necessity for duplication of certain machinery and plant, the shop should be built near, but distinct from, the workshops. A typical lay-out is given in Plate VIII.

Sites for instrument repair and wireless repair shops should be free from vibration or magnetic disturbance.

The design is typical only; the actual location of the various compartments will depend on the orientation of the site, and availability of distant view-points. It is preferable that optical shops should face north (in the northern hemisphere) and an unobstructed view for at least 500 yards is essential, while a longer one is very desirable.

(iii) Apparatus and power.

14. **Lifting apparatus.**—Workshops should always be provided with adequate lifting appliances. Quick-moving cranes are essential for efficiency, and for economy of handling.

It is essential that one 5-ton travelling overhead crane shall be provided in one bay and that the whole of the area of each main workshop shed shall be covered by a 2-ton travelling overhead crane. In addition, 12-ton and 20-ton travelling gantries will be provided in the vicinity of the workshop sheds.

15. **Machine tools.**—The machine tools enumerated in war equipment tables will be sufficient for the start of the workshops, but may have to be augmented considerably as the situation develops.

Machines will be despatched to the theatre of war complete with all tools and accessories.

16. **Cutting and welding plants.**—Acetylene and oxygen gas will be required.

Initial needs will be met by filled cylinders supplied on mobilization. Subsequent requirements will be met by sending out filled cylinders from home. If, however, the

theatre of operations is distant from any commercial source of supply, plants for manufacture may have to be set up overseas. In order to minimize delay in supply of the plant, specifications are held in readiness in the War Office, and also in the war box of P.O.M.E.

17. Power.—Power for driving the workshop machinery will ultimately be taken from power stations, but for use during the early stages of the campaign (see para. 3 above) engines and generators are included in the war equipment table of the advanced section of the advanced ordnance workshop, to enable a start to be made at once.

All motors above $\frac{1}{2}$ H.P. will be supplied at the British standard voltage, that is:—

A.C. 3 phase 50 cycles at 400 volts between phases.

Smaller motors may be connected between the neutral and outer conductors when the voltage suitable will be:—

A.C. single-phase 50 cycles 230 volts.

18. Range.—A testing range will be required for the amourers' shop.

(iv) Personnel.

19. A typical organization and distribution of the personnel of a base ordnance workshop is given in Table IX. The organisation and distribution of personnel of an advanced ordnance workshop, if operating independently, would be on similar lines.

20. The workmen will be divided into gangs of manageable size, each under the supervision of an experienced N.C.O.

Each gang should be as far as possible of similar trades.

These gangs will be combined into squads of at least 50 men, and each squad will be in charge of an O.M.E. or A.O.M.E.

The N.C.O. will be held responsible for the efficiency of the work of his gang and the O.M.E. or A.O.M.E. for that of his squad.

As a further precaution a special O.M.E. (if available) in the larger workshops can be detailed to inspect the work of particular gangs in rotation, on the same lines as an internal audit.

21. In addition to charge of squads as mentioned in para. 20, duties may advantageously be distributed to O.M.Es. on the following lines:—

- (a) Care of workshop plant.
- (b) Inspection and test of equipments.
- (c) Charge of drawing offices.
- (d) Specialization on electrical and optical work, guns and carriages, M.T., and wireless.

22. The staff of a base ordnance workshop is shown in Table IX, organized into squads for mechanical vehicles, artillery equipments, general stores, etc., together with certain specialist squads.

23. The war establishment of the base ordnance workshops is considered sufficient to permit the working of a double shift when necessary.

When this is done care must be exercised to include supervisory grades from O.M.Es. downwards in proportion to the number of men included in each shift.

(v) Procedure—Stores and accounting.

24. Normally all stores for repair in workshops except M.T. vehicles will be received at the workshop receipt store from the returned stores depot, but M.T. vehicles for repair and complete or bulky equipments will go direct to the workshops.

25. All stores transferred from the R.S.D. to workshops and from workshops to groups, will be consigned on A.B. 108 with serial numbers after a prefix W/.

26. A.F. G 1045 and 1045A will be prepared in the workshops. In the case of stores received from the R.S.D., the A.B. 108 will be the basis of the A.F. G 1045.

The procedure will generally follow peace methods except that costing will not be necessary and work time cards and work summary cards will not be kept.

27. The expense store will be conducted in accordance with peace procedure, but its scope will be extended to holding certain components as found necessary. The account will be kept in a simple tally similar to No. 2 copy of the field R. & I. voucher and stock record A.F. G 1060.

It may be sub-divided into separate sections. In the receipt store attached to the M.T. shop, for example, there may be sections for tracked vehicles, wheeled vehicles, general stores, etc.

The sections may be separated to provide convenient access to the portion of the workshop where the relevant work is proceeding.

28. It is important that stocks of materials and of the selected components should be limited to one month's requirements. Monthly estimates of these requirements will be furnished to the O. i/c P. concerned.

29. An assembly store will be formed, if the M.T. sub-depot is far away. In this store will be received serviceable or detachable portions of repairable equipments, and assemblies whose repair has been completed before the equipment to which they belong is ready.

In a small workshop the receipt and assembly stores may be in one, but as the shop grows it may be convenient to separate them.

30. Reconditioned components may be issued from the assembly store.

It may be found convenient to collect, in the receipt store, repairable components and assemblies recovered from vehicles, armament, etc., under repair, until it is possible to prepare one workshop indent to cover a large batch of similar articles.

31. Material, and components except as specified above, will be obtained as in peace. A copy of the expense voucher will be pinned to the appropriate A.F. G 1045A, and these will in their turn be attached to the relevant A.F. G 1045, which will be put away in numerical series.

32. Produce will be handed over to the R.S.D. as convenient, non-ferrous metals being recorded in Stationery Office Book 124.

33. A tool store will be formed within the workshop to obviate delay in workmen obtaining special A. in U. tools, taps, chasers, gauges, etc.

Records of issues will be maintained and a periodical check instituted.

34. An issue store will be formed for the collection, after repair, of small stores which are ready to go to the stores depot. Stores will be inspected for serviceability before issue.

(vi) Procedure—Technical.

35. As far as possible, each stripping and erecting squad (see para. 22) should be allotted repairs to specified types of vehicles, and to no others, in order that the men of each squad may become completely familiar with the types of vehicles with which they deal.

36. The function of the stripping and erecting squad is to strip down the vehicle, carry out any repairs to the chassis that may be possible as it stands, and reassemble with new or reconditioned assemblies. It should be the principal aim of the squads to effect the return of the vehicle in thoroughly serviceable condition in the minimum time.

37. In case the M.T. sub-depot is at any considerable distance from the workshop, part of the stock of major assemblies may be located in the workshops. In this case, serviceable assemblies removed from vehicles under repair, and assemblies made serviceable in the workshops, may in reasonable quantities be added to this stock instead of being transported to the M.T. sub-depot.

These movements will be reported to the M.T. sub-depot census branch, and also to the G.H.Q. census.

If no assemblies of the correct pattern are available in store, it will be necessary for the actual assembly removed from the vehicle to be reconditioned and replaced, and priority should be given to these assemblies to avoid delay in the completion of the vehicle.

38. Only a few machine tools will be allotted to the stripping and erecting squads.

Stripping and erecting squads should only undertake such minor repairs to assemblies as are within the scope of the squad, both as regards the equipment provided and the skill of its men, if such repairs can be effected without delaying the completion of the vehicle.

Normally all defective assemblies will be passed to specialist squads for repair.

39. The specialist squads will each deal as far as possible with one type of work only, for example:—

Engines.

Back axles.

Recuperators.

The specialist squads will as soon as possible be segregated from the remainder of the workshop.

40. After the overhaul, the engines of "A" vehicles will be tested on the test bench. In the case of "B" vehicles a test is not compulsory, though a short test on the bench should be carried out if time permits.

41. All "A" and "B" vehicles, after repair, will be given a road or cross-country test, according to the type of vehicle. A hill should be included in the test run, if possible. Fitters trained as test drivers are available for this purpose.

CHAPTER VI.

SUPPLY OF AMMUNITION.

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Section 45.—General.

1. Ammunition is one of the most vital of army supplies in war, for it is the final means by which nearly all effective injury is inflicted on the enemy. A shortage of it hampers every operation in the field, and a stoppage even for a very short period of time is likely to be fatal.

2. Outstanding characteristics of modern war are the great increase in the expenditure of ammunition, and in its variety. Elaborate organization will be necessary for maintaining its movements to the front, and for meeting widely fluctuating demands.

In point of tonnage and of cost the ammunition expended is likely to surpass any other type of material. When its military importance is also taken into account the necessity for a complete and efficient organization to deal with it becomes clear.

3. Most of the problems connected with the supply of ammunition are no doubt common to all belligerents, but special difficulties will arise in the maintenance of supply to British armies overseas.

The possibility of a temporary interruption of sea transport has always to be considered, and will entail the maintenance of increased reserves on the lines of communication.

The whole of the ammunition has to be shipped, disembarked, and passed through the "bottle-neck" of a base port, or ports, where it may be constantly exposed to the danger of air attack.

4. Knowledge of the characteristics of ammunition fires and explosions on a large scale, which are to be expected in base depots exposed to air attack, is still so incomplete that it is not possible to predict how far an ammunition fire will spread, or what damage it will cause.

Apart, therefore, from meeting the normal difficulties to be expected in the organization of the supply of large quantities of important material, the results of fires and explosions, whether caused by accident or by the enemy, have constantly to be borne in mind.

5. It should be remembered that the object of an explosive is to explode. (Magazine Regulations, Part I.) This is a principle which should never be overlooked.

Circumstances will arise on active service where complete safety precautions in connection with ammunition cannot be taken, and certain risks must be accepted, but the highest responsible authority should be consulted, or in any case informed, when these risks have to be taken.

The result of possible explosion or fire should be considered, and the question asked: Has everything practicable been done to guard against this danger?

Unless this question can be answered in the affirmative, the occurrence of a fire or an explosion will produce a difficult situation for those in responsible authority.

6. As an immediate consequence of these considerations, it should be accepted as a principle that no accumulation of ammunition should ever be allowed to grow in or near docks, railway plants, hospitals, inhabited areas or organizations of military or civil importance in or near base ports.

Base ammunition depots must therefore be remote from all establishments that might be damaged by any explosion that might occur.

Section 46.—Early stages of a Campaign.

1. Like every other large organization in the field, that for the supply of ammunition will take considerable time to build up; but during that time the fighting troops must be supplied with ammunition.

2. If the overseas base is within a day's journey from the home ports, ammunition may be expected to arrive daily, in small ships or barges; but if the base is more distant, larger ships may be used, arriving at longer intervals, and the flow of ammunition into the base may be intermittent.

In either case the rate of its despatch to the front will depend mainly on the intensity of the fighting.

From the earliest stages, however, a reserve will be accumulated. Its size will depend initially on forecasts of anticipated expenditure made in peace, on the length of the sea voyage and other factors. Its development and its distribution will be decided by G.H.Q.

3. It is an important principle that accumulations of ammunition must not be allowed to form in the dock area or near the landing place.

4. Initially, ammunition may be sent direct from the base port to the front in railway wagons or—where no railway service exists—in M.T. or other vehicles.

Wagons or vehicles should be loaded direct from the ship, and should proceed thence to railhead, or in the case of road transport, to points in the forward areas where the ammunition can be handed over to the R.A.S.C. corps ammunition parks.

(For ammunition load tables, see Field Service Pocket Book.)

5. When the supply of ammunition from home exceeds the needs of the forward areas, the surplus will be stored under temporary arrangements until the permanent depot is ready for receipts.

No attempt should be made to store on the future site of the permanent depot, as this will only hinder construction, and increase explosion risks and handling difficulties. Possible solutions are:—

- (a) Utilization of sidings on a branch line, not required by movement control, to dump ammunition beside the lines.
- (b) Formation of roadside dumps, necessitating road transport to and from the nearest suitable siding.
- (c) A combination of (a) and (b).

Dumps must never be placed where their explosion could interfere with lines of communication or endanger other important installations. The use of isolated buildings, if available, will avoid exposure to weather and aid concealment.

It may be necessary to relax safety distances in temporary dumps, but the increased risk of total loss must not be overlooked. For this reason, and because of exposure to weather and the increased labour and transport required by temporary dumps, every effort must be made to hasten the completion of permanent depots.

6. The use of vehicles (rail or road) for temporary storage (“en cas mobile”) either on the L. of C. or at railhead has great advantages as regards mobility and rapidity of despatch. When the fighting troops are on the move it may be the only practical way to deal with ammunition issues.

It has, however, the drawback that the vehicles under load are not available for their normal work, and (as far as the R.A.O.C. are concerned) this practice will only be resorted to with the sanction of G.H.Q.

7. The formation of dumps of ammunition at, and in front of, railheads is a matter for decision by G.H.Q. and formation headquarters. The R.A.O.C. personnel for railheads, and for all dumps on the L. of C., will be found from that of the base ammunition depot.

8. If the base is merely a beach, with no facilities, it may be necessary to keep the main reserve of ammunition on board ship until the formation of dumps on shore becomes practicable; but ships must be cleared as quickly as possible, to free them for their normal work.

9. Under arrangements made by G.H.Q. issues, receipts, stock, and in the case of base depots, dues in, will be reported daily—or oftener if necessary—for all ammunition held in R.A.O.C. charge.

Instructions will be issued by G.H.Q. regarding the replenishment of railheads from ships, dumps on the L. of C. or base ammunition depots.

10. The construction of the base ammunition depot (or depots) will be put in hand at the earliest practicable moment, and will be a service of special urgency.

As soon as any part of it is completed to the point where it can be used for storage, the flow of ammunition from the base port to the depot, and thence to railheads, will be developed.

At this stage systematic organization, based upon experience, becomes practicable, and the principles on which it can be built up are dealt with in the following pages.

Section 47.—Supply of Ammunition in the Field.

1. The main difference between the ammunition supply system and that for the supply of other ordnance stores is that in the case of ammunition wide and unpredictable fluctuations of expenditure occur.

The flow of ammunition from rear to front must be automatic. Each echelon will automatically be replenished from the next rearward echelon, and a “head” of ammunition will therefore be kept up in each echelon to ensure that this flow is maintained.

2. The general staff decide on the quantities of ammunition required in the field, in rounds for each gun, and its distribution at depots and railheads. The D.Q.M.G.,

through the D.O.S., demands the necessary quantities from the War Office, after reckoning the stocks already held. Provision of spare components is an ordnance matter.

The D.O.S. is responsible to the D.Q.M.G. for the maintenance of L. of C. stocks, and must at all times be able to tell the D.Q.M.G. in detail what he holds.

He must bring to the notice of the D.Q.M.G. any anticipated shortage of any nature, and he is responsible that fresh supplies of ammunition are distributed between base depots so as to maintain appropriate stocks at each.

3. Units do not indent for ammunition. Expenditure is reported daily by fighting units, and formations submit consolidated reports to G.H.Q., together with forecasts of any anticipated abnormal expenditure.

G.H.Q., on receipt of these reports, orders the necessary number of complete trainloads of ammunition to be sent forward from base ammunition depots to each ammunition railhead, from which automatic replacement of expenditure has been made to the R.A.S.C. for distribution.

4. R.A.O.C. responsibility for the forward supply of ammunition ceases at railhead, or at corps or G.H.Q. dumps when these are formed, except for any inspection work that may be needed.

5. A diagram illustrating the system of supply of ammunition in the field is given in Plate IX.

6. Duties in connection with the inspection of ammunition and explosives are laid down in Sec. 61.

Section 48.—Procedure at Ports.

(i) Unloading.

1. The unloading of ammunition from ships is a function of the Movement Control.

An ordnance officer is however attached to H.Q. docks group, at each port, to advise the docks authorities on all technical matters.

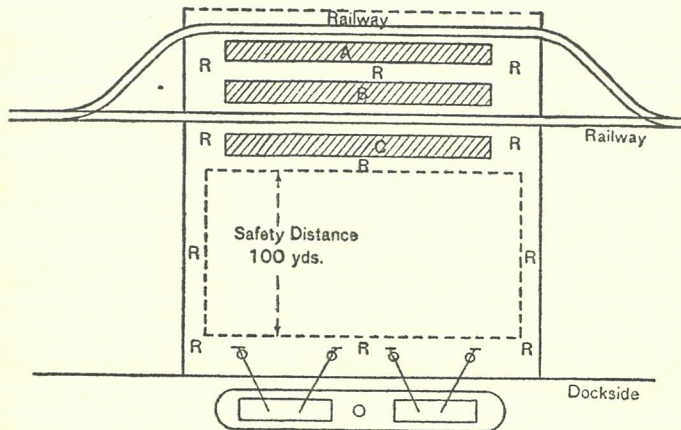
2. A separate wharf should be allocated for the landing of ammunition, and suitable road and railway facilities will be required.

3. The following diagram indicates an arrangement which will be found to give good results as regards safety as well as rapid and economical working.

It will not be regarded as a standard to be implicitly followed. Detailed arrangements will of course depend on

the facilities to be found at the port concerned; but regard should be paid, as far as local circumstances allow, to the principles on which this plan is base; that is to say:—

- (a) elimination of man-handling as far as possible.
- (b) one-way traffic.
- (c) safety distance between ship and rail, and between empty and full transport.



4. The wharf, which may be the dock side or a jetty, should not be less than 100 yards from the loading platforms (ABC) and the railway sidings.

Where the safety distance is not available it may be possible to reduce the risk by the erection of traverses.

The sidings are double, and along them, at wagon floor level, the loading platforms are made, about 18 feet wide.

Running along the wharf and the platforms is a paved roadway (RRR) suitable for horse and motor vehicles.

Along the dock side are movable cranes that can be placed so as to suit the position of holds in the various ships. These cranes are supplied with flat scale-boards capable of a load of about 25 cwt.

A number of flat carts, either horse drawn or motor vehicles, ply round the paved way, always moving in one direction. Local or service vehicles may have to be adapted for this purpose in R.A.O.C. workshops.

The loaded scale-boards are raised from the ships' holds and lowered on these flat carts, which then take them to the allotted part of the loading platforms, where the ammunition is collected by natures and sub-varieties and loaded into railway wagons.

5. As the quantity of ammunition to be dealt with increases, the capacity of the plant can be augmented by the addition of more sidings and platforms.

6. By this arrangement a high rate of working can be attained, and ammunition can be despatched in uniform and well-sorted consignments.

Should wagons not be available for loading, through shunting or other causes, the unloading of the ship need not be stopped, as the ammunition can be deposited on the platforms in readiness for loading when more empty wagons arrive.

7. It is a principle (see Sec. 69, para. 37) that ships are loaded with complete rounds. To facilitate discharge, the position in the ship of the types and components comprising the cargo is shown on the loading plan.

8. In the case of component ammunition, the principle that wagons should be loaded with complete rounds only has here to give way to the necessity for clearing the ship as quickly as possible. To sort components on the wharf and to assemble them into complete rounds before loading would occupy space which is rarely available; would take time, and so delay the unloading of the ship. Shell or cartridges are therefore normally loaded into separate wagons, and fuzes, tubes, and other small components may be loaded into any partly-filled wagon irrespective of contents.

If, however, wagons are despatched direct to railhead from the wharf, they must be loaded by complete rounds, however inconvenient.

9. Under favourable conditions it will be found possible to unload 40 tons for each crane every hour, but such a high rate is not likely to be maintained. 25 tons a crane per hour is a good average.

(ii) Forms to be used.

10. The various forms used are described in the following paragraphs.

11. Bill of lading. (See footnote to Sec. 69, para.26). Prepared by O.O. port (home). Despatched by docks service (home). Received by docks service (overseas).

It will show ballistic groups/lots/batches (see Sec. 69, para. 38). With the bill of lading will be the ship's **stowage plan**.

12. Ship telegram.—Sent by War Office. Received by (i) Movement Control (docks); (ii) G.H.Q.
Summarizes bill of lading.

13. *Confirmation telegram*.—Sent by O.O. Docks. Received G.H.Q. Confirms ship's arrival.

14. *Docks loading order*.—Telegraphed by D.O.S., quoting the relevant ship telegram. Received by O.O. Docks. Repeated to depot/railhead concerned.

Shows allocation of cargo and should be received by O.O. Docks before arrival of ship.

Armed with loading order, O.O. Docks is able immediately on arrival of ship (and some time before off-loading can begin) to make out advice and discharge list.

Spare components are normally sent on demand, and consigned to the depot which demanded them. Should any spare components arrive not so consigned, they must, on arrival, be notified to G.H.Q. who will allot them.

15. *Advice and discharge list* (for specimen see Appendix VII).—Made out by O.O. Docks from loading orders and bill of lading.

It shows the complete contents of the ship in detail by types, with columns to show quantities allocated to depots and quantities discharged each day.

Spare components are shown separately. These are normally sent on demand and consigned to the depot which demanded them. Should any spare components arrive not so consigned, these will, on arrival, be notified to G.H.Q., who will allot them.

Any item which has been the subject of special orders (particularly in relation to the association of components) will be indicated in the remarks column. New types will also be noted.

Such information will be used as the basis of a special warning telegram from O.O. Docks to C.O.O., B.A.D., quoting the wagons in which the stores concerned are despatched.

The advice and discharge list will be distributed as follows:—

Copy No. 1: Handed by O.O. Docks to docks service to clear bill of lading.

Copy No. 2: Retained by O.O. Docks pinned to ship telegram and loading order, to support daily ammunition statement.

Copy No. 3: Sent to G.H.Q., to show completion of loading order.

There will usually be time to type the advice and discharge list (and the extracts mentioned below) between the arrival of the ship and the time when she is ready for discharge.

16. *Extract advice list*.—It shows the ammunition which will be found in each hold and its destination.

It will be prepared by O.O. Docks. Copies will be given to the R.A.O.C. representative in each hold, and the R.A.O.C. representatives on the quay who are supervising the loading of wagons for the various destinations.

17. *Indent for goods wagons* (A.F. W 5153).—Made out by the docks service, from advice furnished by O.O. Docks on the basis of the loading order. (See Instructions for Movement Control, Appendix I.)

18. *Waybill* (Appendix XI).—Prepared by R.A.O.C. checkers, as they load wagons, to show ship, berth, date, wagon number, particulars of contents and destination (in code).

Copy No. 1 is tacked inside the wagon if practicable, to the roof, immediately over one of the doors.

Copies Nos. 2 and 3 are used in the office of O.O. Docks as a basis for preparing the train list and daily issue list.

19. *Daily issue list* (see Appendix VIII).—Prepared (3 copies) by O.O. docks from Waybills. It shows port, ship, berth, date, number and type (capacity) of each wagon, nature and quantity of contents and destination (in code).

A separate list is used for each ship for each day of discharge.

Copy No. 1 passed to docks service attached to relative advice and discharge list.

Copies Nos. 2 and 3 used by O.O. docks staff for preparation of daily components summary and daily ammunition statement.

20. *Wagon Movement Order* (A.F. W 5158).—Compiled (3 copies) by O.O., docks staff from daily issue list or waybills, as convenient. Sent to Movement Control. It shows destination (in code) location and registered numbers of all wagons for despatch and their contents (in general terms).

21. *Detail sheet of train* (A.F. W 5159).—This is a Movement Control form, made out in the marshalling yard, showing the composition of trains as despatched. If during their journey trains are re-marshalled at regulating stations, fresh detail sheets will be prepared here.

22. *Train telegram*.—Advice of despatch will be telegraphed by Movement Control to their representative at the consignee depot, who is in close liaison with the O.O. i/c Traffic at the depot. It will contain general information as to the contents of the train.

23. *Daily components summary* (see Appendix XII).—It shows, for each nature of ammunition, the quantity of its components despatched in each consignment.

The columns are totalled to show the number of complete rounds in the consignment and the unallotted surplus of any component. Such surpluses are brought forward on the next day's statement.

The form thus produces a running account of components, showing complete rounds "married" and despatched daily.

Consignees use a similar form to "marry" receipts.

24. *Daily ammunition statement* (A.F. G 882A.—Army: A.F. G 882B—R.A.F.).—Compiled daily by all R.A.O.C. installations issuing and receiving ammunition to show the day's transactions and stock on hand (in complete rounds) at a fixed hour.

This system does away with the necessity of using ledgers and their supporting vouchers in the field, and enables all transactions during the day to be seen at a glance.

25. *Daily stock telegram*.—A summary of the daily ammunition statement, sent daily to G.H.Q. by all R.A.O.C. ammunition installations.

By consolidating these telegrams, D.O.S. is able to present daily to D.Q.M.G., the stocks of all natures of ammunition, so that demands for replenishment may be sent to the War Office and the allocation of loading orders decided.

26. All telegrams concerning ammunition will be sent in the ammunition code (see Field Service Pocket Book). The same code will be used to indicate on the wagon label (A.F. W 5156) the contents of the wagon (see Instructions for Movement Control, Appendix I).

(iii) Method.

27. The working of each ship will be supervised by an officer or warrant officer.

28. For each ship a N.C.O. in charge and one R.A.O.C. representative for each hold will be detailed to assist the docks service checkers in clearing the ship.

The duty of the N.C.O. is to keep the wharf personnel informed of what is next coming off the ship.

The representatives in the holds will ensure that ammunition is properly handled and that as far as practicable ballistic groups and sub-varieties are not mixed on the scale boards.

It is not their duty to check quantities. That is the function of the Movement Control.

The N.C.O. will be provided with the advice and discharge list, and the representative in each hold will have an extract advice list as a guide to the types to be unloaded.

29. On the wharf a N.C.O., R.A.O.C. (foreman checker) will be detailed for each "rake" of wagons (see Definitions) for a particular destination.

From his copy of the advice and discharge list (or extract) he will allocate wagons according to the types of ammunition coming off the ships, and will detail a R.A.O.C. checker to each wagon loading.

Wagon checkers will ensure that their wagons are loaded according to instructions as regards type and quantity (see Sec. 51, para. 17).

They will make out waybills (3 copies) tacking No. 1 copy inside the wagon. For specimen, see Appendix XI.

The foreman checker will verify the loading, seal the wagon and record wagon number, nature and quantity of contents and checker's name in A.B. 136.

Labels will be affixed by personnel of the docks service and checkers will complete these labels to show contents, weight and date.

30. Waybills as completed will be collected and taken to the office of O.O., Docks, to be consolidated into the daily issue list.

31. The total quantities landed each day will be entered, from the daily issue lists, into the "discharged" columns of the advice and discharge list, for ammunition packed in complete rounds.

For component ammunition it is first necessary to "marry" the components on the daily components summary, before entering complete rounds on the advice and discharge list.

(iv) Personnel.

32. The initial provision of R.A.O.C. personnel attached to the docks service (see war establishment of H.Q. and 1 dock group) contains a proportion for the transit duties in connection with ammunition laid down above.

33. This is, however, only a nucleus, and considerable augmentation will be needed as the campaign proceeds.

Additional personnel will be required also for the staff of A.D.O.S. Ammunition (if appointed). Details of the extra personnel likely to be required at a later stage of a campaign are in the war box of the C.O.O., base ammunition depot.

It will probably be found necessary, at an early stage, to establish an ammunition repair factory (see Sec. 54).

Section 49.—Base Ammunition Depot—Lay-out and Construction.**(i) General.**

1. The procedure for selecting the site is laid down in the Manual of Movement (War), Sec. 58.

The site must be sufficiently level to allow of quick lay-out of railway lines clear of other military installations, towns, or large villages; and must not itself constitute a menace to vital communications. Sites amongst sand dunes, if obtainable, are dry, contain natural traverses, have soil easy to work, and make concealment less difficult. Land which is liable to flood, or which is densely covered with resinous timber or gorse, should be avoided.

2. Magazine Regulations, Part II, will be taken as a guide to the principles of lay-out, construction and safety distances.

Mandatory clauses in these regulations may not be relaxed without special authority from G.H.Q. (see Preface to the regulations).

Sub-depots should be separated by distances of two or three miles.

3. Sheds will on no account be sited in straight rows or in any symmetrical pattern. The lay-out will be designed to present as inconspicuous a target as possible from the air.

Natural features of the ground will be utilized as far as possible.

4. A lay-out for a depot (three sub-depots) to hold 21,000 tons (which is the maximum to be stored in any one depot) is given in Plate X.

This is not intended to be rigidly copied, but will be adapted to suit local conditions.

5. It will probably be found necessary to deal with ammunition in a depot before the structural work is completed. This leads to waste of labour in handling the ammunition, and deterioration through exposure.

The construction of depots should therefore be pressed forward by sub-depots in turn, thus ensuring a minimum area under temporary arrangements (see Sec. 46, para. 10).

6. Many of the instructions in Sec. 36, para. 15, concerning the lay-out of a base ordnance depot, applies also to a base ammunition depot, and these should be followed as far as they are relevant.

(ii) Storage space for ammunition.

7. The amount of ammunition of various categories to be stored in a depot or sub-depot will depend on the operations, and on the theatre of war.

It may be taken, however, that, for safety reasons, no sub-depot will be required to hold more than 7,000 tons.

8. A guide for calculating storage space will be found in Table XV.

(iii) **Offices.**

9. The office accommodation required will be approximately as follows:—

	Area sq. ft.	No. of rooms.	
<i>Base ammunition depot—</i>			
H.Q. Office, C.O.O.	} 1,600	{	6 In a central position.
I.O.O. and clerks			
Sub-depot office			
O.O. and clerks	} 540	{	2 At each sub-depot.
Transit branch			
	200	{	1 At each sub-depot marshalling yard.
Traffic centre and yard	540	{	2 Near main mar- shalling yard.
Regimental duties	360	{	2 In each camp.
<i>Ammunition empties depot</i>	700	{	3
<i>A.D.O.S. Amn. (if ap- pointed)</i>	2,100	{	9
<i>Ammunition repair factory (if formed)</i>	1,600	{	7

Section 50.—Base Ammunition Depot—Organization.

(i) **General.**

1. The system of organization of a base ammunition depot in the following paragraphs is given in outline. It will probably have to be adapted to suit local conditions and in the light of experience as the campaign progresses.

2. The general organization of the depot will be as follows:—

Central H.Q. office for C.O.Os. staff and 1 O.O. traffic centre.

Three sub-depots, each under an O.O. Each sub-depot will have its own sidings, transit branch and office.

Central laboratory.

Ammunition empties depot.

Camp or Camps for personnel.

3. The sub-depots will be sited according to the nature of the ground, but should in any event be separated from one another by distances of two or three miles.

4. The three sub-depots will be similar in arrangement.

Each will comprise normally four lines of sheds, for Categories A, B, C and E, and D (see Magazine Regulations, Part II). Each sub-depot will be in charge of an O.O., assisted by an officer and a warrant officer, with sufficient rank and file to provide N.C.Os. i/c lines, N.C.Os. i/c sheds, clerks, checkers, etc.

Depot establishments provide for a pool of clerks and storemen. Issues and receipts may be made by sub-depots in turn or simultaneously, as the situation demands, and the pool system facilitates this.

5. The laboratories will be under the I.O.O.

6. The ammunition empties depot is a separate sub-depot for the storage of ammunition empties returned from the front. (See Sec. 53.)

(ii) Duties of Officers.

7. The distribution of duties within the depot are as follows:—

(a) The duties of the C.O.O. are laid down in Sec. 19.

(b) The O.O. of each sub-depot will be responsible to C.O.O. for the general working of his sub-depot. He must necessarily have a full knowledge of the details of all types of ammunition, and of depot work generally. He will be responsible to the C.O.O. for the correctness of issues to railheads, for the accuracy of his stocks, both as regards stacking and quantity, for the maintenance of safety appliances, and for carrying out all orders relating to ammunition under his charge.

In the event of air attack or other danger, he will be responsible for directing operations against any fire which may break out in his sub-depot, and for the decontamination of any ammunition or any area in his sub-depot which may be sprayed or otherwise contaminated with mustard gas.

His duties involve the most advantageous use of the personnel allotted to him, and its supervision in order that ammunition may be carefully handled.

(c) The I.O.O. is adviser to the C.O.O. on all matters requiring technical knowledge of ammunition.

He will undertake such inspections and tests of ammunition in the depot as may be ordered, or as he may recommend to the C.O.O.

He will prepare technical reports on all defects in ammunition that come to notice.

He will inspect all consignments arriving at the depot, the condition of which is suspected to be other than serviceable, with a view to excluding all but safe and fully serviceable ammunition from stock.

He will carry out any demolitions that may be necessary.

Any repairs or replacements required to make ammunition safe or serviceable will be carried out under his supervision.

He will also carry out such inspections as may be necessary of ammunition on charge of local units, such as A.A. batteries. (See also Sec. 61.)

- (d) The O.O. i/c Traffic will be responsible to the C.O.O. for all routine dealings with the sub-depots and groups and with the Movement Control with regard to incoming and outgoing trains.

(iii) Personnel.

8. The strength of the R.A.O.C. personnel engaged on ammunition duties will of course depend on the scale of the campaign, and upon the supply of labour for actually handling ammunition.

The fact must always be borne in mind that the ammunition supply fluctuates between periods of extreme pressure and of relative quiescence.

The periods depend on field operations, and cannot always be foreseen. At any moment, therefore, the ammunition service may be called upon to put forth its maximum effort and to maintain it for some time, perhaps under conditions of danger due to attacks.

9. These considerations make it necessary that the personnel of ammunition depots, etc., be adjusted with a view to carrying on the service day and night for considerable periods and under difficult conditions. A principle to be followed is that for every important duty at least two men should be available, each capable of carrying on by himself. By this organization the risk of failure will be reduced to a minimum.

10. The provision of personnel for ammunition duties in war establishments (that is H.Q. base ammunition depot and three ordnance ammunition companies), will not provide labour (see (iv) below), but is sufficient for the supervision and administration of a base ammunition depot holding up to about 21,000 tons, and handling 500 tons in and 500 tons out daily. Personnel are also included for a separate ammunition empties depot and for two railhead detachments.

The distribution of the personnel is shown in Table X.

11. As the duties of the R.A.O.C. ammunition personnel are to a great extent supervisory, the proportion of warrant officers and N.C.Os. to privates will be unusually high.

12. As a result of the relatively minor nature of the ammunition service in peace, the supply of trained R.A.O.C. ammunition personnel on the outbreak of war will be small, and it is therefore of special importance that there should be no delay in training more R.A.O.C. personnel in ammunition work.

The demand for such personnel will arise in an acute form when ammunition railheads and field ammunition depots have to be manned, and when base ammunition depots develop.

13. It will therefore be necessary to organize, as early as practicable, a school of instruction in ammunition duties, where all ranks, both officers and others, can be trained in considerable numbers.

14. When trained, this personnel will be employed at base depots, and will form a pool whence drafts can be sent to meet requirements as they arise.

15. For the purpose of inspecting R.A.F. bombs and ammunition (see Sec. 1, para. 2 (a)), R.A.F. personnel will be attached to the base ammunition depot. These will work under the I.O.O.

16. Personnel should be housed as near as safety considerations permit to the sub-depot (see Sec. 49) in which they work, so as to avoid waste of time in marching to and fro.

Each sub-depot will require its own camp or group of billets.

(iv) Labour.

17. This is likely to consist of local unskilled labour, and the work of such labourers, after training and under adequate supervision, is very satisfactory. For each handling, an average output of five tons a day for each man may be expected with inexperienced unskilled labour working under good conditions. This allows for one day's rest in seven and for cooks, etc.

For specific jobs at high pressure, a 10-ton wagon can be loaded from stack in six man-hours, and unloaded direct into lorries in four man-hours.

18. There are two systems of working:—time work (eight hours a day) and task work.

19. When dealing with ammunition time work is on the whole to be preferred, as the temptation to hurry and to handle the ammunition roughly is absent.

Task work, under which the labourers are released on the completion of their allotted amount of work, will not

increase the tonnage handled, but the hours of work will be considerably shortened, and the work of an eight-hour day may be completed in about five hours.

On the other hand, the increased rate of working results in damage to ammunition and packages, and in added risk, and the responsibility of the R.A.O.C. in restraining rough handling is increased.

20. After experience of the short working hours of task work, very poor results will be obtained from native labour if time work is resumed.

21. The efficiency of native (or any) labour will be greatly increased by continuous employment on the same work and arrangements should be made with the labour authorities accordingly.

The men learn the best method and take an interest in their own efficiency.

They will learn to distinguish sub-varieties of ammunition and to detect defects, such as damaged packages, absence of grummets, etc., which they will bring to notice.

Selected men can be attached to sheds, and are of great service in keeping the sheds clean and in good order, in repairing minor defects, and in assisting in the general work of the shed.

22. For the conditions of employment of civilian labour, see Sec. 2.

23. Experience has shown that labour in the depot should be arranged and distributed, and the work apportioned, by the R.A.O.C. These duties cannot be carried out to the best advantage without technical ammunition knowledge and detailed information regarding the ordnance work in hand (in other words, ordnance training).

24. It is essential to satisfactory working that the relations between the R.A.O.C. and the labour authorities should be good. Any friction or lack of co-operation here will at once be reflected by a falling-off in efficiency.

25. Labour should be accommodated as near as possible to the sub-depot in which they normally work, and if possible in close proximity to the R.A.O.C. for that sub-depot.

26. As the personnel, both R.A.O.C. and labour, may be required for immediate work at any time of the day or night, their sleeping quarters should be so arranged that the men required can be turned out without disturbing the remainder.

For this reason the scale of tentage, huts, or billeting should be more liberal than in the case of men who are not liable to long spells of day and night work.

Every effort must be made to provide dry and comfortable sleeping accommodation. Hot food, etc., should also be available for men working at night in bad weather.

Section 51.—Base Ammunition Depot—Procedure.

(i) Receipts.

1. Full particulars of each train load despatched to a base ammunition depot will be received by the Movement Control representative at the traffic centre by means of the train telegram (see Sec. 48, para. 22).

2. This train telegram will enable advance instructions to be given to O.O. i/c Traffic, detailing the sub-depots, and the particular sheds therein, to which the wagons should be distributed. This will be effected by means of the train and wagon distribution form shown in Appendix IX.

3. Should a train load arrive, however, without such previous warning, it will nevertheless be off-loaded without delay, the detail sheet of the train being used to guide the distribution of wagons.

4. (a) O.O. sub-depot, on receipt of train distribution form, will ascertain from N.C.Os. i/c lines the distribution of wagons to sheds, and will notify this to the transit branch of his sub-depot on the wagon distribution form (Appendix IX).

(b) At the same time, O.O. sub-depot will demand labour from his O.C. Labour Camp, showing the distribution to sorting platform and the respective sheds.

5. The O.O. i/c Traffic will check train distribution form with detail sheet of train, and split the train as ordered. Transit branch at each sub-depot will cause wagons to be placed at sheds or sorting platform as ordered in the wagon distribution form.

6. Inward consignments will be checked twice on receipt.

7. The first check is merely to ascertain at once any obvious major error, such as a truck of H.E. labelled shrapnel, or 6-inch howitzer instead of 6-inch gun, in which case the wagon can be shunted to its proper place, and the distribution of the whole train checked, and if necessary reported to the Movement Control.

8. This first check will be made immediately the wagon arrives at the shed. The checker, who should be the N.C.O. i/c shed, will verify the contents as far as he can by opening the wagon and comparing its contents with the waybill. He will endorse the waybill to show its apparent correctness or otherwise, and send it to the sub-depot office.

9. The second check will be made during off-loading. In this case the checker will check each package, shell, etc., entering the result of his check on a **check-form** shown in Appendix X and will post shed tallies therefrom.

10. This check-form will be sent to the sub-depot office for comparison with the waybills, and for consolidation into the **sub-depot off-loading list** (see para.14).

11. If there is disagreement between the check form and waybill, the check-form will be taken as correct, except in the case of an obvious explanation of the discrepancy.

12. Only in the event of large inaccuracies will discrepancies be referred back to ports.

13. Waybills will be receipted either by—

(a) N.C.O. i/c sorting platform, if wagonloads are broken there.

(i) in the case of wagons re-sorted and consigned to sheds:—N.C.O. i/c S.P. will make out fresh waybill showing:—

wagon from which taken;
nature and detail, sub-variety, number.

This he will place in the wagon, for the information of the shed concerned.

(ii) in the case of wagons re-sorted and consigned to railhead:—F. i/c S.P. will make out fresh waybill, pinning No. 1 copy in the wagon.

He will pass No. 2 copy to O.O. i/c Traffic, for inclusion in detail sheet of train; and No. 3 copy to group concerned. No. 3 copy will be marked "issued direct from wagon. . . ."

Such issues will be accounted for in the sub-depot's daily statement.

(b) N.C.O. i/c lines, if wagon is forwarded unopened to the shed.

14. Each day's check forms will be consolidated into a sub-depot off-loading list which, with the daily components summary forms the basis of the receipts entries in the sub-depot's daily statement (see para. 49).

15. Except in emergencies, ammunition will not be loaded or unloaded at night.

Darkness increases the danger of accidents in handling. Results, from the labour point of view, are poor. Moreover, the necessary lights increase the danger of air attack, and also of fire.

16. For these reasons, wagons arriving too late to be off-loaded by daylight will not be shunted to their sheds until shortly before work begins next day.

On no account will loaded or empty wagons be allowed to stand outside or near ammunition sheds during the night.

Wagons will be removed from the vicinity of ammunition sheds as soon as possible after they are emptied or loaded.

Care should be taken not to fill the interval between sheds with wagons, which might otherwise provide a train of explosive from shed to shed.

(ii) **Sorting.**

17. In many types of ammunition, the batch, lot, etc., may be of great importance to the user, and sorting by batches or lots may be essential if accuracy of fire is to be obtained. For example, the accuracy of anti-aircraft fire depends on fuze lots giving uniform results, while that of field artillery depends chiefly on propellant lots giving uniform ballistics.

18. Therefore it may be necessary that track should be kept of these sub-varieties at every stage, so that batteries may receive, at successive issues, ammunition of the same ballistic character.

19. As ammunition is unloaded, therefore, it will be sorted into sub-varieties, which must be differentiated in stacking (see Plate XI for one method).

Each sub-variety will be recorded, in each shed, on a separate tally.

20. In the case of component ammunitions any special instructions as to association of components are communicated to the C.O.O. by means of a warning telegram from O.O. docks (see Sec. 48, para. 15).

21. Every effort will be made so to load the different sub-varieties of ammunition, that each railhead receives consistent supplies of the same sub-variety and no others.

As lots or groups become exhausted, others with, as far as possible, the same ballistic properties will be set aside for issue to the railhead concerned.

22. The sorting of incoming stocks, described above, is of such importance that a special sorting platform, devoted to this service, should form part of each sub-depot.

23. If possible, such platforms should be raised to wagon-floor level.

They should be about 300 feet long and 30 feet wide, with railway lines along both sides.

They should possess a hard surface, capable of bearing heavy stacks of ammunition; and should be covered by a light roofing.

24. Should it not be possible, in the early stages of a campaign, to secure sorting platforms at wagon-floor level, the work described below will be carried out on the flat.

In such a case, the roofing should be of such a height as will allow subsequent raising of the platform.

25. The saving of labour, shunting and time effected by the use of raised sorting platforms will be found greatly to outweigh their initial cost of construction.

26. The principal use of the sorting platform is for sorting ammunition, and for preparing consignments for issue, as shown by the following example:—

(a) Issues of—say—ten wagons of 6-inch howitzer ammunition have to be made to a railhead, and at the same time it is known that ten wagons of 6-inch howitzer shell are about to arrive from the base port, with their cartridges, fuzes, and tubes in other wagons of the same train.

(b) These wagons of the incoming train are brought to the sorting platform. A suitable number of shell is removed from each wagon to make room for the necessary cartridges and other components, which are transferred from their own wagons to the shell wagons by means of hand-barrows.

Ten wagons loaded with complete rounds are thus made ready for issue to railhead with the least possible expenditure of labour, time, and shunting.

(c) The balance of the ammunition, not required for immediate issue, is distributed to its appropriate sheds.

(d) In the event of the cartridges or fuzes, arriving with a consignment of shell, being unsuitable for issue to a particular railhead, suitable cartridges or fuzes are brought up by wagon to the other side of the platform, and loaded across.

(iii) Issues.

27. Daily reports of expenditure, together with forecasts of any anticipated normal expenditure, will be made to G.H.Q. by formations (see F.S.R., Vol. I, Sec. 161).

Daily reports of issues, receipts and stocks in hand will also be made to G.H.Q. by O.Os. i/c ammunition railheads.

28. G.H.Q. on receipt of these reports will consult depot stock telegrams and work out as far as possible complete train loads for each railhead, from depots where the stock is available.

29. These orders for complete trains will be conveyed to depots by the D.O.S. in the form of depot loading orders.

Normally they will be telephoned to depots; each message being confirmed by telegram, a copy of which will be sent to A.D.O.S. Ammunition if appointed.

These messages will normally be sent in the evening before the day on which the ammunition is to be loaded and despatched.

30. Immediately on receipt of orders from G.H.Q., the C.O.O.—from information derived from No. 3 copy of the sub-depots' daily statements (see para. 49)—will send loading orders (No. 1 and 2 copies) to the sub-depots concerned. Separate sheets will be used for each category.

31. He will send No. 3 copy of the loading order to O.O. i/c Traffic, as a warning of what wagons will be required.

32. O.O. sub-depot will retain No. 1 copy of the loading order.

He will pass the sheets of No. 2 copy to the lines concerned, and the N.C.O. i/c lines will notify the traffic foreman of the required distribution of wagons to sheds, on the wagon distribution form.

33. N.C.O. i/c shed will load wagons accordingly.

34. The loading of all wagons will be checked by R.A.O.C. checkers.

35. On completion of loading the checker will prepare waybills (4 copies). These will be checked by N.C.O. i/c lines against his loading order.

36. The checker will tack No. 1 copy of the waybill inside the wagon.

He will ensure that the wagon is properly sealed, and complete the destination and contents label to show contents, quantity and date.

37. N.C.O. i/c shed will ensure that no wagon is loaded beyond the weight limit fixed by the railway authorities.

38. Wagons will be loaded evenly, so that all axles carry the same weight.

Loading will be so arranged as to minimize damage by shocks due to shunting and travel. High stacks, which could be knocked down by shunting, will be avoided.

39. Uniform methods of loading will be adopted, as far as the types of wagons in use permit, in order to facilitate checking.

Where necessary, layers of heavy shell will be secured by nailing a piece of wood to the floor of the wagon as a scotch. This will protect other components from damage by rolling shell.

Boxed ammunition will be loaded in regular layers over the whole floor of the wagon, as many layers being put in as will amount to the authorized load for the wagon.

Standard methods of loading component ammunition will be found in Plate XI.

40. Wagons for issue to railheads will always be loaded with complete rounds, unless special orders to the contrary are received.

41. The checker will hand Nos. 2, 3 and 4 waybills to the N.C.O. i/c shed, who will retain No. 4 copy for posting shed tallies.

42. Nos. 2 and 3 copies will be passed to the sub-depot office. One copy will be passed to O. i/c Traffic as a basis for the wagon movement order (see para. 43). The other is used to make up a loading report (3 copies). It will show the registered numbers, location, capacity, contents and distribution of all wagons consigned to each railhead. It will be checked against the loading order and sent to the C.O.O. as an indication that the loading order has been complied with. Any waybills received from sorting platforms (see para. 13 (a) (ii)) will also be passed to O.O. i/c Traffic and incorporated in loading reports.

43. Details of the loading report will be telephoned to O.O. i/c Traffic, and confirmed by a copy of the loading report. From the telephoned message and the waybills O.O. i/c Traffic will compile a wagon movement order as in Sec. 42, para. 20.

44. The wagon movement order will be passed at once to the Movement Control, by whom the wagons will be assembled into trains and despatched.

45. Movement Control representative at the ammunition railhead will receive a train telegram (see Sec. 48, para. 22). This will give O.O. i/c A.R.H. a summary of the contents of the train.

The waybill, on the other hand, gives detailed information regarding sub-varieties to be found in the wagon. This is of special importance in making issues at railhead (see para. 18).

Moreover, in the event of a wagon being separated from the rest of the train the contents can always be ascertained from the waybill.

46. Immediately N.C.O. i/c shed has despatched his waybills to sub-depot office, he will post up the tallies, in the sheds concerned, with the necessary issue entries (see para. 41).

47. There should be no inabilities under this system: because G.H.Q. only orders up what C.O.O. has reported in possession of his depot; and C.O.O. only passes loading

order to sub-depots for what they have reported to be in their possession.

If through an error, however, an inability should arise, it will be immediately reported to C.O.O. by telephone, so that he may pass a loading order to another sub-depot.

In the absence of such report, C.O.O. will assume that his issue order has been met by the sub-depot concerned, and this will be confirmed by the sub-depot loading report.

(iv) **Accounting.**

48. Ledgers will not be kept in ammunition depots in war.

49. The daily statement system (see Sec. 48) will be used, supplemented by the shed tallies which are necessary for the control of sub-varieties and lots.

(a) **In each shed** one tally will be kept for each sub-variety or lot (see para. 19).

(b) **In each sub-depot office** a daily ammunition statement (A.Fs. G 882A and B) and a daily components summary (see Sec. 48) will be compiled, from off-loading lists and check forms for receipts and from loading reports for issues. A copy of each will be sent to C.O.O., B.A.D.

(c) **In C.O.O.'s. office** these daily ammunition statement and daily components summaries show the exact position in each sub-depot, and enable the C.O.O.:

(i) To verify the depot stock position of complete rounds and components.

(ii) To arrange adjustment of stocks between sub-depots if necessary.

(iii) To compile a consolidated daily ammunition statement.

(iv) To send the daily stock telegram to G.H.Q. (see Sec. 48).

(v) **Stocktaking.**

50. Stocktaking methods such as obtain in peace are not practicable in an ammunition depot in war.

51. In the first place, nothing can be allowed to interrupt the vital function of the depot, the supply of ammunition to the front.

Secondly, the stock of each nature of ammunition is normally split up among several sheds, some or all of which may be receiving, or issuing, or both.

52. When opportunity occurs, however, during a quiet period, or when stock in a particular shed is almost exhausted, stock will be checked against tallies.

Any necessary corrections will be incorporated in the next sub-depot daily statement, with a note explaining the cause.

(vi) **Spare components.**

53. Considerable wastage of components of ammunition occurs in war. Thus B.L. cartridges may be rendered un-serviceable through wet; tubes may miss-fire; components of all sorts may be damaged by enemy fire; losses may occur, and so on.

54. In order that a complete round may not be lost through one of its components being damaged, a stock of spare components will be kept at the base ammunition depot to meet demands.

The articles most in demand are usually tubes; then cartridges; and lastly, fuzes.

Components of all types of ammunition, however, are likely to be required.

55. Such spare components will usually be demanded from C.O.O. base ammunition depot (or A.D.O.S., Ammunition, if appointed) by certain ordnance officers in the forward areas such as officers i/c ammunition railheads.

They will be issued from base depots under the orders of the C.O.O. (or A.D.O.S. Ammunition) without reference to G.H.Q., so long as the issue does not involve breaking down complete rounds.

56. Provision of these spares will be affected by A.D.O.S. Ammunition if appointed; if not, by C.O.O. base ammunition depot.

(vii) **Small arm ammunition.**

57. In order that the various types of boxes for S.A.A. in use may be recognised by day and night, distinguishing marks will be placed on them.

Officers and other ranks will make themselves acquainted with the markings. They are detailed in Appendix XIII.

(viii) **Traffic centre.**

58. The main duty of the traffic centre is liaison with the Movement Control to ensure the regulation and allotment of wagons.

The subordinate transit branches perform similar functions in the sub-depots which they serve. They can also act as intermediaries for the supply and allocation of labour for the sub-depot.

Once labour has been assigned to a sub-depot, its employment and allotment are best left in the hands of the sub-depot staff.

In the same way, when wagons have been allotted to a sub-depot, they should not be interfered with by the transit branch, except in special circumstances, until the completion of the work for which they are allotted.

It is a principle of organization that the O.O. i/c sub-depot is in sole charge of his area and of all wagons and labourers in it: though the executive orders for the movement of wagons are the function of the movement Control.

Section 52.—Ammunition Railheads.

(i) General.

1. Ammunition railheads are normally administered by H.Q. of the formation which they serve, but the control of ammunition railheads is the responsibility of G.H.Q.

Stocks are fixed by the general staff at G.H.Q., and are based, normally, on one or two days' estimated requirements (see F.S.R., Vol. I, Sec. 161).

These stocks will be held either in railway wagons under load, at or close to ammunition railhead, or in dumps in the vicinity. Transport between railhead and dumps will be provided by the railhead reserve M.T. company R.A.S.C.

Replenishments will be ordered forward from base by G.H.Q. as laid down in Sec. 51, para. 28.

2. The duties of the O.O. i/c ammunition railhead are described in Sec. 12.

3. Conditions of working of ammunition railheads vary so widely that it is not possible to frame detailed instructions regarding their operation.

A railhead will normally consist at first of a siding where ammunition is transferred from railway wagons to the R.A.S.C. ammunition lorries. Ultimately, it may develop very considerably, and cover a large area.

4. During mobile warfare a state of readiness for immediate movement must be maintained. The whole organization is a small depot on wheels, and the question of storage of ammunition on the ground does not arise.

As soon, however, as the railhead becomes fixed it may be necessary to stack ammunition on the ground, both to form a reserve and to set free railway wagons.

5. If the railhead is likely to move in a short time, waterproof covers are the only means of protecting ammunition stacked in the open, but they have many drawbacks for this purpose. They are easily torn and have a short useful life when constantly handled.

In hot weather the temperature under a waterproof cover is likely to be very high, especially if exposed to the

sun, and a hot, moist atmosphere is created which is unsuitable for ammunition. Effective ventilation is difficult to arrange, and when work is proceeding on a stack the waterproof cover must be removed and the ammunition is left uncovered.

Waterproof covers, of course, give no shelter to men working on ammunition. They are also inflammable, costly, and are much coveted by troops for making shelters, etc.

If, however, the enemy is using mustard spray, it is essential that the ammunition is protected from contamination. Layers of corrugated iron on top of stacks will serve.

6. In moving a railhead, an advanced party, as strong as can be spared, should always be sent on to the new railhead as long before the move as practicable.

The appropriate authorities should be approached with regard to the early allotment of billets, signals, arrangements for the movement of road vehicles through the railhead, and other essentials for working, as it is usually necessary to begin the issue of ammunition directly the train arrives.

7. If a railhead is likely to be fixed for some time, economy and efficiency will be gained by putting up light corrugated iron sheds for ammunition.

These give satisfactory protection, and are free from the drawbacks of waterproof covers. They are also cheaper than the equivalent amount of waterproof covers, and if constructed with a view to being moved, they can be taken down, moved to a new railhead with the train, and re-erected.

In position warfare it may be found necessary to provide a quantity of gravity rollers and a special platform at wagon level for the storage of heavy shell of 8-inch calibre and upwards.

8. Supplies of dunnage are sent overseas without demand in correct proportions until depots are amply stocked. Similarly, C.O.O., B.A.D. will stock railheads with dunnage as required.

9. The railhead signal office should adjoin the office of the O.O. i/c.

10. Telegraphic notification of all consignments of ammunition sent to a railhead will be received by the Movement Control.

(ii) Classification.

11. Ammunition received at railheads from the base will normally be in well-sorted consignments, containing few sub-varieties. Details of these will be shown on the way-bill.

12. The value of this sorting, which represents much labour and time in base depots and elsewhere, will be to a

great extent lost unless careful arrangements are made to issue certain sub-varieties, and successive consignments of the same, to certain units or groups of units, as far as this is practicable.

Records will therefore be maintained of the sub-varieties issued to formations or units.

13. The importance of doing this is due to the fact that uniformity in the ammunition supplied to a battery does much to improve accuracy and fire effects.

The O.O. i/c will therefore take up this matter as soon as he can with the headquarters of formations supplied through his railhead, and with O.C. corps ammunition park, R.A.S.C., with a view to making the best possible distribution of the sub-varieties of ammunition received.

(iii) Issues and Receipts.

14. Issues will be made to replenish the R.A.S.C. ammunition lorries on demand (unless any special instructions to the contrary have been issued by G.H.Q.).

To ensure delivery of uniform sub-varieties to batteries, A.B. 108 will be prepared, giving a list of all ammunition and explosives loaded into each lorry, showing in detail the quantity, nature and sub-variety it contains.

The original will be given to the driver or other responsible person, and the duplicate retained as a record of issues (see R.A.S.C. Training, Vol. II, Sec. 29).

15. Unless otherwise ordered, receipts for ammunition received at railheads will not be furnished to the base.

16. It is essential that close liaison be maintained with the corps ammunition park, R.A.S.C., and that requirements to replenish R.A.S.C. lorries be ascertained as long as possible before the actual time of issue (which will take place, as a rule, immediately on the arrival of the train).

Issues will be made, whenever possible, to a timed programme, so as to avoid holding up lorries. During periods of pressure, however, such arrangements may not always be practicable.

17. An account of all transactions in ammunition will be kept on the daily ammunition statement system (see Sec. 48).

A statement will be prepared each day showing all receipts and issues of complete rounds in detail, and the stock of all natures.

The stock, or "remain," will be transferred to the next day's statement. By this means the whole of the day's work in ammunition can be seen at a glance.

From this statement a report will be prepared and telegraphed to G.H.Q. daily, at the hour ordered, showing issues made and stock remaining on hand.

18. A record will also be kept of all railway wagons containing ammunition or other ordnance stores consigned to, received at, and despatched from ammunition railhead.

(iv) **Personnel.**

19. The R.A.O.C. personnel of an ammunition railhead will be adjusted according to requirements.

This personnel should be organized into an office staff and groups, each group dealing with certain types of ammunition such as component, boxed, and miscellaneous. The miscellaneous group may include bombs, fireworks, demolition explosives, etc.

20. The war establishment for an ammunition railhead provides for day and night working. It may be altered by superior R.A.O.C. authority as local circumstances demand.

21. A characteristic of work at ammunition railheads is that it varies between the widest limits, and the heaviest work necessarily comes when assistance is most difficult to obtain. For this reason it must be realized that the capacity of the railhead is limited by the **additional** labour which can be made available when the maximum output is required, and the H.Q. of the formation concerned will be advised to this effect by the O.O. i/c.

At any time an ammunition railhead may be called upon to work up to its maximum capacity for considerable periods, and to continue so to work until compelled to stop by the necessity for moving the railhead to some other place.

The successful working of a railhead under such conditions calls not only for sound organization and training but high qualities in the R.A.O.C. personnel in charge, and any failure on their part may have grave results for troops in action.

22. When heavy issues over extended periods have to be made (as in preparation for offensive operations) the O.O. will be given sufficient information (secrecy being observed) to enable him to work out a scheme for issues day by day, and to estimate the extra labour and other personnel that he will require.

His arrangements must fit in with those of the transport organizations working from his railhead, and he will therefore keep in close touch with the headquarters of these organizations.

23. Camp arrangements call for special care. The men should be as near to the railhead as possible but not inside the actual area.

Inside that area no fires, cooking or smoking should be permitted.

24. The considerations regarding accommodation, etc., set out in Sec. 50, paras. 25 and 26, apply with equal force to personnel at railheads.

Section 53.—Ammunition Empties Depot.

1. In order to deal with the large number of empty ammunition packages returned from the front, it will be necessary to open a small separate depot early in the campaign. This depot will be administered as a sub-depot by the C.O.O. base ammunition depot.

2. It will be sited in the base area, but apart from the base ammunition depot. Easy rail access from the front and to the base port is essential.

3. It will function as a transit depot for the examination, sorting, conditioning and despatch home of ammunition empties of all types.

The examination includes ensuring that the packages are free from any explosive, and also that they are correctly packed and closed, unless this has already been done by the O.O. i/c ammunition railhead (see Sec. 12).

4. A suitable lay-out is that shown for an open storage depot in Plate XII. No covered accommodation will normally be required, except for offices and a shed for sorting and packing.

5. In view of the great value of fired cartridge cases and empty ammunition packages, they must be handled with care, so as to avoid unnecessary damage.

Section 54.—Ammunition Repair Factories (if formed).

(i) On lines of communication.

1. An ammunition repair factory (if ordered) will be established in some convenient position from the point of view of rail traffic. It should not be in the immediate vicinity of an ammunition depot, wharf, or port, and the lay-out should provide for large extension.

2. Large quantities of ammunition become non-serviceable—that is, unfit for immediate issue—through the usage to which it is subjected in the forward areas. Unless it can be repaired, the result is a loss not only of valuable material, but of fighting power.

3. The saving of material that can be effected by means of a well-equipped ammunition repair factory on the lines of communication is therefore very important.

4. Nearly all the ammunition that has been rendered non-serviceable can be repaired at small cost.

The equipment of a repair factory is simple, and most of the work can be done by unskilled labour under the supervision of trained technical personnel.

5. An ammunition repair factory should be placed where wagons returning from railhead can reach it conveniently, and where transfer of the repaired ammunition to depots presents no difficulty.

The scale of the repair factory will depend on the scale and nature of the operations. As a rough guide, its capacity should be 5 per cent. of the total ammunition issued.

6. The site should comply with the provisions of Sec. 49, para. 1.

7. The area (inside the fence) covered by a factory capable of dealing with 300 tons a day would be about one square mile.

8. A standard gauge system will be required to bring wagons from railheads to four receipt sheds (300'×30', and 300' apart end to end and traversed).

In these the ammunition will be sorted into various natures and classified for repair.

It will then be moved by narrow-gauge wagons to six sheds and six dumping areas, each 300'×30' and spaced 300' apart all traversed.

9. From this area the ammunition will be moved as required, by narrow-gauge wagons, to the factory area.

10. The factory should consist of, say, 12 masonry (concrete or brick) sheds, each 300' clear of the rest, and each sub-divided by solid walls into six rooms, about 20'×12', each for eight workmen, the material for repair entering at one end and passing out at the other.

11. Three painting and stencilling sheds, each 300'×30', adjacent to repair sheds and on the issue side of them, will also be required.

12. From the factory area the repaired and inspected ammunition will be taken by narrow gauge wagons to three suitably spaced issue sheds, each 300'×30', served by the standard gauge system.

From these sheds issues will be made to depots.

13. There should be, in addition, six store sheds to contain components, materials used in repair, tools, and articles in use.

A number of smaller sheds will be required to accommodate recovery plant and other installations to be established as need arises.

14. A block of offices, a power plant, and a camp for personnel complete the organization. An area should also be set aside, about half a mile outside the fence, and served by the narrow gauge system, for use as a demolition ground for the disposal of unserviceable material beyond repair, from which no valuable produce can be recovered.

(ii) **In forward areas.**

15. During active operations a quantity of ammunition of all sorts becomes unserviceable through injury or loss of components, and through minor defects the repair of which does not require the resources of base repair factories.

To save the unnecessary transport of such ammunition back to the base and up to the front again, and to relieve the pressure on base repair factories, the establishment of repair factories in forward areas during deliberate operations may be required.

These deal with repairs that do not require machines or special technical plant or skill.

They will be in charge of R.A.O.C. personnel, assisted by labour as required, and it is important that this labour should not be changed, as the men soon become skilled in the work, and their output is much greater and more satisfactory than that of untrained men.

16. The site of such a repair factory will be governed by considerations of transport facility, but concealment is important, and the sheds must be well separated and traversed to protect them in case of explosion.

Repair factories should not be established so close to railheads or ammunition dumps that an explosion in the factory might involve the railhead or dump.

CHAPTER VII.

AIR RAID PRECAUTIONS.

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Section 55.—General.

(i) Introductory.

1. "No portion of the theatre of war, homeland, or base of operations when this is overseas, within the radius of hostile aircraft can be regarded as immune from gas attacks. Such attacks may begin at the moment of the declaration of war. They may be directed to interfere with the mobilization arrangements and the movement of an expeditionary force to its concentration area."—Defence Against Gas.

The provisions of this chapter apply, therefore, to home establishments as well as to ordnance installations in the theatre of war.

2. Air defence includes:—

(a) Active defence.

(i) Local.

(ii) Gun.

(b) Passive defence.

(i) Protection from reconnaissance.

(ii) Dispositions of buildings, material and personnel so that suitable targets are not presented to enemy air action.

(iii) Measures taken to minimize the results of hostile air attack.

Every commander, however small his unit, is responsible for its local protection and is normally provided with automatic rifles for its local air defence.

Ordnance establishments not provided with means for local air defence may have attached to them detachments of units charged with their protection.

Active defence—that is co-ordinated defence by anti-aircraft guns and lights and defence by fighting aircraft—is the function of the General Staff and the Royal Air Force.

Normally, the active gun defence of an ordnance installation will be part of a plan covering the whole of the area in which it is situated.

No less important is protection from reconnaissance. Large scale bombing and machine gun attacks are seldom launched without preliminary reconnaissance. Escape from detection by the use of cover, shadows, camouflage, cessation of movement and similar measures may well mean escape from air attack.

In addition, vehicles, buildings, camps, dumps, can be disposed, and tracks obliterated or confined, in a manner that will change the appearance of areas so little that no fresh targets will be revealed to enemy air action.

The organization of passive defence, which will go far to minimize the results of air attack, is the responsibility of the commander of the unit or establishment, who is also responsible for co-ordinating the scheme with those of neighbouring units or establishments and of the local civil authorities.

Such defence at home, as far as it affects ordnance establishments, will be part of an organized whole, in which military arrangements, and those existing generally for the protection of civilians, will be blended.

Normally, in the theatre of operations, the passive defence of ordnance installations will also be part of a plan covering the whole of the field force ancillary services.

It has to be borne in mind, however, that ordnance services will begin to function from the very outset of the campaign.

It is therefore the responsibility of chief ordnance officers and all others in charge of ordnance installations to have a scheme of passive defence ready to function immediately work begins.

If general orders on the subject already exist, the ordnance scheme will conform to them, with suitable adaptations to meet local conditions.

Such general orders, however, may not be available at the earliest stages of the campaign, or may not cover the needs of a widespread ordnance establishment, possibly many miles distant from the base port.

C.O.Os. and others in charge of ordnance establishments will not, therefore, wait for schemes to be prepared for them.

They will prepare their own schemes, to function the moment work begins. Later, these can be adapted to fit in with whatever general scheme may be laid down.

3. In the case of most ordnance depots, the main danger of gas attack will be in the form of attack from the air;

though installations within range of land or naval gun-fire must be prepared for attack by gas shell also, or even for the effects of long range gas clouds.

4. Passive air defence schemes will include measures for protection against all the dangers of air attack:—

- H. E. bombs.
- Incendiary bombs.
- Gas bombs.
- Gas spray.
- Machine gun fire.

Undue importance should not be given to protection against gas, the use of which is problematical, whereas the use of the other weapons is certain.

5. From the earliest stage of a campaign, an organization for defence against air attack will be established in every ordnance installation, however temporary its nature.

This organization will be developed, as the campaign progresses and installations assume more permanent form, to secure the greatest possible protection for both personnel and stores.

6. A thorough and up to date understanding of the principles and methods laid down in the handbook Defence Against Gas is part of the equipment of every R.A.O.C. officer.

7. All ranks, moreover, should be:—

- (a) familiar with the use of the respirator;
- (b) capable of performing their normal tasks while wearing it;
- (c) able to recognize the signs of gas contamination and the types of war gases which might be encountered;
- (d) conversant with the measures necessary for individual and collective protection and with the elements of first aid (including anti-gas and personal decontamination or "cleansing");
- (e) well grounded in the procedure for the protection of the stores, machinery, etc., under their immediate charge and the steps which may be necessary and possible for the decontamination of such stores and machinery.

8. Unnecessary wearing of gas masks is detrimental to efficiency and morale.

Accordingly the organization for defence against gas will ensure that gas masks are only worn when absolutely necessary.

9. The measures to be taken include:—

- (a) Organization of gas detection squads each dealing with an area about $\frac{1}{4}$ mile square.

- (b) Locating main spray detectors in addition to ground detectors and the gas alarm sentry's detector.
- (c) Visiting detectors at regular intervals and particularly after the appearance of enemy aircraft overhead. Time will be allowed for gas spray to settle. Gas squads should make a positive or a negative report for each detector visited, to the gas sentry. Gas spray forms characteristic pink spots on the spray detectors.
- (d) Sounding the gas alarm only when gas has been detected.

(ii) Air Raid Precautions Officer.

10. For the co-ordination of precautions against air attack, an officer will be definitely detailed, in every ordnance installation, as air raid precautions officer (A.R.P.O.)

He should be, preferably, one who has qualified as a regimental instructor at an approved army school: but the organization of effective precautions against air attack, including attack by gas, should be within the competence of every ordnance officer.

11. Air raid precautions officer will act as adviser to the C.O.O. on all points connected with air attack, including gas: and will be responsible for:—

- (a) immediate publication of "standing orders for air raid protection";
- (b) initiation and subsequent development of a scheme, adapted to local circumstances, for the protection of personnel, stores and plant;
- (c) immediate submission to the C.O.O. of schedules of the material necessary for protection and anti-gas decontamination; and executive action, under the C.O.O.'s direction, to obtain this material;
- (d) preparation, if ordered, for the establishment of such organization and plant as may be necessary, for the decontamination of gas-infected clothing and equipment returned by the troops (see Defence Against Gas, Chapter IV, Section 24, paragraph 10 (iii)).

12. His station during an air raid will be at the command post of the depot: which post will be provided with adequate means of communication (telephone, runners, etc.).

He will be provided with adequate means of transport.

The command post will at all times be occupied by some responsible person.

It will be provided with a large-scale plan of the installation, showing:—

- (a) the use to which each building, etc., is put and the nature of stores therein;
- (b) lay-out of electric cables, gas mains, water mains, drains;
- (c) location of shelters, cleansing centres, decontamination centres, regimental aid posts, and the command post itself;
- (d) location of auxiliary water supplies and the sites of major-fire appliances and of first aid fire posts.

13. He will keep a diary, in which he will record:—

- (a) every step in the organization and development of air raid protection in his depot or installation, so that the practical knowledge gained at each stage may be made available for the ordnance service as a whole;
- (b) full details of every air raid affecting his depot including:—
 - (i) the adequacy or otherwise of the warning given;
 - (ii) the efficacy of the alarm signals;
 - (iii) the methods employed by the enemy;
 - (iv) the casualties and the moral and material damage inflicted;
 - (v) the success or otherwise of the depot air raid precautions scheme, under actual test;
 - (vi) the action necessary to cope with fresh factors in the attack.

14. Close liaison will be maintained with the Royal Air Force.

Air reconnaissance of any large installation by day or night, and air photographs, may bring to light valuable possibilities in the way of concealment.

Section 56.—Standing Orders.

1. Standing Orders for Air Raid Protection will include provisions for dealing with all the forms of attack mentioned in Sec. 55, para. 4, and will be closely co-ordinated with the ordinary fire orders.

2. They will be divided into four parts.

3. Part I will detail, as succinctly as possible, the general precautions applicable to the whole installation. It should be arranged in three sections:—

- (a) System of alarm.
- (b) plan for revision of orders.
- (c) General organization.

Copies of Part I will be posted in every camp, office, store and workshop.

4. Part II will be prepared separately for each building or group of buildings, whether camp, office, store or workshop:—

It will detail:—

- (a) the local alarm;
- (b) the gas detection squads and their duties;
- (c) the position of the anti-gas and/or other shelter intended for the occupants of the building in question;
- (d) the anti-incendiary and other protective apparatus available, and their location;
- (e) the personnel charged with using this apparatus.
Personnel will as far as possible be detailed, not by name, but by the function they normally perform—"Foreman in-charge No. 1 shed," and so on—so that frequent amendment will be unnecessary. On the other hand, duties requiring specially trained personnel (decontamination, etc.) will be allotted by name;
- (f) the cleansing centre to which unwounded personnel should proceed, in case of contamination;
- (g) the regimental aid post to which wounded and/or gas cases, whether contaminated or not, should proceed.

Each building or area will be provided with copies of its own Part II air raid protection orders.

5. Part III will not be published but will be retained by officers i/c of areas and N.C.Os. in charge of decontamination squads.

It will detail the type of construction materials and stores found in the area, and the methods of decontamination applicable to these types (see Appendix XIV).

It will also detail the decontamination facilities available in the area as regards:—

- (a) personnel;
- (b) protective clothing and materials.

The purpose of Part III is to present the officer i/c area with a picture of the task with which he may be confronted and the possible solutions.

It cannot, however, be too strongly emphasized that no work should be undertaken until the position as a whole can be studied.

Should the contamination of an area be serious, careful planning and rigorous economy in the use both of personnel and materials will be essential.

Facilities are strictly limited and should only be used on vital tasks.

Officers must ask themselves whether the danger of further contamination, or the importance of the area or stores contaminated, justifies immediate commitment of personnel to the work.

If the answer is No, warnings should be erected and the buildings, dump or area left to weather.

A reserve both of protective clothing and material will always be kept in hand in case of further attacks.

This reserve will not be used—nor indeed should heavy tasks be attempted—without prior consultation with the A.R.P.O. who may, on the one hand, be aware of more urgent tasks or, on the other hand, may be able to provide assistance from other areas.

6. Part IV will detail the arrangements for treating contaminated and other casualties at cleansing centres and regimental aid posts. It will lay down:—

- (a) the personnel for the cleansing centres. Such personnel will be organized and trained beforehand;
- (b) the material available for cleansing of personnel and its location;
- (c) simple directions, in the form of posters, showing how any individual, who thinks he is contaminated, may cleanse himself.

The organization of a cleansing centre is laid down in Defence Against Gas, Chapter IV, Sec. 30: and the stores required are detailed in Appendix IV to the same handbook, which also gives a typical lay-out.

Every cleansing centre should have an alternative exit, in case the ground outside is contaminated.

The organization of a regimental aid post is described in R.A.M.C. Training, Chapter XII, para. 174.

A copy of Part IV will be posted in each cleansing centre and regimental aid post. These, though separate, will be adjacent (see Sec. 57, para. 15).

7. The effect of thus sub-dividing standing orders for air raid protection will be to secure that each individual knows:—

- (a) the general air attack orders pertaining to everybody;
- (b) the particular orders affecting the locality where he works or is billeted;
- (c) the detail of his own function (if any) in decontamination work

without being called upon to master the orders relating to other localities, which may not affect him or his place of work.

8. Guidance in the preparation of standing orders is provided in Defence Against Gas, Chapter II, Sec. 15.

9. Orders for cleansing centres and regimental aid posts will state clearly the location of the dressing stations or other centres to which casualties, in case of necessity, are to be evacuated, and the method of evacuation.

10. C.O.Os. will be personally responsible that the standing orders are reviewed both periodically and whenever extension or rearrangement of the depot is taking place: so that no portion of the personnel, installation or plant may be uncovered by up to date instructions.

Section 57.—Detailed Precautions.

(i) Preliminary.

1. Supply of water and sand for fire-fighting purposes must be ample.

2. Lighting restrictions will conform with any local regulations in force, and entail the provision of blinds or other means for obscuring light of all windows and skylights. Where blinds are fitted, they will be in frames close to the glass, and will be drawn before lights are switched on.

It may be possible to take advantage of the fact that blue and yellow are complementary colours, by colouring windows and skylights inside with blue distemper and enclosing lights in yellow shades. Alternatively, sodium gas-filled lamps may be used in conjunction with blue-coloured windows and skylights.

3. If the lighting is electric, alternatives for emergency use will be held available on a liberal scale in every building.

4. The use of flares in the open is forbidden.

5. Lighting circuits will be so arranged that exterior lights, if any, can be extinguished from a central switch, leaving interior lights burning; so that, if the C.O.O. decides that the urgency justifies the risk, work may proceed during an alarm period.

Specially shaded blue lights should be provided for important points such as headquarters, shelters, etc.

Vehicles should not be allowed to move in the depot after dark unless fitted with special lights.

(ii) Alarm.

6. Warnings of impending air attack may be provided by either of two means:—

(a) If the theatre of war is a friendly country, already in possession of a system of passive air defence, the existing methods of warning will be made applicable to military establishments belonging to the field force.

- (b) If the theatre of war is a hostile country, or one not provided with a system of passive air defence, a system of warning will be laid down by the general staff, applicable to all military installations.

In neither case, however, is the responsibility of the C.O.O., or other officer in charge, diminished.

All passive defence schemes will include particulars of the alarm signals to be used, including the local gas alarm.

7. Until such systems are in operation, he will provide his own system of air attack alarm, notifying higher authority.

This system must not be liable to confusion with fire, S.O.S., or other alarms.

It must not involve the use of the mouth or lungs.

A siren with a distinctive note which can be operated from a known or easily accessible position, will probably prove the most effective method.

(iii) Shelter.

8. It is of primary importance, in establishing air-raid discipline and preventing panic, that all personnel shall immediately proceed to their appointed posts or shelters when air raid alarm is received.

9. Gas-proof and splinter-proof shelters will therefore be provided, in which all personnel can take refuge, as near their normal work and/or billets as possible.

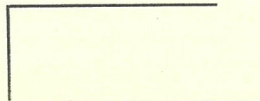
Narrow trenches of irregular design, with splinter-proof head cover of sandbags resting on corrugated iron, afford a very large measure of protection. Such a refuge will resist spray efficiently long to enable its occupants to be evacuated; while their respirators will protect them against vapour.

Billets, whether tents or buildings, will be provided with sand-bag splinter proof protection to a height of at least three feet.

Dug-outs will be prepared as circumstances permit, care being taken that they are not liable to flooding. In framing orders regarding their use, the instructions in Defence Against Gas will be borne in mind.

10. Large stacks of certain natures of stores will themselves give a considerable measure of protection, not against direct hit but against the lateral effect of splinters.

It may therefore be possible to arrange shelters in the middle of certain stacks. Stacks arranged in the form of two letters "L," thus,



will give the maximum protection with the minimum derangement of stores.

The possibility of rendering such shelters gas-proof will be taken into consideration.

In all cases where such action is contemplated, the question of fire risk, in case incendiary bombs are used, will be kept prominently in mind.

(iv) **First Aid.**

11. Anti-gas precautions are entirely the responsibility of the commanding officer; exercised, in the case of ordnance installations, through the A.R.P.O.

The selection of regimental aid posts is the responsibility of the C.O., in conjunction with the unit medical officer. (F.S.R., Vol. I, Chapter XV, Sec. 114.)

In the case of widespread ordnance installations at the base or in line of communication areas, it may be difficult, in the early stages of the campaign, to secure a great deal of help, in this connection, from medical sources.

Greater responsibility therefore falls upon the C.O.O., advised by his A.R.P.O., in the matter of providing, for each isolated sub-depot, etc., a self-contained organization to deal with all the results of air attack.

In view of the wide area over which ordnance installations will be spread, such organizations will be subdivided so that casualties can be treated without delay.

If a person, whose clothing is contaminated by splash or spray of mustard, can change his clothing and receive treatment within ten minutes, he will be prevented from becoming a casualty.

12. It should be remembered that the casualties consequent on an aerial attack may include any or all of the following:—

- (a) casualties due to splinters, falling masonry, shock, fire, etc.
- (b) casualties due to gas;
- (c) casualties under (a) and (b) which are, in addition, contaminated with blister gases.

13. Individuals whose person or clothing has been contaminated by spray **need not, however, become casualties, if they are treated promptly.**

Hence it is vital that cleansing centres should be available everywhere, and in such numbers that any person who has been contaminated, or thinks he has and who is not otherwise injured), can cleanse himself immediately. The simplicity of the apparatus required makes this not an impracticable ideal but a perfectly feasible proposition.

14. It must be remembered that the effects of contamination are often not apparent for some time. It is there-

fore important, both for practical and psychological reasons, that, once the fact of a spray attack has been established, no obstacle should be put in the way of an individual, who might possibly have been subjected to spray, having access to the cleansing centre.

At the same time, the importance of keeping under cover, and hence **immune from spray**, all persons not necessarily employed in the open, cannot be too highly stressed.

15. Casualties in classes (a) and (b) above can only be dealt with in regimental aid posts, which must necessarily, by reason of the medical apparatus and skilled personnel required, be fewer and more centralized.

To avoid the spread of contamination, it is important that uncontaminated cases should not be treated in the same room as contaminated cases. Hence every regimental aid post must have its own cleansing centre, adjacent but separate.

16. Arrangements for cleansing centres will include an organization for:—

- (a) shutting contaminated clothing in covered bins;
- (b) removing it to a special centre for treatment;
- (c) collecting and distributing it after treatment;
- (d) identifying each individual's belongings so that they may be returned to him intact;
- (e) decontamination of bins used for contaminated clothing.

It is the responsibility of the C.O.O., or other officer in charge of the installation concerned, that fresh clothing is available, at each cleansing centre, for all personnel likely to be treated there.

(v) Lay-out.

17. The likelihood of air attack will be a factor of vital moment in determining the lay-out of any ordnance installation.

From the earliest stages of a depot's growth, the following three considerations will be regarded as of paramount importance:—

- (a) avoidance of "pattern";
- (b) alternative routes;
- (c) dispersion of stores.

(a) Avoidance of "pattern."

18. It is highly likely that, in the early stages of a campaign, any ordnance depot may have to rely largely, for accommodation, on such buildings as exist on the site chosen.

The inconveniences arising from adapting existing buildings will be largely outweighed by the fact that they will present no fresh target from the air.

Irregular stacks of stores, in the vicinity, will not afford any conspicuous indication of the presence of a depot; but an assembly of tents, and especially of store tents, undoubtedly will.

19. If the campaign is of long duration, the time will arrive when, through their intelligence service, the enemy will become aware of the location of ordnance and similar depots.

By that time, these installations will have acquired a certain measure of safety by reason of:—

- (i) Multiplicity of targets. No enemy, however powerful, will have an unlimited air force available
- (ii) Development of protection, both active and passive, against air attack.

In the early stages of the campaign, however, the enemy's information regarding L. of C. installations will be fragmentary; and the more concealment is studied, the less exact it will be.

(b) Alternative Routes.

20. Every effort will be made to avoid "bottle-necks," and to provide alternative traffic routes, whether by rail or road.

This applies both to the depot in general, and to all its component buildings, sheds, tents or stacks.

No store should be so situated that, if the normal approach is rendered temporarily impassable by contamination, fire or damage by H.E., it cannot be reached by alternative means.

(c) Dispersion of stores.

21. In no circumstances must an ordnance officer have "all his eggs in one basket."

As regards ammunition depots, this is secured by the plan, outlined in Chapter VI, of establishing a number of sub-depots holding a similar range of contents; so that, if one is put out of action, another can function.

The principle is of equal importance however, in the case of stores.

The complete destruction, by air attack, of the entire stock of a vital artillery instrument, searchlight part or M.T. component might damage the efficiency of the fighting forces out of all proportion to the value of the item concerned.

Therefore any inconvenience arising out of the dispersal of stocks must be accepted and overcome.

22. This can best be achieved by the adoption of the principle of "wholesale and retail" storage. Thus any item, or any section of stores, of vital importance to the

troops will be stored in two or three places, so separated that, if one storehouse is destroyed, the others are likely to escape.

Detail issue will take place from one storehouse only at a time, the others being used for the reception of bulk supplies. As each storehouse is exhausted, detail issue will be transferred to another, while the original storehouse is replenished.

(vi) **Local Protection of Stores.**

23. The principles mentioned above having been put into effect, facilities for the local protection of stores will depend on a number of circumstances. The following points deserve attention:—

- (a) Buildings close up against cliffs or steep inclines automatically receive a certain degree of protection.
- (b) Woods should be avoided by anything but mobile ordnance units. They tend to delay the dispersion of gas; and, while the leaves afford momentary protection against spray, they retain the spray for long periods.
- (c) When a building with glass windows is taken over (whether previously existing or newly erected) all windows needed for light but not for ventilation should, as soon as opportunity offers, be sealed with paper strips round the edges.

To prevent collapse of glass windows they should be backed by pasting strong paper or linen all over the glass and preferably on both sides. Where windows are needed for light, collapse of the glass can be prevented by backing it with cellophane, which must be provided with the "articles in use" required for base depots.

- (d) Corrugated iron sheets, layers of sand, filled sand-bags or even old wood such as the sides or lids of boxes, spread over the tops of stacks stored in the open, offer a considerable measure of protection from spray.

Corrugated iron can be decontaminated, and other protective material can be destroyed, after the attack.

Tarpaulins afford complete protection against spray; but these are not likely to be available in anything like sufficient quantities. In any event, they need decontamination after each attack—a process which materially shortens their effective life. The aim should be, therefore, to limit their use, as far as possible, to temporary and mobile

installations, where the fact that tarpaulins are easily folded for transit will be an important consideration; for example, temporary depots in the early stages of a campaign, railheads, etc.

- (e) Dumps should be built up, where possible, in such a way that cases on the outside are resistant to spray.

Tins and tin-lined cases are examples.

Removal of the outer wooden cases, and decontaminating the metal surface, will, if the tins are reasonably well sealed, save their contents from any ill effects.

- (f) Spray detectors will be spread over the area of a dump, and will be inspected after every air attack, so that ample warning can be obtained in case they have been sprayed.

Note.—These are supplementary to, and not instead of, the gas sentry's detector, which is watched continuously.

(To avoid misunderstanding, it should be known that spray detectors are little affected by rain. Personnel will readily distinguish between the spotting or splash-marks caused by rain and the discolouration caused by gas.)

- (g) As hosing down with water is, in certain circumstances, an efficient method of removing gas, steps will be taken to make the best possible use of whatever water supply is available, and to locate advantageously such pumps, etc., as may be obtainable.

In this connection, close co-ordination is necessary between the standing orders for air raid protection and the ordinary fire orders.

If hosing down is to be employed as a method of decontamination, it is vital that there shall be drainage available, leading the contaminated water away in such a manner that it shall not:—

- (i) lie about and thus contaminate the neighbourhood;
- (ii) come into contact with the water supply for drinking or any other purpose.

Such considerations will thus limit severely the adoption of this method.

- (h) Protection of food from gas can only be ensured by keeping it in airtight containers.

Warnings will be issued against using, for any purpose whatever, water which is suspected of contamination.

- (j) Large areas, the size of which prohibits decontamination if heavily contaminated with mustard, will have to be evacuated until the effect of the spray has passed off.

24. A large supply of bleaching powder (chloride of lime) must be available.

When mixed with two or three times its volume of earth, or made into a paste with water, this forms an effective neutralizing agent to mustard.

Dry bleaching powder alone must not be used for mustard decontamination purposes. If it is placed, unmixed with earth, in contact with liquid mustard gas, they react together and burst into flame.

Bleach paste should not be used on materials liable to damage from corrosion, unless no other means of decontamination are available.

Methods of decontamination of various substances are laid down in Defence Against Gas, Chapter IV.

Section 58.—Mobile Units.

1. The protection of an ordnance unit in the field is the responsibility of the officer commanding, in conjunction with the formation to which it belongs.

2. Each unit will have its own standing orders dealing with aerial attack and anti-gas measures, corresponding, as far as applicable, with those of other units.

3. C.Os. of such units will make themselves familiar with the pamphlet Tactical Notes on Defence against Gas.

4. During an advance, particular care should be exercised (as laid down in that publication) before taking over premises for workshops, stores or billets, which may previously have been in the occupation of the enemy; and personnel should be warned of the danger of gas "booby traps."

5. On the move good march discipline may save a road convoy from bombing or machine-gun attack. Bunching will be avoided, distances between vehicles will be irregular and not less than 40 yards. Every driver will halt his vehicle on the side of the road, under cover, if possible, immediately the vehicle in front stops unless he is signalled on.

6. If a convoy is attacked, vehicles should be driven on as if nothing happened. Automatic rifles will only be used if the enemy aircraft is actually attacking within range.

7. All vehicles will carry gas spray detectors on the front and sides where the driver or the driver's mate can see them. Gas masks will be fitted if gas is detected.

8. When moving into a new position, movement should not be checked until the vehicle is in its final place. Full use will be made of cover and camouflage. Track discipline is of primary importance. Tracks will be obliterated if possible. The disposition of vehicles will be made so that the change in occupation of the area is not revealed to enemy air observation.

9. On halting in bivouac, air sentries and gas detection squads will be organized at once. Gas spray detectors will be placed in position. The report centre will be notified.

10. When an air attack alarm is sounded personnel under cover will continue their work without interruption.

11. The signal will be long blasts on a whistle or horn. The enemy attack over signal, is two blasts repeated at intervals of five seconds.

12. The gas attack signal will be a long, drawn-out sound on a whistle and motor horns.

Section 59.—Respirators.

1. Respirators will be stored, as far as practicable, in a dry cool place.

They will on no account be allowed to become damp.

2. Full instructions regarding the cleaning, inspection, repair and storage of respirators will be found in Equipment Regulations, Part I, and Defence Against Gas, Appendix II.

3. The repair of respirators by reassembling salvaged serviceable components will be undertaken in the returned stores depot.

CHAPTER VIII.

INSPECTION OF STORES ON ACTIVE SERVICE.

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Section 60.—General.

1. Inspection of ordnance stores in the field is a function of the R.A.O.C.

The work falls, mainly, into the following categories:—

- (a) Mechanical vehicles, in the possession of units and in store. (See paras. 2-4.)
- (b) Guns, range-finding instruments and stores of a like nature, in possession of units and in store. (See paras. 5-11.)
- (c) Machine guns and small arms, in possession of units and in store. (See para. 12.)
- (d) Anti-gas respirators and protective clothing, in possession of units and in store. (See para. 14.)
- (e) Stores manufactured in R.A.O.C. workshops. (See para. 15.)
- (f) Stores purchased from civil sources, or manufactured by civil contract, in the theatre of war. (See paras. 16 and 17.)
- (g) Stores returned by troops or recovered from salvage. (See paras. 18 and 19.)
- (h) Certain stores of a delicate nature received from home. (See para. 20.)
- (j) Ammunition. (See Sec. 61.)

2. Mechanical vehicles in the possession of units will be inspected periodically by the O.M.E. of the L.A.D. serving the unit concerned.

3. The procedure followed in peace will be maintained as far as the circumstances of war permit: and the same forms will be used as in peace, as far as they apply.

4. Mechanical vehicles in store at base ordnance depots will be inspected under arrangements made by C.O.M.E.

Those in field parks will be inspected under arrangements made by C.O.M.E. corps.

5. Guns, range-finding and optical instruments, and other stores inspected by O.M.Es. in peace, will be inspected in war:—

if in the hands of units:—by the O.M.E. of the L.A.D. serving the unit in question,
if in store:—as laid down in para. 4.

6. When sentencing guns and howitzers which have entered the last quarter of their lives, the inspecting officer will give an "estimated remaining life," for the information of the battery commander.

In the case of special natures of ordnance (that is ordnance of which no reserve, or only a small reserve, is maintained within the field of operations) such a sentence will be notified, by telegram, to superior R.A.O.C. authority.

7. Whenever it is decided to fit a gun in possession of a unit with a loose liner or loose barrel, as the case may be, this operation will be performed only under the direct supervision of the O.M.E. of the L.A.D. serving that unit.

8. Condemnations of mechanical vehicles and armament (guns, carriages, searchlights, height-finders and predictors) will be reported by telegram to A.D.O.S. corps, repeated to D.A.D.O.S. and unit. Reports will specify nature of equipment, registered or War Department number, unit and the reason for condemnation.

9. In such cases, steps will then be taken by the R.A.O.C. authority concerned to replace the condemned stores without further action on the part of the inspecting officer.

10. The removal of jammed projectiles from ordnance, including any captured from the enemy, will normally be carried out by, or under the supervision of, an O.M.E. and an I.O.O.

If removal is found to be impossible they will arrange for the gun or howitzer concerned to be destroyed or otherwise disposed of.

Ordinarily this destruction or disposal will not be proceeded with till sanction has been obtained from superior R.A.O.C. authority.

11. Inspecting officers will attend courts of inquiry upon all accidents, or abnormal occurrences, in connection with important warlike stores, either as members of the court or in attendance.

Their technical knowledge and experience will be placed at the disposal of the court for the purpose of assisting the latter to ascertain the cause of the mishap.

12. Machine guns will be inspected periodically and as occasion arises by unit armourers.

13. In the cases mentioned above, problems beyond the scope of the O.M.E. of a L.A.D., or a unit armourer, will be referred to the army field workshop serving the unit in question.

Specialist personnel will be available there to deal with the matter, either by a visit to the unit or by examination and repair in workshops, whichever may be convenient and conducive to the early return of the article in question to a serviceable condition.

14. Anti-gas respirators and protective clothing will be inspected under unit arrangements, as in peace: and also, as opportunity offers, by the I.O.O. corps.

The advice of this officer will always be available in any problem that arises.

Particularly he will be responsible for advising units as to the continued use, or replacement if necessary, of respirators or protective clothing which have been subjected to prolonged exposure to gas.

15. Stores manufactured in R.A.O.C. workshops will be inspected before issue by the officer commanding the workshop or a subordinate to whom he has delegated this duty.

16. Stores purchased or manufactured in the theatre of war will be inspected under arrangements made by the officer responsible for the purchase.

Thus in forward areas the ordnance officers of the respective formations will be responsible in the case of purchases initiated by them.

The A.D.O.S.P., when initiating purchases at the base, will arrange with C.O.O. base ordnance depot for such inspection as may be stipulated in the contract or order.

17. Should the inspections mentioned in para. 14 increase in volume or complexity, it may be necessary to obtain the assistance of technically trained personnel.

The purchase and storage of such articles as fur clothing and gum boots might call for such skilled assistance.

18. Stores returned by troops, or recovered from salvage, will be inspected before and after overhaul.

A preliminary inspection, as thorough as circumstances permit, will be made (unless a controller of salvage is appointed) by R.O.Os. at railheads and other ordnance officers in forward areas, so as to avoid congesting the returned stores depot with either:—

(a) Serviceable stores, which could be re-issued in their present condition.

(b) Stores which are obviously worthless, or

- (c) Stores which could easily be repaired in the formation area, with the facilities there existing, and re-issued there.

19. Returned and captured stores received at the returned stores depot will be inspected on arrival. They will fall into three categories:—

- (a) Serviceable.
(b) Worth repairing or breaking down into components.
(c) Beyond repair and worthless.

(although, if the instructions in para. 18 are followed, category (c) should be reduced to a minimum).

Stores sentenced "serviceable" will be transferred forthwith to the group concerned.

Any stores beyond repair and worthless, which arrive at the base despite the precautions mentioned in para. 18, will be destroyed.

Stores worth repairing, or worth breaking down into their components, will be treated accordingly. Those rendered serviceable will be inspected, under arrangements made by the O.O., R.S.D., before being transferred to stock.

20. Delicate instruments, and stores of a like nature specially liable to damage in transit, will be inspected, on receipt from home, before being put to stock.

The extent to which preliminary inspection of this kind is necessary will vary with the duration of the voyage and will depend to a large extent on climatic conditions.

Other stores, on arrival from home, will be assumed to be serviceable in the absence of any evidence to the contrary.

21. All officers on whom regular inspection duties are likely to fall should be kept in touch with the latest developments of pattern and other information bearing on the stores with which they deal.

To this end, the D.O.S., D.Ds.O.S. army (if appointed), A.Ds.O.S. corps and C.O.Os. base ordnance depot and base ammunition depot will be supplied with technical instructions and publications: particularly with the minutes of the technical committees dealing with ammunition, mechanical vehicles, artillery stores and small arms.

22. They will pass on special information so derived to such officers, serving under them, as are particularly concerned.

23. Information acquired thus, and by the constant issue, handling and repair of stores, will be communicated, whenever advisable, to the troops who use the stores in question.

This can be done either formally through the medium of general routine and other orders, or informally by visits, where convenient, to units.

Explanations of new types of stores, instructions in their preservation and correct use, and advice on the technical difficulties to which they may be liable, are always welcomed by units. Discussions on such matters, moreover, help to broaden the outlook of ordnance officers.

24. All ordnance officers, whether in forward areas or at the base through whose hands stores are continually passing, will keep a look-out with a view to detecting:—

- (a) Inherent faults in design, workmanship or material: which may be either of general importance or of particular importance in certain climates.
- (b) Wilful or preventable damage.
- (c) Repeated misuse.

Cases under (a) should be brought to the notice of the home authorities at once; instructions being prepared, where possible, which will enable the users to overcome the difficulty pending change of pattern.

Cases under (b) should be reported to higher authority in the manner laid down in general routine orders.

Cases under (c) call for special representations to the headquarters of the formations concerned.

Section 61.—Ammunition and explosives.

Note.—This section should be read in conjunction with Sec. 9.

(i) General.

1. Inspecting officers for ammunition duties will be attached to the offices of:—

D.O.S.

D.Ds.O.S. armies (if appointed).

A.Ds.O.S. Corps.

A.D.O.S. Amn.

Each base ammunition depot.

They will act as technical advisers, carry out and supervise technical operations and prepare technical reports and draft technical instructions connected with ammunition.

2. The frequent repetition of the word "technical" in the above paragraphs is intentional.

The I.O.O. has no administrative responsibilities in connection with the storage, issue or receipt of ammunition, except in the case of I.O.O. corps (see Sec. 9, para. 2 (a)).

His functions are limited to:—

- (a) Advice, to the authority concerned, as to methods of storage and handling and other technical matters bearing on the efficiency of the ammunition and the safety of the personnel concerned.
- (b) Inspection.
- (c) Control and supervision of technical operations.

3. When laboratory operations are being performed, he will be responsible that the personnel employed are fully conversant with the correct methods of working to be followed. When practicable he will demonstrate these by carrying them out himself; otherwise he will arrange for them to be demonstrated by a qualified ammunition examiner.

He will be responsible for the close and continuous supervision of all laboratory work.

Demolitions will be carried out under the personal supervision of an I.O.O.

4. Inspection of ammunition at base ammunition depots will approximate, as closely as war conditions allow, to the system obtaining in peace, both as regards procedure and the forms used.

5. The need for periodical inspections will depend, however, upon the rate of turnover and the conditions of storage.

With a rapid turnover and good storage, periodical inspections are unlikely to repay the labour and time spent upon them.

On the other hand, if stocks are held without turnover for some months, and if the storage conditions are not good (on account of climate or through lack of suitable sheds) periodical inspections may be necessary to guard against deterioration and against the possibility of deteriorated ammunition being issued to the troops.

In such cases the inspecting officer must use his discretion as to the extent of the examination to be carried out.

6. Should consignments of ammunition arrive at base depots (from the front or elsewhere) in a condition that may be other than serviceable, it will be the duty of the inspecting officer to carry out such inspections as may be necessary to ensure that none but serviceable ammunition is put to stock.

7. The I.O.O. will be available to carry out inspections of ammunition in the charge of units in the locality, such as anti-aircrafts units, schools of instruction, Royal Air Force depots, etc.

8. In carrying out his duties, an I.O.O. will have the assistance of ammunition examiners and other R.A.O.C. and labour personnel, as may be necessary.

9. An I.O.O. will attend courts of inquiry upon all accidents or explosions connected with ammunition, either as a member of the court or in attendance. His technical knowledge and experience will be placed at the disposal of the court for the purpose of assisting the latter to ascertain the cause of the mishap.

(ii) Defects.

10. An important part of the duties of inspecting officers will be the investigation of defects in ammunition that come to light in the course of its use by the troops.

11. Such defects will, whenever this is practicable, be investigated personally by the inspecting officer, and with as little delay as possible.

Full reports will be prepared giving all technical particulars that may throw light on the cause of the defect.

These reports will be sent to superior ordnance authority for transmission to G.H.Q. They will be forwarded without delay for the information of the home authorities responsible for design and manufacture, who require early and accurate information on such matters.

12. The fullest details as to markings, history, and use of the ammunition concerned are required, as upon these reports will depend the possibility of tracing the fault to its source and removing it.

13. In cases where it is not possible for the inspecting officer to investigate personally, the report on the occurrence will be passed to him for scrutiny and remarks, so that any inaccuracies or omissions may be rectified before the report goes forward.

14. When practicable, specimens of the defective ammunition, or fragments or parts thereof, will be sent home in connection with reports.

15. The degree of reliability to be placed upon the particulars given in reports will be indicated. Thus details based upon the personal observations of the inspecting officer will be more reliable than details reported, but which he has not been able to verify; as officers who are performing other duties are unlikely to possess the up-to-date knowledge of ammunition required for the preparation of complete reports.

(iii) **School of instruction.**

16. Expansion of the supply of R.A.O.C. personnel trained in the technical inspection of ammunition will present a problem calling for immediate attention on the opening of a campaign.

17. A school of instruction (ammunition) will be established as soon as practicable to train officers, warrant officers, non-commissioned officers and men in ammunition duties (see Sec. 19).

18. In view of the rapid development of ammunition in war time, and the frequent introduction of new types, it is important that certain officers of the R.A.O.C. are selected and specially detailed for the inspection of ammunition.

Officers engaged upon other duties will have neither time nor opportunity to keep their technical knowledge of ammunition up to date.

CHAPTER IX.

FINANCIAL POWERS, LOCAL PURCHASE, REQUISITIONING, AND SALES.

(See Chapter XXI, F.S.R., Vol. I.)

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Section 62.—Financial Powers.

1. Financial powers in regard to ordnance services will be delegated to the D.O.S. with a field force by the War Office, who will fix the limit to which expenditure on this account should be confined. These powers should be sufficient to enable the D.O.S. to utilize local resources without undue delay, subject to a check upon waste.

2. In an emergency not admitting of prior reference to War Office, the powers vested in the D.O.S. may be exceeded upon written instructions of the D.Q.M.G. after reference to the Financial Adviser, the War Office being informed accordingly.

3. The D.O.S. may delegate to other ordnance officers such portion of his financial powers as may be desirable, with the concurrence of the Financial Adviser.

Every officer to whom financial powers are delegated will keep an imprest account.

4. Should it be necessary in an emergency for these officers to exceed these powers, and should time not admit of reference to their immediate R.A.O.C. superior, officers will obtain written instructions in the matter from the commander of their formation, sending a report of the transaction to their immediate R.A.O.C. superior for information.

Section 63.—Local Purchase.

1. Stores obtained by local purchase by D.A.Ds.O.S. of formations will not be taken on charge, but the purchase will be supported by a receipt for the stores from the unit to which the stores are issued.

These receipts, together with the contractor's bill, will normally be rendered to the paymaster i/c command services for payment.

When it is necessary to pay cash on delivery, the bill will be paid by the D.A.D.O.S. from his imprest account, which will be supported by the received bill and the unit's receipt for the stores.

In both cases bills will be endorsed by the purchasing officer to the effect that the purchase was necessary and was made at a proper price (or in accordance with the terms of a contract) and that the stores have been received and are in good condition.

Reference will also be made to the date of the monthly report to the A.D.O.S., P. (see para. 6).

2. If it is found necessary, in order to avoid competitive buying, to limit the areas open to respective ordnance officers for local purchase, instructions on the subject will be issued from G.H.Q.

3. When in exceptional circumstances an officer, other than an ordnance officer, finds himself compelled to make a local purchase he will obtain covering approval of the purchase by forwarding, to the D.A.D.O.S. to whom indents are normally sent, a list of the articles purchased and a statement of the authority or necessity for the transactions.

The list will bear a certificate that the articles have been received and are fit for service.

If the stores have been paid for he will attach a receipt for the amount paid.

In the case of purchase not exceeding £25, of any one description of store, the D.A.D.O.S. will satisfy himself that the transaction is correct, will certify to that effect, and if the account has been settled he will return all the documents to the officer who effected the purchase, to support the relevant item in the imprest account.

If the account has not been paid, the D.A.D.O.S. will certify and send the documents to the paymaster in charge of command services for audit and payment.

In the case of purchases over £25, the D.A.D.O.S. will obtain covering approval of the D.O.S. or his authorized representative.

In all cases the transaction will be entered in the return of local purchases rendered by the D.A.D.O.S. concerned (see para. 6).

4. Procedure similar to that above will be adopted in the case of all repairs for which payment is made.

5. All stores purchased on the L. of C. will be brought to account.

6. Ordnance officers will render a monthly report of all purchases to the A.D.O.S., P., including any made by units

under para. 3. These reports will give a reference to the imprest account from which the bill was paid.

7. The attention of ordnance officers holding imprest accounts is drawn to the "General Instructions to Imprest Holders," F.S.R., Vol. I, Sec. 193.

8. Should any transaction be likely to invite comment on audit, a brief explanation should be entered on the document supporting the transaction, together with a certificate that the arrangement entered into was the best possible in the circumstances.

9. The following are the powers of local purchase at home on mobilization:—

D.A.Ds. of divisions and	£10 on any one description
C.O.Os. of central	of store.
ordnance depots.	

A.Ds.O.S. of commands	£50 on any one description
	of store.

Authority to purchase in excess of above amounts will be obtained from the D.O.S. the War Office through the P.O.O.

Section 64.—Requisitioning.

1. If requisitioning is necessary, ordnance officers will follow the procedure laid down in F.S.R., Vol. I, Chapter XIX.

2. As a general principle only officers of an administrative service detailed for the duty are authorized to requisition (or purchase), but in cases of emergency—for example, when troops are on patrol duty or where no duly appointed requisitioning officer is available, requisitioning may be carried out by the commander.

Indiscriminate requisitioning and granting of requisition receipt notes are strictly forbidden (F.S.R., Vol. I, Chapter XIX, Sec. 177, para. 5).

3. Requisition will generally be made by a demand on the form prescribed (A.F. F 780), which may be altered to suit local conditions.

4. When payment is not made on the spot the requisitioning officer will give to the local civil authority a requisition receipt note, on the form prescribed (A.B. 361), for all goods or services rendered.

When once a written demand has thus been given, even though it may be on a scrap of paper, no subsequent payment will be made for the goods except through the medium referred to in para. 5.

Conversely, when payment is made on the spot, no acknowledgment for the goods or services will be given by

the requisitioning officer, but a receipt for the amount paid will be obtained.

Payment, whether immediate or deferred, will as a rule be made to the authority through whose agency the goods or services are obtained, and not to individual inhabitants.

5. All authorities or persons to whom requisition receipt notes are given will be directed to send them at the earliest possible date to the officer in command of the nearest British garrison or, in the case of mobile operations, to the officer detailed, in general routine orders, to deal with such matters.

This officer will give an acknowledgment (A.F. F 781) for the notes received for clearance, and will at once transmit the notes to the branch appointed on the outbreak of hostilities for settling claims.

6. Requisition receipt notes should not be given to civilian authorities before the stores are delivered, and on no account will any other form of receipt be used or tendered.

7. In no circumstances will the original requisition receipt notes show the rank, unit, or force of the requisitioning officer, but this information will always be inserted by that officer on the duplicate and triplicate copies.

8. When ordnance stores are requisitioned by an officer other than an ordnance officer, the D.A.D.O.S. of the formation concerned will see that full details are obtained without delay; that the duplicate requisition receipt note is sent to the branch appointed for settling claims; and that the triplicate copy is disposed of as directed in the following paragraph.

9. A monthly return of requisitions will be forwarded to the A.D.O.S., P., accompanied by triplicate copies of requisition receipt notes.

Section 65.—Sales.

1. Sales will be conducted in the same manner as in peace, as far as local circumstances will permit.

The method employed will normally be by tender, but if for any particular reason a direct agreement or bargain is made, the offer made will be in writing, and a full explanation of the circumstances will be attached to the sale voucher.

2. The material particulars of sales of stores will be furnished without delay by the responsible officers to the paymaster i/c command services.

CHAPTER X.

WAR ARRANGEMENTS AT HOME.

Note.—This chapter should be read in conjunction with the Manual of Movement (War), and with any special instructions that may be published by the War Office.

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Section 66.—General.

1. Plans for mobilization and despatch of the field force overseas are made during peace time. As far as the ordnance service is concerned these include detailed arrangements for:—

- (a) Replacing articles of peace equipment which are unfit for active service.
- (b) Issue of mobilization equipments.
- (c) Issue of stores on an approved scale for the fitting out of transports allotted to the field force and for the use of troops on board.
- (d) Issue of stores required for extra accommodation, etc.
- (e) Mobilization of R.A.O.C. units and personnel required in connection with the field force.
- (f) Replacement of R.A.O.C. personnel detailed for field force units.
- (g) Despatch overseas of stores required for base depots, etc., and for maintenance of the force.
- (h) Further provision of ordnance stores.
- (i) Collection and issue of mechanical vehicles at places of mobilization to complete units to war establishment.
- (k) Assisting units to embark and disembark mechanical vehicles.
- (l) Collection and shipment of the initial stock of mechanical vehicles.

Instructions regarding the responsibility of the R.A.O.C. in connection with the collection and shipment of mechanical vehicles are laid down in Mobilization Regulations. Further references will be found in Section 70.

2. Special arrangements have also to be made to deal with:—

- (a) Increased requirements of ammunition and stores and consequent addition to accommodation and establishments at home.
- (b) Increase in traffic at the various home ports.
- (c) Intensive training of R.A.O.C. personnel to maintain establishments.

3. War boxes are held in peace under R.A.O.S., Part I, in respect of the war appointments shown below.

They are maintained by the heads of branches, A.P.O.Os., or Chief Ordnance officers who perform, in time of peace, functions analogous to those of the respective appointments.

They contain notes and information which would be of value to the officer concerned when taking over the duties of his post. They will be sent over with, and to supplement, the stationery boxes.

War appointment.

- D.O.S.
- P.O.M.E.
- A.D.O.S., P.
- O.O. P. No. 1 (M.T.) Sub-depot.
- O.O. P. No. 2 Sub-depot.
- O.O. P. No. 3 (M.T.) Sub-depot.
- C.O.O. Base Ordnance Depot.
- C.O.O. Base Ammunition Depot.
- O.O. No. 1 (M.T.) Sub-depot—
 - Group i.
 - „ ii.
- O.O. No. 2 Sub-depot—
 - Group iii.
 - „ iv.
- O.O. No. 3 Sub-depot—
 - Group v.
 - „ vi.

War boxes are also held in respect of the following portions of the base ordnance workshop. They are maintained by the ordnance officers responsible, in time of peace, for the respective mobilization equipments.

- Headquarters.
- Armament shop.
- “A” vehicles shop.
- “B” vehicles shop.
- Armourers shop.
- Instrument and optical shop.
- Wireless and signal stores shop.

Section 67.—Expansion.**(i) Storage and inspection.**

1. It is impossible to foresee to what ultimate magnitude a campaign, once begun, may attain.

2. A small campaign may conceivably impose no strain on the R.A.O.C. at home that cannot be met by a moderate development and extension of the ordinary peace time organization.

On the other hand, a war may develop so rapidly and on so vast a scale as to demand the mobilization of the country's entire resources, and to call for a maintenance system out of all proportion to that existing in peace.

3. Although it is impossible to foresee the extent of such developments, it is by no means impossible to prepare for them. Indeed the success of a sudden expansion will depend, in no small measure, on foresight exercised in time of peace.

Accordingly, it is the duty of A.Ds.O.S. of commands and D.A.Ds.O.S. of areas (R.A.O.S., Part I, Chapter I) to acquaint themselves, in time of peace, with the potentialities of their areas in the supply and manufacture of material that may be required in war.

It is no less their duty to have in mind premises which might be used, without detriment to other services, in case it became necessary to expand, suddenly, the storage accommodation at their disposal.

4. Such expansion will be co-ordinated by the P.O.O.

To him, A.Ds.O.S. commands will render, immediately on the beginning of hostilities or of a precautionary period, weekly returns showing, in thousands of square feet, the storage space available in the depots under their administration, with information regarding accommodation obtainable elsewhere (see Sec. 68).

The P.O.O. will arrange delivery from contract accordingly.

5. Since the process of mobilization will automatically empty much of the accommodation at command depots, an up-to-date knowledge of the space available may be of great importance.

6. It will be the aim to locate main stocks of stores at central depots.

This will be especially the case with stores needing inspection on delivery.

Command depots, however, may be called upon to hold overflows of bulky items.

7. Issue of such overflow stocks will be controlled entirely by the P.O.O. as deposit stocks.

8. Meanwhile the inspection branch will (if occasion requires) put into operation a plan, formulated in peace, for inspection at contractors' works.

The P.O.O. will thus be able to arrange, in cases of emergency, the direct despatch overseas of the stores concerned (see Sec. 69).

9. A.P.O.Os. are appointed in time of peace to undertake, under the general direction of the P.O.O., the provision, storage and issue of separate categories of stores, such as

- M.T. stores.
- Armament stores.
- Ammunition.
- General stores.
- Clothing.

and the control of the stocks in central ordnance depots dealing with them.

It will probably be found essential, as the campaign progresses, for certain of the work of the A.P.O.Os. to be further delegated.

10. Similarly inspection work will, if necessary, be decentralized under chief inspectors, one for each class of stores.

They will co-ordinate the work of inspection at factories and depots.

11. It may be necessary to establish ammunition depots to take over the output of filling factories.

(ii) Personnel.

12. Equal importance attaches, in peace, to the preparation of plans for the replacement of R.A.O.C. personnel, and personnel belonging to the reserve, by civilians.

13. Such plans cannot be more than tentative; but they can indicate the names of suitable skilled civilian personnel and the posts which they would be fitted to fill in time of emergency.

(iii) Mobilization schemes.

14. It is vital to remember that, on the despatch of a field force, a large number of posts, now held by serving officers of the R.A.O.C., will be taken over at short notice by reserve and other officers who may be unfamiliar with the installations which they will have to administer.

15. It is therefore of the utmost importance that each ordnance installation existing in time of peace (as well as

those to be formed on the outbreak of hostilities) should possess a clear and detailed mobilization scheme.

Such a scheme should show a newly appointed officer, at a glance, the steps to be taken in the mobilization period, and, as far as they can be foreseen, the development of which the installation in question is capable.

It should provide for a considerable measure of decentralization: so that a relieving officer may be freed from detailed arrangements and may know that these are in the hands of capable subordinates who understand their duties.

16. The constant revision of mobilization schemes, in time of peace, is essential.

Such revisions should be undertaken at definite periods; and also whenever any change is made in the policy or functions of the installation, which might affect the mobilization scheme.

(iv) Air raid precautions.

17. Under the conditions of modern war (see opening paragraph of Chapter VII) ordnance installations at home may be as liable to air attack as those in the theatre of operations.

18. It is therefore essential that standing orders for air raid precautions should be prepared in time of peace, and should be so decentralized that each individual knows—

- (a) The general provisions regarding alarm, anti-gas precautions, refuges, etc., appertaining to all.
- (b) The particular provisions affecting the locality under his charge or his place of work.

19. Such standing orders will form a separate appendix to the mobilization scheme of each ordnance installation.

20. Chapter VII applies with equal force to installations at home and to those in the theatre of war; and should form the basis of the necessary standing orders.

Section 68.—Demands from overseas: issues from home.

1. Issues from home to base depots overseas (ammunition as well as store depots) will be made in two phases.

2. In the first place, issues will be made on the basis of a pre-arranged shipping schedule (see Chapter III).

These issues will be initiated by the despatch, from the War Office to the home depot which is to make the issue, of a schedule of store movements. Copies of this form will be sent to the ordnance officer at the port where the stores are to be loaded.

Thereafter the procedure will be the same as that for the second phase.

3. The second phase will begin as soon as the provision officers at the overseas base have sufficient data on which to frame demands.

As soon as this occurs with regard to any one vocabulary section, that section will be transferred from the basis of automatic issue from home to the basis of issue on demand from overseas.

It must be realized that, owing to local circumstances, some vocabulary sections may, at an early date, require to be put on the basis of issue on demand; while, in the case of others, some time may elapse before the system of pre-arranged issue from home gives place to issue on demand.

4. The provision officer, at the overseas base, will have in his possession a copy of the shipping schedule referred to above (para. 2). He will therefore know what stores he can expect, if he makes no demand, and when they are due to be shipped. It will be for his decision whether the stores outstanding at any given moment are sufficient for the probable needs of the force: and whether the proposed dates of shipment are suitable.

As soon as he has sufficient information in his possession regarding the actual and probable requirements of the force, he will substitute the demand system. He will inaugurate this system, which will prevail for the remainder of the campaign by telegraphing to the War Office (M.G.O.7) and to the home provision branch concerned (which functions under the P.O.O.) as follows:—

Item.....* Cease automatic shipment of section.....
 after despatch of column.....† Demands begin with
 my..... dated.....

Henceforward the provision officer overseas will address his demands direct to the home provision branch concerned.

5. Before coming to the normal procedure of subsequent demands, and their issue, it is necessary to make it clear how such issues will be controlled.

6. The home provision branch will keep two co-ordinated records.

One, compiled with the aid of A.P.O.Os'. home provision branches (see Sec. 67, para. 9) and A.Ds.O.S. of commands

*This refers, not to an individual vocabulary item, but to the whole of the vocabulary section in that column of the shipping schedule.

†Various columns in the shipping schedule show the stores to be shipped week by week, according to a timed programme.

(see Sec. 67, para. 4), will show what store space is available, or could be made available, throughout the kingdom.

The other record, kept (in P.R.Fs.) by the various home provision branches (see R.A.O.S., Part I, para. 166) will show:—

- (a) Stocks held on deposit at ordnance depots.
- (b) Stores due in from contractor: and to which home ordnance depot these are being consigned.

Note will be kept, in this record, of stores peculiar to certain theatres of war.

7. War reserves are recorded in P.R.Fs. kept in home provision branches. The war reserve figures are incorporated in total liabilities every time a review of an item is made during peace.

When war reserves are issued, a copy of the issue order will be sent to the home provision branch concerned, so that the war reserve figures shown on P.R.Fs. may be reduced accordingly.

Ordnance depots holding stores on deposit will report their stocks to the home provision branches and from that time onwards will send them copies of all receipt and issue vouchers in respect of such deposits.

8. On the establishment of the system of demands from overseas, such demands, and also all hasteners, will be sent direct to the provision branch concerned, as laid down in R.A.O.S., Part I, for peace.

9. Having selected (from the record mentioned in para. 6 above) the home depot from which issue is to be made, the provision branch concerned will notify the issuing depot (by passing the demand, or an issue order, or by telegram). The issuing depot will then submit to the War Office (M.G.O.7) requisition for shipment of stores (A.F. W 5170—five copies), filled in to show:—

- The name of the consignee.
- The number of packages.
- The nature of the stores.
- The weight and shipping tonnage.
- The station from which stores are to be despatched.
- The relative urgency.

Section 69.—Shipping arrangements.

(i) General.

1. The War Office will notify on A.F. W 5170:—
 - The port of shipment.
 - The name of the ship and date the stores are required alongside.

Copies of this form will be sent to the docks service at the home port and to the Movement Control (for information of the Ordnance Officer, port) and to the depot which is to make the issue.

The issuing depot will despatch stores to the port in accordance with A.F. W 5170.

2. For each consignment, and for each separate consignee the issuing depot will prepare a bill of lading (or shipping advice and delivery note. See para. 26 and footnote) quoting the voucher numbers on which the stores are issued.

3. On the vouchers concerned the issuing depot will note the ship on which the stores are to be despatched and the date of delivery alongside (as shown in A.F. W 5170).

4. The O.O., issuing depot will notify to the Movement Control at the port the registered numbers of the wagons in which the stores are despatched. He will also notify any heavy lifts or stores that require particular care in handling.

5. Wagons containing the stores will be consigned to the port marshalling yard, whence they will be called forward by the port authorities (see para. 18).

6. The O.O., issuing depot will prepare a carrier's note (A.F. G 980) for each consignment, as laid down in R.A.O.S., Part I, para. 637.

An advanced copy will be despatched at the earliest possible moment to the Movement Control at the port. On this copy the O.O., will enter the reference numbers of the A.F. W 5170 on which the consignment was ordered for shipment.

7. In addition, to assist check from rail to ship, the O.O., issuing depot will ensure that a waybill, endorsed in an envelope, is pinned in a prominent place on each wagon. (In the case of covered wagons, the waybill should if practicable be pinned to the roof, immediately over one of the doors.)

8. The O.O., issuing depot will post to the O.O., of the overseas sub-depot concerned three copies of the issue vouchers, showing the ship by which the stores are being despatched.

These will be distributed as follows:—

One to O. i/c P.

One as sub-depot accounting copy.

One returned to the issuing depot (home) to be attached to the bill of lading by which that depot's accounts are cleared.

Provision branches overseas will be notified of actual receipts by means of the posting slips.

9. Ordnance work in the theatre of war will begin immediately on arrival overseas.

From that moment, it will be necessary to issue ammunition and ordnance stores to the troops.

Issues may have to be made during actual landing operations. This certainly will be the case, if the landing operations are protracted. They will occur, although possibly on a small scale, during the disembarkation of troops; and they will continue, without intermission, throughout the period (which should be as short as possible) until the base depots concerned are ready to function.

10. Accordingly, ships must be loaded in such a manner as to secure that

- (a) Stores likely to be urgently needed, such as machine guns and spares for mechanical vehicles, are readily accessible;
- (b) The position in the holds of all varieties of stores is known.

(ii) **Ordnance officer, port.**

11. Supervision of the shipment of stores, from the ordnance point of view, is the function of the ordnance officer, port.

One such officer will be appointed to each port from which ordnance stores are shipped.

12. He will serve under the orders of the Movement Control.

He will, however, communicate direct with the War Office (M.G.O.7) on all matters concerned with the transit of ordnance stores.

13. He will also communicate direct as may be necessary with—

A.P.O.Os. concerned (see Sec. 67, para. 9).

C.O.Os. central depots.

Consignors and consignees of the stores passing through his hands.

14. He will take steps to become cognizant of all ordnance stores passing through the port.

To this end he will organize a system of obtaining early warning of all arrivals of ordnance stores by land and sea.

15. He will be provided with a suitable staff of R.A.O.C. and civilian personnel.

16. He will engage, pay and administer such civilian employees as may be authorized to work under him; but for labour he will apply to the Movement Control.

17. He will keep a diary of important events and decisions affecting his work.

(iii) **Despatch of stores to port.**

18. On receipt of A.F. W 5170 the S.T.O., after consultation with ordnance officer, port, will call forward, from the port marshalling yard, wagons containing stores allotted to a particular vessel.

19. He will include in the notification any instructions that may be necessary (especially in the case of ammunition) regarding the arrangement of wagons.

The object of these instructions is to secure the maximum of convenience in off-loading, and the minimum of shunting.

20. Under this system, only such stores should arrive at the port as can be shipped without delay.

It may occur, however—for example, owing to some unexpected delay in the berthing of a ship—that an accumulation of stores takes place at a port. In such a case, trains must be off-loaded without delay, so as to set free the rolling stock.

The ordnance officer, port, in such a case, will advise the Movement Control as to the custody of ordnance stores and the steps necessary to provide suitable accommodation and protection.

(iv) **Issues direct from the contractor.**

21. In certain exceptional cases, stores will be despatched, under the orders of the provision branch concerned, direct from the contractor's works to the port.

Such stores will have been inspected at works before despatch.

If practicable the normal procedure already described will be followed.

This may be done either by the establishment (if justified by the output) of a small ordnance organization to take over and issue the factory's production; or by detaching ordnance personnel temporarily from the appropriate depot to take on charge, and despatch for shipment, such special consignments as it may be necessary to send direct to port.

22. Should neither alternative be practicable, owing to lack of time or other cause, the provision branch concerned will send A.F. W 5170, or a telegram of similar nature in lieu, to the contractor with copies to the Movement Control at the home port.

The carrier's note may or may not be necessary, according to the terms of the contract regarding delivery.

23. The consignor will notify the Movement Control at the port, by telegram of the wagons in which the consignment is despatched.

24. Inspection notes for such consignments will be sent by the consignor to the O.O. sub-depot (overseas), and to the home provision branch concerned, for payment purposes.

The ordnance officer, port, will check stores into the ship as far as practicable by means of the inspection note. He will then pin one copy of the note to the copy of the bill of lading normally sent to the consignor (see para. 27), and despatch these to the provision branch concerned, for payment purposes.

The provision branch, having recorded the issue (see Sec. 68, para. 6), will pass the inspection note and bill of lading to the appropriate central ordnance depot, who will bring the stores on charge, and voucher them to the consignee.

The vouchers will be sent direct from the issuing depot to the consignee, marked "issued direct from contract. Bill of lading. . . ."

25. It should be borne in mind that the procedure outlined above will only be adopted in exceptional cases. Normally, stores for shipment overseas will be despatched to port by ordnance depots at home.

(v) Bills of lading.*

26. The ordnance officer, port, will check consignments from rail to ship on behalf of the movement control.

He will attach one copy of each waybill to the retention copy of the carrier's note. The receipted copy of the carrier's note (see para. 6), will form a check against the bill of lading which is the actual document (see para. 27) by which the issuing depot clears his account.

He will also prepare freight form "T." This is a summary of the various bills of lading for a particular ship. He will hand freight form "T," with one copy of each relevant bill of lading attached, to the Movement Control, thus providing them with a concise statement of the ship's ordnance freight.

27. Six copies of the bill of lading (unstamped) will be necessary, and will be disposed of as follows:—

No. 1.—To the ship's master for transmission to consignee.

No. 2.—Retained by Movement Control, home port.

* When ships are chartered, a shipping advice and delivery note (A.F. W 5175) will be used. (See Instructions for Movement Control.) When stores are sent by freight ship, the bill of lading (A.F. G 964) will be the document employed. The instructions in this sub-section, and elsewhere in this Manual, apply to either document.

No. 3.—To consignors. From this copy (linking package numbers will be those shown on the vouchers concerned) he will clear his account. Discrepancies noted on this copy will be investigated by the consignors.

No. 4.—To the ship's master for use of docks service at overseas port.

No. 5.—To the ship's master for retention.

No. 6.—To the ship's master for transmission to overseas port.

28. Consignments from different depots at home will require separate bills of lading. The reason for this is that (see para. 27) the bill of lading is used to clear the issuing depot's accounts.

Consignments for different ports, or for different sub-depots supplied from the same base port overseas, will also require separate bills of lading.

29. It is essential that the bills of lading should be in possession of the master of a vessel before departure.

30. The ordnance officer, port, will bring to the notice of the sea transport officer any article of abnormal weight or bulk, so that the movement control at the port of discharge may have ample warning of any special appliances for unloading which may be required (see para. 4 above).

31. The ordnance officer, port, will arrange, as far as practicable, that stores known to be urgently required are so stowed as to be readily accessible at the port of unloading.

This will be greatly facilitated, in certain cases, by the judicious use of 'tween decks.

He will, as loading proceeds, place his bills of lading at the disposal of the ship's officers, to assist them in compiling the stowage plan of the ship.*

32. The ordnance officer, port, will not keep formal accounts.

He will, however, keep a record of ships carrying ordnance stores. This will show:—

- the date of arrival and departure of ship;
- the date of beginning and completion of loading;
- the date of despatch of wagons (or road transport) from the consignors (taken from the carrier's note or convoy note);
- the date of arrival of wagons in port; and of their unloading;
- the record of discrepancies;
- note of stores shut out.

* Under normal peace-time freight conditions, stowage plans are made out by ships' officers (for their own information).

In the case of time charter (such as might obtain in war) they have, according to commercial practice, no such responsibility.

Arrangements will, however, be made by the sea transport officer whereby stowage plans will be prepared from the bills of lading by the ships' officers.

33. Should any stores, allocated to a certain ship, be shut out, the Movement Control will report particulars of such stores immediately the ship is closed, to War Office by telegram.

The bill of lading and freight form "T" will be amended as necessary.

Should a question of priority shipment arise, on which the ordnance officer, port, requires instruction, he will refer by telegram to War Office (M.G.O.7).

34. The ordnance officer, port, will assist the Movement Control in the establishment of a small workshop of carpenters, tinsmiths, etc., for the repair of packages received in a damaged condition.

Ordnance stores received for shipment in a damaged condition will be returned to the consignor, who will repeat the issue.

(vi) Marking of packages.

35. It is possible that in some cases ships will be allotted exclusively for the carriage of ordnance stores.

This, however, may not always be the case; and it is necessary to ensure that, on arrival at the overseas docks, ordnance stores shall be segregated from those of other services.

Packages of ordnance stores will therefore be marked in at least two places with a painted green disc, about six inches in diameter.*

Ammunition packages are distinctive and should require no extra markings.

The consigning depot will in each case be responsible for the marking of packages.

36. Further, the division into sub-depots of the base ordnance depot (see Sec. 36) makes it desirable that stores for each sub-depot shall be easily recognized.

Normally stores destined for one sub-depot will arrive together at the port of departure, and will be loaded together. At the port of arrival, however, further precautions will be necessary to ensure correct delivery.

Accordingly, an additional marking will be affixed to indicate the sub-depot to which the package is to go. This

* Other stores, with which the ordnance officer, port, will have to deal—that is, stores issued from ordnance sources at home but consigned direct to the depot, overseas, of the user service—will have their own distinctive markings, thus:—

Transportation	Railways	Buff star.
	Docks	Buff square.
	Inland Water Transport	Buff circle.
Works Service, R.E.		Brown triangle.

Wagons containing complete loads of stores in any such category will bear similar distinguishing marks, to facilitate sorting and handling.

will take the form of a bar, about six inches long and one inch deep, coloured as shown below:—

Blue	.....	.....	.....	No. 1 sub-depot.
Black	.....	.....	.....	„ 2 „
Red	.....	.....	.....	„ 3 „

The markings described above will be affixed by the consignor.

(vii) **Outward bound ammunition.**

37. Consignments of ammunition for shipment will be accompanied by two copies of the carrier's note.

The ordnance officer, port, will give the consignor a receipt on one copy.

His receipt will quote the name of the vessel and the date of shipment.

From the other he will prepare the bill of lading.

No further accounting is necessary.

This difference in procedure is explained by the fact that ammunition is usually distributed from the home port under instructions from the War Office, and not despatched direct from consignor to consignee.

38. The ordnance officer, port, will enter on bills of lading details of the consignment, including ballistic groups/lots/batches (see Sec. 51, para. 17).

39. The ordnance officer, port, will place the bill of lading at the disposal of the ship's officers, to assist them in the preparation of a stowage plan as laid down in para. 31.

In the case of ammunition, the plan will give sufficient detail to allow natures urgently required to be identified at once, and assembled with all their components.

40. Unless otherwise ordered the ordnance officer, port, will ship only complete rounds in any one consignment.

41. The ordnance officer, port, will ensure that each consignment comprises only one sub-variety (see Sec. 51, para. 17), or as few sub-varieties as possible.

Successive consignments of each nature to each overseas port will as far as practicable be of identical sub-varieties.

Thus the whole of one lot of propellant of a given ballistic letter and number should go, in one consignment or successive consignments, to one destination.

42. Should the ordnance officer, port, have any difficulty in securing this, either owing to the irregular receipt of sub-varieties from consignors, or owing to the methods of loading adopted by the shipping authorities, he will bring the matter to the notice of the War Office (M.G.O.7).

Section 70.—Mechanical Vehicles.**(i) General.**

1. Mechanical vehicles of all formations and units will be despatched overseas accompanied only by their drivers and a proportion of spare drivers and certain other personnel.

The movement of wheeled vehicles from mobilization stations to the ports of embarkation will be by road in convoys in accordance with time-table drawn up by the movement control.

Tracked vehicles will proceed as above by road unless the distance to be covered exceeds 50 miles for I tanks and medium dragons and 100 miles for other tracked vehicles.

2. Units will be completed to war establishment before they leave their place of mobilization, by the issue of mobilization and impressed vehicles in accordance with time tables drawn up before mobilization under the instructions of G.Os., C.-in-C. of Commands in which the units concerned are mobilized.

Units will prepare their vehicles for shipment as far as practicable before moving from their place of mobilization. They will complete the preparation for shipment at the ship's side with the assistance of the R.A.O.C. in accordance with the instructions laid down in Equipment Regulations and the pamphlet "Preparation of Mechanical Vehicles for Transport by Rail and Sea and Subsequent Movement."

3. The responsibility of the R.A.O.C. for mechanical vehicles other than those of its own units include—

- (a) Administration of command mobilization vehicle garages in which units' mobilization "A" and "B" vehicles are stored.
- (b) Handing over these vehicles to units on mobilization.
- (c) Receiving, equipping, servicing and issuing impressed vehicles at command ordnance depots on mobilization.
- (d) Provision of R.A.O.C. vehicle embarkation sections at vehicle embarkation ports on mobilization.
- (e) Despatch of R.A.O.C. port workshop detachments and R.A.O.C. vehicle convoy sections to vehicle disembarkation ports on mobilization.
- (f) Shipment of vehicles for stock.

(ii) Command mobilization vehicle garages.

4. Units mobilization mechanical vehicles are stored in peace in command mobilization vehicle garages, or ordnance depots. Detailed arrangements are made in peace time for the issue of these vehicles to units on mobilization.

Command mobilization vehicle garages are administered by the R.A.O.C. They will become available for the reception of impressed vehicles on mobilization and subsequently will be available for general storage purposes.

(iii) **Impressed vehicles.**

5. Arrangements are made in peace time to earmark civilian owned vehicles for impressment on mobilization.

Arrangements are made by command ordnance depots in their mobilization plans for organizing vehicle reception sections, normally at command mobilization vehicle garages, for receiving servicing and completing impressed vehicles with W.D. tools and equipment and issuing them to units.

The W.D. tools and equipment are issued by the central ordnance depot concerned to command ordnance depots in peace time and stored boxed in complete sets until required.

The number of vehicles earmarked for command ordnance depots includes a small pool to provide units with one G.S. vehicle in every thirty vehicles, to carry the loads of any vehicles which may become casualties on the way to the port of embarkation.

These vehicles, if not used, will be collected at the port of embarkation by the R.A.O.C. vehicle embarkation section and held in the vehicle park for subsequent shipment with the reserve vehicles.

(iv) **R.A.O.C. vehicle embarkation section.**

6. On mobilization, a R.A.O.C. vehicle embarkation section cadre will be despatched by the C.O.O., Chilwell, to each port where "A" and "B" vehicles are being embarked.

The section will be brought up to establishment under local arrangements.

It consists of—

- (a) A vehicle shipment sub-section;
- (b) A vehicle park;
- (c) A port workshop detachment.

7. The vehicle shipment sub-section will assist units at the ship's side to empty their petrol tanks and to prepare their vehicles for embarkation in accordance with E.R., Part I, Chapter XX.

8. The vehicle park will hold a pool of spare vehicles to replace units' vehicles when necessary. It will also collect the spare vehicles (if not used) issued to units by ordnance depots, and receive reports of the location of vehicle casualties left on the road or in civilian garages by units on their way to the port of embarkation.

9. The headquarters of the vehicle embarkation section will be located with the vehicle casualty park at the embarkation rest camp, vehicle wing.

10. On completion of the embarkation of "A" and "B" vehicles the vehicle embarkation sections will be absorbed into the central ordnance depot.

11. The port workshop detachment will assist units in carrying out minor repairs. It will also recover vehicles left on the road or in civilian garages by units on their way to the port of embarkation. On the completion of its duties it will be absorbed by R.A.O.C. workshops at the central ordnance depot concerned.

(v) R.A.O.C. disembarkation port workshop detachments.

12. Detachments will mobilise as separate units on the basis of one for each port where "A" and "B" vehicles are being disembarked. They will move overseas with the first convoys.

13. They will assist units in preparing their vehicles for movement at the docks and at the marshalling park. For this purpose they are organized in two portions.

14. On completion of disembarkation of vehicles they will be absorbed into the M.T. section of the base ordnance workshop.

(vi) Shipment of vehicles.

15. The procedure for obtaining freight for the stocks of vehicles for the base ordnance depot M.T. sub-depot is the same as that for the stores. The vehicles will be driven to the docks and prepared for shipment by civilian drivers in accordance with arrangements made by the C.O.O., central ordnance depot.

On completion of the preparation of vehicles for shipment or manoeuvring vehicles in the ship—if required—the drivers will return to the central ordnance depot.

The documents required are the same as are required for stores.

In addition, a vehicle shipment card in duplicate will be prepared for each vehicle and handed to the Movement Control at the docks.

The card will be marked by the Movement Control with the number of spare petrol cans which are removed from the vehicle and stored on the deck of the ship as deck cargo, and with the name of the ship.

No. 1 copy of the card will be taken by the master of the ship and handed to the disembarkation staff officer

for delivery to the convoy section (see Sec. 37, para. 11 (ii)). No. 2 copy will be sent to the C.O.O., central ordnance depot.

Drivers proceeding overseas with vehicles may travel in separate troopships. They will carry their own vehicle shipment cards. These cards will serve the following purposes:—

- (a) Pass for the driver to enter the docks at the disembarkation port to take over his vehicle.
- (b) Authority to draw his scale of filled 2-gall. petrol cans from the Movement Control.
- (c) Authority to take over his vehicle from the ship's side from the Movement Control.

CHAPTER XI.

MINOR CAMPAIGNS.

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Section 71.—General.

1. A minor campaign will generally present three outstanding features:—

- (a) Absence of enemy air power.
- (b) Lack of accommodation and transport facilities.
- (c) Simplification of material.

2. Absence of enemy air power will render unnecessary the dispersion of ordnance installations outlined in Secs. 36 and 49; and will in that respect decrease the difficulties of organizing the supply of stores and ammunition.

3. On the other hand, lack of transport facilities will, in another direction, greatly increase these difficulties.

A minor campaign will offer great scope for initiative and ingenuity, both in devising ways and means to overcome difficulties and in improvising stores to fulfil unexpected requirements.

4. While the lack of transport facilities may limit severely the number of troops engaged in actual fighting it may, at the same time, call for a disproportionate increase in the numbers of men employed behind the line; for example, in making roads and otherwise improving the lines of communication.

On the other hand, the material needed by the fighting troops will probably be simpler than in a major war. Anti-tank weapons, for example, may be unnecessary. The campaign may only call for the use of field artillery.

5. Broadly speaking, the principles laid down in the foregoing chapters apply. In detail, however, considerable modification may be required.

The object of this chapter is to indicate what alterations in procedure may be necessary in certain circumstances, and to suggest methods for overcoming difficulties which may arise.

6. The D.O.S. field force will make a careful study of the objectives, the terrain and the local resources—if time permits, before the actual beginning of the campaign—and will draw up an appreciation of the situation.

Assuming that facilities at home and transport to the overseas bases are adequate, the points which will require his particular attention are as follows:—

- (a) Facilities at the port.
- (b) Buildings or site available for the establishment of ordnance installations at the base.
- (c) Transport on the lines of communication.
- (d) Climate, as it affects:—
 - (i) Provision of clothing and special stores.
 - (ii) Storage arrangements.
- (e) The ultimate objective and terrain, as they affect:—
 - (i) The probable length of line of communication.
 - (ii) The possible or probable establishment of advanced bases.
 - (iii) The breaks in the continuity of methods of transportation.
 - (iv) The repair and recovery services.
- (f) Facilities for obtaining, in the theatre of operations or in adjoining countries:—
 - (i) Labour.
 - (ii) Stores.
- (g) Distance of the overseas base from home, and provision problems consequent thereon.

7. The whole success of the ordnance arrangements, at any rate in the early stages, may turn upon proper consideration of the question on the lines indicated.

On this depends the sending out of adequate personnel and suitable quantities of the correct stores, and the framing of the scheme of supply.

8. The above-mentioned points will be dealt with in sequence.

Section 72.—Facilities at the port.

1. Provision of port facilities is not the responsibility of the R.A.O.C., but it vitally affects the performance of their duties.

Where facilities are bad, and especially in the case of a landing on a beach, it will be necessary to form ordnance

sorting dumps. Here stores and ammunition will be sorted, before being transferred to the base depots. It may be necessary in urgent cases to make issues from these dumps.

The carry from pier or beach to sorting dump should be as short as possible, consistent with safety.

Plenty of space should be taken. Adequate waterproof covers must be available. Stores should not be stacked too high.

A record of stores passing through sorting dumps, and of any issues made from them, will be kept in journal form.

2. When it is necessary to off-load stores from ships into lighters, the docks service take over and are responsible for the stores from the ship's side until they are landed on the quay or beach.

For this purpose it is essential for the docks service to furnish convoy men provided with boat notes (A.B. 11), for clearance on final delivery.

Provision of waterproof covers for protection of stores while in open lighters is the responsibility of the sea transport officer.

Section 73.—Buildings and sites available.

1. In a small war, when an established town is used as a base, it may be assumed that there will be large demands for whatever buildings may be available.

Hospitals and billets will certainly be given preference, before buildings are allocated as ordnance stores and workshops.

2. If such buildings are available, and if the campaign is not likely to be of long duration, it will probably be expedient to put up with whatever inconvenience is involved, and to utilize existing facilities, improving them as far as practicable.

This applies particularly when there is plenty of local labour and transport available. In such a case it may not matter a great deal if stores are grouped in various quarters of the town.

3. The likelihood or otherwise of buildings being available for ordnance purposes should, if possible, be explored thoroughly before the beginning of the campaign, so that, if they are not likely to be adequate, arrangements can be made for sectional shedding to be despatched at the same time as the stores, and in the same ship.

Shelving, dunnage and packing material should likewise be provided in advance, and should go out with the stores.

4. As stated above, existing buildings can be adapted, if the campaign is likely to be of short duration. Store tents can also be utilized in the early stages.

It is, however, in the earliest stages of a campaign that the heaviest strain falls on an undeveloped ordnance service. Therefore any foresight that can be exercised in giving the R.A.O.C. a good start, with conveniences for expansion, will be amply repaid in the rapidity with which the ordnance service will develop into efficiency.

5. It may be possible to utilize local resources for the erection of sheds, but it is certainly preferable to send them out in sections, ready for erection.

Steel-framed corrugated-iron sheds are superior to timber huts from a safety point of view.

6. Dimensions and descriptions of suitable shedding will be found in Military Engineering, Vol. VII.

7. If much has to be done in erecting accommodation for various services, the R.A.O.C. must be prepared to meet large demands for bolts and nuts, steel of various sections, and the commoner types of carpenter's tools.

In such circumstances it will prove economical to send out, with the initial consignment of stores, bolt and nut-making machinery, together with large supplies of suitable round and hexagonal steel. Any desired size of bolts can then be rapidly produced.

8. Plenty of space should be taken in the lay-out of the ordnance depot.

Ground liable to flood at any season should be avoided.

If railway facilities are not likely to be available, the lay-out should be similar to that for an ordinary camp depot (see "Notes on R.A.O.C. Duties and Procedure") but on a much larger scale, and with the addition of separate enclosures for workshops and the returned stores depot.

Early attention must be paid to the provision of suitable roadways.

Whenever there is likely to be a regular flow of traffic, tramways should be installed.

Section 74.—Transport.

1. Transport will probably have more bearing on a campaign than any other factor.

No army can operate without sufficient transport and an efficient line of communication. No line of communication can be efficient unless it affords:—

- (a) Ample facilities for the conveyance of ammunition, food and stores to the troops.
- (b) Adequate provision for its own maintenance, and the replacement of means of conveyance.

2. Any or every variety of transport may be utilized in a minor campaign.

That with units may include:—

- Mechanical vehicles.
- Animal-drawn vehicles.
- Pack animals.
- Porters.

Transport on the lines of communication may include all the above, with the additions of:—

- Load-carrying aircraft.
- Railways.
- Waterways.

A class of transport suitable in one country may be quite unsuitable or unobtainable in another. Thus pack animals may be horses, ponies, mules, donkeys or camels.

3. Loads for vehicles, pack animals and carriers are given in Table XIII.

Particulars of various sets of load-carrying appliances are contained in the war-box of the D.O.S.

4. It is essential that the D.O.S. at the War Office, and the D.O.S. field force, should be provided, as long as possible before the beginning of the campaign, with information regarding transport conditions, so that they may make arrangements for maintenance.

5. In an uncivilized country, where roads and railways are scanty or non-existent, and the forces engaged are large, it may be essential to construct a railway and good roads as the force advances.

Troops in advanced areas, however, may be far ahead of such facilities. Stores may have to be conveyed in turn by several means of transportation, before reaching the troops.

Packages must therefore be of a volume and weight that can be carried conveniently by any of the means of transport in use.

Immediate representations will be made to the home authorities regarding the packages most suitable. Meanwhile repacking must take place at the overseas base.

Repacking on the L. of C. will seldom be possible or advisable, owing to the delay involved, and the absence of labour, material and cover.

6. It will however, be advisable to detail R.A.O.C. personnel to watch over ordnance interests at important stages or breaks of gauge. They will identify ordnance stores and markings and advise the authorities concerned on ordnance requirements generally.

They will keep records of ordnance stores passing through the stage, on similar lines to those employed at regulating stations (see Sec. 21).

7. The aim, at each stage, will be to avoid any delay other than that necessary for unloading and re-loading.

To this end it is necessary to send forward the earliest possible notification of on-coming consignments, so that, at each stage, equivalent load-carrying capacity may be available.

Thus ten tons of stores arriving by rail, to be transferred to pack-mule, will require 140 animals waiting in readiness at railhead: and the stores must arrive in loads suitable for pack transport.

8. Should it be impossible, in the earliest stages, to achieve this, owing to the urgency with which stores are called forward, it may be necessary as a temporary measure to establish protected dumps for repacking; but for the reasons given above this should be avoided wherever possible.

9. Where communications are bad it follows that repair facilities should be pushed as far forward as they can be, without undue risk of loss, and only heavy work returned to the base.

For example, pushing forward extra spare parts for rifles, even at the cost of a little additional transport, may enable unit armourers to repair on the spot rifles which might otherwise have to be sent right back to the base.

Section 75.—Climate.

1. Particulars regarding climatic conditions will be available to the authorities at home, immediately the theatre of operations is known: but these should be supplemented, as early as possible, by information gathered locally and acquired by experience.

On a correct grasp of climatic conditions and seasonal changes will depend the adequate provision of any special summer or winter clothing which may be required, and of many other stores which may be vital to the health, comfort and efficiency of the troops: for example:

- Stoves.
- Braziers.
- Water coolers.
- Refrigerators.
- Mosquito nets.

2. In dry atmospheres anywhere near the equatorial zone, spine pads and Indian pattern sun helmets will probably be essential.

3. In any climate which necessitates special warm clothing in winter, it is better to provide sleeveless leather jerkins, which leave the arms free, than heavy fur coats which hinder them in action.

Such fur coats may, however, be required for transport drivers and certain other personnel.

4. Storage in very hot climates does not present acute difficulties on active service.

Ammunition stores in the open, however, should be shaded from the sun by shelters. If it is possible to construct underground magazines, quite low and even temperatures will be secured.

5. Certain stores have particularly poor keeping qualities in hot climates. Special precautions should be adopted in such cases, even for short periods.

For example, black waterproof covers—if they are essential and cannot be replaced by green covers—should, if possible, be sent out in the plain state and waterproofed or otherwise treated locally.

Similarly, in arctic regions special precautions have to be taken as regards certain stores.

Section 76.—Objective and terrain.

1. The ultimate objective of a campaign is of great importance in planning the supply services.

On it depends the length of the L. of C., while the nature of the country may involve considerable alterations in the methods of transportation at various stages of the campaign.

2. Troops pushed on far in advance of railhead may be maintained for a time by motor transport; but entry into hilly country may involve a further change to pack transport, demanding large supplies of pack saddlery.

It may be necessary for units equipped with horse or mule transport to carry, also, pack-saddlery to enable the animals to be utilized as pack transport, when country impassable for wheeled transport is reached.

3. In various countries, native porters are largely employed. Their methods of carrying the load vary widely in different parts of the world: hence equal variation in the kinds of load-carrying equipment that may have to be provided.

In East Africa, for example, natives generally carry the load on the head. In the East, the usual method is by means of a light bamboo pole borne on the shoulders, with a load slung on each end of the pole. Heavier loads are carried slung on a pole borne by two men. Pads are often used to protect the shoulders.

In some parts a light crate, strapped to the back of the shoulders, is used.

It may occasionally be possible to induce carriers to adopt an efficient but unfamiliar method: but an attempt to do so is far more likely to end in failure and dislocation.

4. Where the length of line is likely to be considerable, and especially where a railway is being constructed as the force advances, it will be necessary to open up advanced depots.

These should not be over-stocked. The quantity of stores held should be the minimum consistent with safety.

That is to say, if the normal working of the line is not likely to be interrupted for any considerable length of time, small stocks should be held.

If on the other hand there is a danger point, such as a bridge over a large river or a tunnel on a railway, the destruction of which might interfere with working for a considerable time (such as one month) then at least one month's stock should be held.

When, as the line advances, a new advanced depot has to be opened, it is preferable to stock this direct from the base rather than from an existing advanced depot; the latter being eventually "eaten down."

5. It may be decided to change the base.

In this event similarly, arrangements should be made for the new base to be stocked from home, the old depot continuing in action until the new one is able to function.

If this is not feasible, a proportion of the stock should be transferred, with just sufficient staff to get the new depot ready. The main body of the staff should move when the new base is ready to begin issues, a small staff being left behind to clear up the old depot.

Such a transition needs careful arrangement in advance.

6. Repair facilities present a problem of great importance and considerable difficulty, when the L. of C. is long or difficult.

Normally only first and second line repairs are carried out in advanced areas, and everything requiring overhaul is sent down the line.

If, however, communication is bad—for example, when only horse, pack or porter transport is in use—it is necessary to minimize the loads to be transported. In such case, heavier repair facilities will have to be organized right up at the front.

Extra spare parts will be required for mechanical vehicles, machine guns and rifles, and artificers will be sent forward to the last stage to carry out all possible repairs.

This entails the employment of an increased number of artificers.

7. Water supply presents another serious problem, which must be considered in advance.

In landing operations, water must be available from which the troops can refill their bottles. If there are no local supplies, water must be transported in suitable receptacles.

In a relatively waterless country, wells will have to be sunk and pipe lines laid.

This involves advanced provision of tube wells, boring apparatus, water supply tools such as pipe-wrenches, screw-cutting tools and other items, as well as water-carrying apparatus and portable storage tanks.

Section 77.—Local labour and stores.

1. A good supply of labour at the overseas base is important, in order that the R.A.O.C. personnel in workshops and storehouses may be able to concentrate on their technical duties. If labour is not likely to be available locally it is the duty of the War Office to provide such labour.

The D.O.S. at the War Office, will state his requirements in advance. These will depend on:—

- (a) The tonnage to be handled, which varies with the size and nature of the force.
- (b) The climate.
- (c) The probability of opening advanced depots.

2. Information is available at the War Office regarding the stores likely to be obtained in various possible theatres of war overseas, and in adjacent countries, and this would be taken into account in deciding upon the stores to be sent out with the force.

The D.O.S. field force will, however, make the fullest enquiries, on arrival overseas, regarding what is available locally or from sources other than home, and will take action to obtain his requirements locally to the largest possible extent.

Great savings of shipping can be effected if this is carried out efficiently.

Section 78.—Reserves and store margins.

This has been discussed fully in Chapter III.

Section 79.—Variations in detailed procedure.

(i) Beach landings.

1. Once depots and workshops have been established, the work of provision, issue, receipt and repairs will require few deviations from the normal detailed procedure.

It may be necessary, however, to make issues to the troops before the establishment of any ordnance installa-

tions. A case in point is an opposed landing. This may take the form of:—

- (a) A direct landing at a small port, with certain facilities: or
- (b) Landing on a beach or beaches. The immediate objective may be either the capture of a port, or the development of the beach itself as the actual base of operations.

2. In such a case, detailed plans will be prepared, in consultation with the staff, for supplying the troops with essentials by abnormal methods, until the situation permits the establishment of a depot.

The basis of the plan will be to load the ammunition and stores considered necessary for the immediate operations in a ship or ships, or preferably in large self-propelled, shallow-draught lighters.

In no circumstances will such stores be mixed with those which are not to be landed immediately.

From the vessels, the stores will be dumped on shore.

3. Sites should be as near the piers as possible consistent with safety from enemy action and the possibility of flooding.

4. The R.A.O.C. personnel required for opening the necessary ammunition and store dumps should accompany the stores.

Sites having been selected in conjunction with the staff, stores should be landed as soon as it is safe to get on with the work.

5. Dumps must be strictly limited in number and contents.

There should not be more than one dump, unless cross-communications are bad.

In a dump should be held only an absolute minimum of the most essential items; such as ammunition, machine-guns, filled bags of spare parts, demolition explosives, cable, telephones, flannelette and oil.

6. It must be made clear to units that they will not be able to obtain anything other than the essentials landed, and that no repair work can be undertaken until the base has been secured and ordnance installations opened.

It may, therefore, be expedient that units should be issued beforehand with extra spare parts for machine-guns, etc., provided this does not entail extra transport.

This, however, is for decision by the staff.

7. Arrangements such as are outlined above are perfectly straightforward, if the essential stores have been correctly anticipated, and provided that the initial operations for making good the landing are not too protracted.

Should the landing be contested, involving a long and difficult operation, other arrangements may have to be made. These are discussed in subsequent paragraphs.

To operate successfully, such arrangements need to be planned beforehand with the utmost care.

(ii) **Central control office.**

8. There may be a friendly locality, not far distant from the objective, which can be used as a temporary base.

In that case, it would probably be advisable to land there, say, one month's supply of stores, and to supply the troops through the machinery of the dumps which will have been opened as indicated above.

This plan will work well, provided ample tonnage in the shape of self-propelled lighters or other small craft is made available for transport between base and beach.

9. An ordnance control office will be established at the temporary base.

The officer in charge will be responsible for control of the stocking of the dumps, and for keeping account of the stores issued to them, and by them.

10. He will receive daily, from officers in charge of dumps, a summary of the day's receipts and issues, with a list of stores indented for which could not be supplied.

These can be rendered in any convenient way, such as copies of the tallies or indents.

From these, the officer in charge control office will:—

- (a) Post his ledger and dues records for each dump.
- (b) Order forward supplies from the depot or store ship (see para. 14 below) to the various dumps, recording the demands as "dues in" to those dumps.
- (c) Keep a bulk account for the whole beach.
- (d) Co-ordinate work between the dumps. If one has stock and the other dues out, he may transfer stock from one to the other, or order the transfer of indents or issue orders to a dump where they can be met at once.

11. The remains, at dumps, should be verified with the stock as often as practicable.

12. Although provision work, under the dump system, cannot be so accurate as under normal conditions, the officer in charge control office should be able to do all that is necessary from the daily information afforded.

Provision will only be made in advance for items included in the original list of essential stores sent for the landing, unless other items are added to this list by superior authority.

13. Formation ordnance officers will normally be in charge of their own dumps.

If, however, it is found necessary for them to be with their formation headquarters, and this precludes their having charge of the dumps, they will forward units' indents to the officer in charge of the dump which supplies them.

(iii) **Store ships.**

14. It may be found that no locality is available for the establishment of a temporary base, as outlined in para. 8, and that the capture of a base is likely to involve protracted operations.

In that case a specially loaded store ship must be temporarily employed as an advanced ordnance depot.

This will only be considered as a last resort.

15. The ship must be in ballast, and should have as many decks as possible.

It must be specially loaded on the lines indicated in Sec. 69.

Its loading plan must be clear and correct in every detail.

Ample room must be allowed so that each section of stores is readily accessible. There must be sufficient space in each section for breaking bulk.

If more than one store ship has to be used, all the detailed work of issue, and all the clerical work, must be done in one ship, the others being used as bulk stores.

(iv) **Landing of mechanical vehicles.**

16. Arrangements for landing mechanical vehicles on a beach are made by the Movement Control. Vehicles are transhipped from M.T. ships into power-driven lighters. Petrol tanks of the vehicles are partially replenished in the lighters from spare 2-gall. petrol cans which have been carried in the ship as deck cargo. Petrol in bulk for completely filling petrol tanks is issued from the ship in 4-gall. tins and carried in any suitable place on the vehicle.

The lighters have specially shaped bows for running up on to a beach as far as practicable. The front of the lighter can be lowered on to the beach when the lighter is moored to form an unloading ramp.

A special portable wire mesh roadway carried in the lighters is laid on the sand.

R.A.O.C. responsibility consists in assisting units to prepare their vehicles for running whilst in the lighter on the way to the beach and also in assisting to remove vehicles which are difficult to start, clear of the beach.

APPENDIX I.

LAUNDRY, DISINFECTION
AND DECONTAMINATION SERVICES.

1. The provision of laundry services for troops in forward areas is not normally an ordnance responsibility, but is arranged by headquarters of formations in conjunction with the medical authorities.

2. It is frequently convenient to combine laundry services with such special facilities for ablution (for example, bath-houses) as may be organized on a formation basis.

3. It may be necessary to include, in such an organization, facilities for disinfection of clothing.

Various types of disinfectors are mentioned in the Manual of Hygiene.

4. It may be decided, however, to provide mobile laundries, and to place the service under the R.A.O.C.

Details for the provision of laundry units in such an event, including particulars of the personnel, machinery and vehicles required, are in the war box of the D.O.S.

5. Certain laundry services on the L. of C. will, and others may, become the responsibility of the R.A.O.C.

6. As regards the washing of clothing in possession of troops on the L. of C., arrangements will be made by D.A.Ds.O.S. of L. of C. sub-areas for the utilization of such civilian laundry facilities as are available, in a manner analogous to that by which laundry contracts are arranged in peace.

In the absence of such facilities, arrangements will be improvised by the same authorities and on the same manner as those mentioned in para. 2.

Alternatively, mobile equipments similar to those mentioned in para. 4 may be required, and in that case their organization and control may be vested in the R.A.O.C.

7. In any event laundry and disinfection services are likely to be required in connection with the returned stores depot, and the organization of these, on the lines indicated above, will be the responsibility of the C.O.O., base ordnance depot.

8. It will therefore be necessary for the A.D.O.S., P., to obtain early information as to all the services mentioned above, so that he may make provision for soap, dry carbonate of soda (soda ash), tubs, water-heating apparatus, flat irons and such other stores and apparatus as may be required.

In this connection it is useful to note that special marine soap is essential if salt water has to be used.

APPENDIX II.

DUTIES OF A BRIGADE WARRANT OFFICER R.A.O.C.

(See Chapter I, Sec. 2, and Chapter II, Sec. 10.)

1. He will normally be attached to, and will accompany, the headquarters of the formation.

He will, however, visit units frequently, and will attend delivery point daily, if practicable.

2. He will assist the D.A.D.O.S., of the division as far as practicable, in the performance of the duties detailed in Chapter II, Sec. 10. In particular, he will be responsible to the D.A.D.O.S. for the collection of indents.

3. He will keep the D.A.D.O.S. in touch with the state of ordnance services in the brigade.

4. He will separate "bulk" from "detail" indents. He will submit detail indents to the D.A.D.O.S. for signature and scrutiny.

Local circumstances may render it desirable that the bulk indents from the units of each brigade should be consolidated by the brigade warrant officer. In such a case he will receive special instructions on the point from the D.A.D.O.S.

Normally, however, bulk indents will be consolidated by the staff of the D.A.D.O.S., who is responsible for bringing to the notice of the responsible authorities any tendency to extravagance (see Sec. 10, para. 3).

5. He will ensure that all surplus, abandoned and un-serviceable ordnance stores of any value are collected and returned through the appointed channel.

6. He will periodically check outstanding indents with the units concerned.

APPENDIX III.

WORKING OF CENSUS BRANCHES AT G.H.Q. AND
BASE ORDNANCE DEPOT.

(See Chapter II, Secs. 4 and 17.)

1. Census branches will keep the following records:—
 - (i) Visible card index of classes of vehicles and number held and number deficient in each unit.
 - (ii) Census cards for each vehicle filed in drawers by units. Units will be arranged in formations.
 - Pink card—"A" vehicles.
 - Yellow card—"B" vehicles.
 - Light blue card—trailers.
 - (iii) Index of W.D. numbers for each make or each type of vehicle.

On the reverse of the card is a record of Lists of Changes and modifications actually carried out.
 - (iv) Index to contract and W.D. numbers.
 - (v) Index to Lists of Changes and vehicles affected.
 - (vi) Index to Lists of Changes and serial numbers.
 - (vii) Index to major assemblies for each make of vehicle and contract or type of vehicle and mark.
 - (viii) Record of commonality of assemblies.
 - (ix) Distribution of assemblies held by ordnance field parks and workshops.

2. The central ordnance depot at home will issue, to the base ordnance depot, one complete census, embracing both vehicles held in peace and vehicles received by units on mobilization.

3. Census records will be checked periodically, or as occasion requires, by one or all of the methods shown below.

- (i) From units' marching out states, a copy of which should be sent to the census branch at the base ordnance depot and passed, after its contents have been noted, to the G.H.Q. census.
- (ii) From vehicle shipment cards collected by the Movement Control at the ports of disembarkation.
- (iii) By obtaining a vehicle state from units showing:—
 - (a) W.D. number.
 - (b) Type and make or mark of vehicle.
 - (c) Engine number.
 - (d) Chassis number.

Appendix III.]

4. From the beginning of the campaign all field units, both administrative and combatant, and all establishments will report movements (receipts and issues) of vehicles to the base ordnance depot direct by telegram (repeated to G.H.Q. census).

Vehicles sent into workshops for temporary repairs will not be reported.

Such a telegram from an ordnance field park will be used as a demand for replacement.

5. In addition ordnance workshops will report by telegram to the base ordnance depot census (repeated to G.H.Q. census) whenever a complete vehicle is destroyed or evacuated to the base. The telegram to the base will be used as a demand for replacement.

6. Issues of assemblies from depots and ordnance field parks will be reported by telegram to the base ordnance depot census (copy to G.H.Q. census). Telegrams from ordnance field parks will be used as demands for replacements.

7. Assemblies conditioned unserviceable will be reported by telegram by ordnance workshops to base ordnance depot census (copy to G.H.Q. census).

8. An engine return (Appendix VI) will be rendered weekly on Saturdays by workshops (both mobile and stationary) to G.H.Q. census.

9. G.H.Q. census will report destruction of vehicles and unserviceable assemblies to the War Office.

APPENDIX IV.

**SPECIMEN HEADINGS FOR GENERAL ROUTINE
ORDERS CONCERNING ORDNANCE SERVICES.**

(See Chapter II, Sec. 4.)

1. Ammunition boxes. Instructions for collection and return to base.
2. Ammunition returns. Instructions for rendering.
3. Arms and equipment. Alteration and repair of.
4. Arms, etc., of sick and wounded. Instructions for disposal of.
5. Binoculars.
6. Boots. Care of.
7. Boots. Procedure for repair of.
8. Captured stores (unless a controller of salvage is appointed). Instructions for disposal of.
9. Clothing. Unauthorized alteration of.
10. Contamination by gas. Instructions concerning contaminated stores.
11. Defects in ammunition and warlike ordnance stores. Reports.
12. Drawing of ordnance stores. Instructions forbidding despatch of unit's own transport to fetch stores from base except under special authority.
13. Evacuation of ordnance stores.
14. Excess issues. Obtaining of approval for.
15. Financial powers.
16. Fired brass cartridge cases to be returned to the base ammunition depot.
17. Guns, howitzers and their carriages, machine guns and M.T. vehicles of all natures supplied by R.A.O.C. Procedure for issue of.
18. Guns, howitzers, M.T. vehicles and machine guns. Procedure for maintenance of.
19. Indents.
20. Ordnance procedure.
21. Protective clothing.

Appendix IV.]

22. Produce. Salvage of.
23. Purchase of ordnance stores by officers other than ordnance officers. Procedure.
24. Respirators. Procedure for replacement of, and repair to.
25. Rifles and bayonets. Instructions for inspection and unloading before return to base.
26. Salvaged equipment. Instructions for return.
27. Signal stores. Procedure for replacement.
28. Spare parts for guns, howitzers and their carriages. Procedure for issue of.
29. Spare parts for machine guns, and fighting and non-fighting M.T. vehicles. Procedure for issue of.
30. Tent poles. Salvage of.
31. Timber. Indents for.
32. Unserviceable clothing for disposal as rags. Return of.

APPENDIX V.

WAGON REGISTER. A.—SUPPLY RAILHEAD.

(See Chapter II, Sec. 11.)

Wagon No.	Date of Arrival	W.B. No and date	Formations concerned (Dns., Cps. Tps., etc.)	Date W.B. returned to base	Remarks W.B. clear of otherwise

WAGON REGISTER. B.—REGULATING STATION.
(See Chapter II, Sec. 21.)

Wagon No.	Date of arrival	Consignor	Date of despatch	Consignee	Consignor's W.B. No.	Reg. Stn. W.B. No.	Action taken and remarks

APPENDIX VI.

SERIAL NO.

ENGINE RETURN.

DATE

(Referred to in Sec. 43, para. 16.)

To be rendered weekly on Saturdays by all field and stationary workshops.

Workshops.....

TYPE OF VEHICLE FOR WHICH SUITABLE	ENGINE								
	Make and type	No. in possession			No. recd. from Base or Ord. Fd. Pk.	No. recovered from Vehs.		No. issued in replace- ment (incl. those fitted in vehs.)	No. returned to base for repair
		S.	R.	U.		S.	R.		

Signature of O.M.E.

APPENDIX VII.

No of sheets.....

Sheet No.....

Army Form W 4006

ADVICE AND DISCHARGE LIST (AMMUNITION).

(Referred to in Sec. 48, para. 15.)

Port BOULOGNE.
Berth E.3.

Ship S.S. " Kathleen ".
Total D.W. Tonnage 970.

	Date.	Hour.
Discharge began	5.4	1400
Discharge completed	6.4	1200

Cargo.		Allocation.		Quantities Discharged on.			Remarks.
Designation.	Quantity.	Depot or Railhead.	Quantity.	Date. 5/4.	Date. 6/4.	Date.	(e.g. Notes from bills of lading as to new types of ammunition received for first time, spare components, etc.)
Q.F. 18-pdr.—							
H.E. D.A. fuze (106) ..	16,400	1 B.A.D.	16,400	12,760	3,640	—	
Smoke (106)	4,000	1 B.A.D.	4,000	4,000	—	—	
Q.F. 3-in. 20-cwt. gun—							
H.E. time fuze (199) ..	1,200	1 B.A.D.	1,200	1,200	—	—	
Q.F. 25-pdr. gun—							
H.E. streamline D.A. fuze (117)	20,400	2 B.A.D.	20,400	13,200	7,200	—	
B.L. 60-pdr. gun—							
H.E. D.A. fuze (6 C.R.H.) ..	1,500	1 B.A.D.	1,500	375	1,125	—	
Shrap. (88 fuze) (6 C.R.H.)..	1,000	2 B.A.D.	1,000	—	1,000	—	

[Appendix VII.]

B.L. 6-in. How. H.E.—							
101E fuze	800	2 B.A.D.	800	220	580	—	
Cartridges S.A. ball 0·303-in.—							
VII. BDR.	2,000,000	2 B.A.D.	All.	1,120,000	880,000	—	
VII. CTN.	1,497,600	1 B.A.D.	All.	936,000	561,600	—	
R.A.F.							
Cartridges S.A. A.P. 0·303-in.							
“ W ”	124,800	} 2 B.A.D.	All.	{ 124,800	—	—	
Cartridges, S.A. ball 0·303-in.	998,400						
VII. CTN.	400						
Bombs, S.A.P., 250 lb. ..				—	374,400	—	
					400	—	

*Captain,
O.O. Port.*

DAILY ISSUE LIST.

(Referred to in Sec. 48, para. 25.)

Port BOULOGNE.

Ship " S.S. Kathleen "

Date 6. 4.

Location of Truck.		Designation of Ammunition.	Truck.		Total Contents.	Destina- tion.	Remarks.
Berth.	Line		Regd. No.	Tonnage capa- city.			
E.3.	5	Cartridges, Q.F. 25-pr. gun (a).	15,432	10	2,960	2 B.A.D.	(a) Also contains : 1,000 fuzes, T. & P., No. 88. 1,100 tubes, P.S.A.
			2,076	10	1,240		
				Total	.. 4,200		
E.3.	4	Shells, B.L., 60-pr. H.E. (6 CRH).	60,400	10	370	1 B.A.D.	
			3,984	10	370		
			21,005	12	385		
				Total	.. 1,125		
E.3.	5	Shells, B.L., 60-pr. Shrap. (6 CRH).	8,569	10	370	2 B.A.D.	
			13,407	10	370		
			2,988	8	260		
				Total	.. 1,000		

E.8.	5	Shells, B.L., 6-in. How., H.E. (2 CRH) (b).	7,056 6,218 120	10 10 10	220 220 140	} 2 B.A.D.	(b) Also contains 10,000 0.303-in. Ball, VII BDR. 62,400 0.303-in. Ball, VII CTN (R.A.F.).
				Total	<u>580</u>		
E.3.	3	Cartridges, S.A., Ball, 0.303- in., VII, BDR.	12,572 30,897 25,678	10 10 10	290,000 290,000 290,000 10,000	} 2 B.A.D.	In Truck 120 (b).
				Total	<u>880,000</u>		

APPENDIX VIII.

No. of sheets 3

Sheet No. 1.

Army Form W 4007.

DAILY ISSUE LIST.

(Referred to in Sec. 48, para. 19.)

Port BOULOGNE.

Ship "S.S. Kathleen."

Date 6. 4.

Location of Truck.		Designation of Ammunition.	Truck.		Total Contents.	Destina- tion.	Remarks.
Berth.	Line.		Regd. No.	Tonnage Capa- city.			
E.3.	4	Q.F. 18-pdr. H.E., D.A. fuze (106)	17,562	10	760	} 1 B.A.D.	
			30,010	10	760		
			46,115	10	760		
			2,307	8	600		
			9,555	10	760		
					Total			.. 3,640
E.3.	6	Shells, Q.F. 25-pr. gun H.E. streamline, D.A. fuze (117).	6,684	10	760	} 2 B.A.D.	
			34,946	10	760		
			21,007	10	760		
			5,992	10	760		
			34,468	15	1,120		
			20,196	10	760		
			21,156	10	760		
			1,092	10	760		
			30,557	10	760		
					Total			.. 7,200

Appendix VIII.]

DAILY ISSUE LIST.

(Referred to in Sec. 48, para. 25.)

Port BOULOGNE.

Ship "S.S. Kathleen."

Date 6. 4.

Location of Truck.		Designation of Ammunition.	Truck.		Total Contents.	Destination.	Remarks.
Berth.	Line.		Regd. No.	Tonnage Capacity.			
E.3.	3	Cartridges, S.A., Ball, 0-303-in. VII, CTN.	34,672 29,700	10 10 Total	312,000 249,600 <u>561,600</u>	1 B.A.D.	
E.3.	3	R.A.F. Cartridges, S.A., Ball, 0-303-in., VII, CTN.	7,760	10 Total	312,000 62,400 <u>374,400</u>	2 B.A.D.	In Truck 120 (b).
E.3.	6	Bombs, S.A.P., 250 lb. ..	34,721 15,009 9,840	10 10 8 Total	88 88 48 <u>224</u>	2 B.A.D.	
		Bombs, S.A.P., 250 lb.— Tails Components sets	9,765 967	8 —	400 400	2 B.A.D.	{ (200 × 2). (40 × 10).
		Fuzes, T. & P., No. 88 .. Tubes, percussion, S.A. ..	— —	— —	1,000 1,100	2 B.A.D. 2 B.A.D. }	In Truck 2076 (a) for 60-pr. Shrap.

Captain, O.O. Port.

APPENDIX IX.

No. of sheets.....

Sheet No.....

Army Form W 4008.

For RECEIPTS *

* Delete as applicable.

TRAIN AND TRUCK DISTRIBUTION FORM (AMMUNITION).

(Referred to in Sec. 51, para. 2.)

Date 14.11.39.

Appendix IX.]

*To be used for RECEIPTS **

TRAIN TELEGRAM No. 4/4323. Train due at 2300 hours.

TRAIN No. 438. From :—Port X.

WAYBILL IN TRUCK No. 7963.

Truck Nos.	Contents.	Quantity.	Sub-Depot.	Line.	Shed.	Remarks or Special Instructions.	
7,963	6-in. How. H.E. shells ..	224	No. 1	B	2		
8,394	" " " ..	224		B	2		
2,477	" " " ..	224		} Sorting.			
18,969	" " " ..	224					
24,728	" " " ..	224					
1,460	" " " ..	224					
15,565	" " " ..	224					
1,071	6-in. How. cartridges ..	2,000						} Sorting. To B.3 after sorting.
10,559	60-pr. cartridges ..	1,050			B		3
1,096	Grenades 36 ..	9,600			C		2	} Sorting. To B.1 after sorting.
9,001	{ Fuzes, 106E ..	4,000	}				
	{ Tubes, F.S.A. ..	2,000					

Officer i/c.

APPENDIX X.

Army Form W 4009.

AMMUNITION CHECK FORM.
(Referred to in Sec. 51, para. 9.)

No. 2 Base Ammunition Depot. No. 3 Sub-depot. Line B. Shed 2.
Truck No. 10559.

Consignment No. Y241.
Train No. 438.
Waybill No. 7963.
Date 14.11.1939.

Designation of Contents as per Truck Note.	Quantities.		Remarks. (Here insert any discrepancies of type, nomenclature, etc.) (c)
	As shown on Truck Note. (a)	As found by Checker on Off-loading. (b)	
Cartridges, B.L., 60-pr. Mk. V, Foil— R.D.B., 15 Lot, K 1534 R.D.B., 15 Lot K 1892 	1,050 —	1,040 10	} 1 box × 10 cartridges of Lot K 1892.

NOTES.—(a) Truck Note to be amended as at (b).

(b) Where quantities are found to disagree with the Truck Note the actual quantities found will be inserted. If there is no discrepancy a tick will suffice.

Truck checked by.....
Tallies posted by.....

Appendix XI.]

APPENDIX XI.

WAGON WAYBILL (AMMUNITION).

Army Form W 4010.

(Referred to in Sec. 48, para. 18 and Sec. 51.)

Truck No. L2423.	Seal No. A179767.	Date of Loading, 4-3-31.	Destination, FABY.
---------------------	----------------------	-----------------------------	-----------------------

Place of Loading Port or Depot } No. 1 B.A.D.	Berth or Line and Berth } M4.
---	-------------------------------------

DETAIL OF CONTENTS.

Designation.	Number of Complete Rounds	Details of Packing, if Packed in Complete Rounds.
B.L. 60-pdr. H.E. ..	300	Component.

DETAIL OF COMPONENTS.

Designation.	Quantity.	How Packed.	Particulars.*
Shell	300	Loose.	MK IXC TNT.
Cartridges	300	30 x 10	MKV Foil RDB15. Lot K1534.
Fuzes	300	15 x 20	106E MK VIIZ.
Tubes	300	1 x 200 1 x 100	PSA Mk. II,— RL 3/29 200. RL 4/39 100.

* Here insert details of batch, lot, mark, nature, C.R.H., date, etc., as applicable.

Signature of Checker.....

Initials of Foreman.....

INSTRUCTIONS REGARDING APPENDIX XII.

DAILY COMPONENTS SUMMARY.

1. All figures in this Summary are taken from the Daily Issue Lists.
2. The sample given is that to be used at a Port, but the same principle is applied at Depots for *receipts*, using the train number instead of a ship's name, as the basic unit of receipt. As all issues from Depots to Ammunition Railheads are loaded in complete rounds, the use of this form in computing *issues* from Depots will be unnecessary.
3. The number of components discharged from each ship daily is easily discernible from this form, and thus the total rounds completed can be transferred to the "discharged" column for the day on the relative Advice and Discharge List.
4. The rounds completed at * are entered under the Depot concerned in the issue columns of the Daily Ammunition Statement.
5. Fuzes and tubes are grouped together, any spare percentage of tubes issued being disregarded.
6. The last few columns can be adapted for use with components for trench mortar ammunition or R.A.F. bombs, etc., as may be necessary.

APPENDIX XII.

DAILY COMPONENTS SUMMARY.
(Referred to in Sec. 48, para. 23.)

Army Form W 4011.
Date 6/4.
Consignment No. X.42.

Port or Depot *Boulogne*

To *1 B.A.D.*

Nature	25-pdr.			60-pdr. H.E.			60-pdr. Shrap.			6-in. How. H.E.			8-in. How. H.E.			Bomb, 250 lb.						
	S.	C.	F. & T.	S.	C.	F. & T.	S.	C.	F. & T.	S.	C.	F. & T.	S.	C.	F. & T.	S.	C.	F. & T.	B.	T.	C.	
Balance B./Fwd. ...	—	—	—	—	1,725	1,725	—	400	400	—	500	500										
Ex. { (a)				1,125																		
(b)	8,460	16,000	—	600	—	—	400															
(c)	16,460	20,000	—							500	—	—	100	500	500							
(d)																						
(e)																						
(f)																						
Total	24,860	36,000	—	1,725	1,725	1,725	400	400	400	500	500	500	100	500	500							
* Rounds completed ...	24,860	24,860	—	1,725	1,725	1,725	400	400	400	500	500	500	100	100	100							
Balance C./Fwd. ...	—	11,140	—	—	—	—	—	—	—	—	—	—	—	—	400	400						

To *2 B.A.D.*

Consignment No. *Y.24.*

Nature	25-pdr.			60-pdr. Shrap.			6-in. How. H.E.			60-pdr. H.E.			8-in. How. H.E.			6-in. Gun H.E.			Bomb, 250 lb.			
	S.	C.	F. & T.	S.	C.	F. & T.	S.	C.	F. & T.	S.	C.	F. & T.	S.	C.	F. & T.	S.	C.	F. & T.	B.	T.	C.	
Balance B./Fwd. ...	—	3,000	—	—	1,000	—	—	580	580	—	1,000	1,000	—	150	300					176	—	—
Ex. { (a)	7,200	4,200	—	1,000	—	1,000	580			1,000			300	150	400					224	400	400
(b)													200	400	400							
(c)										360	600		—	—	300	—	150	150				
(d)																						
(e)																						
(f)																						
Total	7,200	7,200	—	1,000	1,000	1,000	580	580	580	1,000	1,360	1,600	500	700	1,000	—	150	150		400	400	400
* Rounds completed ...	7,200	7,200	—	1,000	1,000	1,000	580	580	580	1,000	1,000	1,000	500	500	500	—	—	—		400	400	400
Balance C./Fwd. ...	—	—	—	—	—	—	—	—	—	—	360	600	—	200	500	—	150	150		—	—	—

To

Consignment No.

Nature	25-pdr.			60-pdr. Shrap.			6-in. How. H.E.			60-pdr. H.E.			8-in. How. H.E.			6-in. Gun H.E.			Bomb, 250 lb.			
S.	C.	F. & T.	S.	C.	F. & T.	S.	C.	F. & T.	S.	C.	F. & T.	S.	C.	F. & T.	S.	C.	F. & T.	B.	T.	C.		
Balance B./Fwd. ...																						
Ex. { (a)																						
(b)																						
(c)																						
(d)																						
(e)																						
(f)																						
Total																						
* Rounds completed ...																						
Balance C./Fwd. ...																						

(a) *S.S. Kathleen.* (b) *S.S. Rother.* (c) *S.S. Trent.* (d) *S.S. Derwent.* (e) *S.S.* (f) *S.S.*

* *To Issues on Daily Ammunition Statement. See Instructions on reverse.*

Table I.]

TABLE I.

**LIST OF STORES SUITABLE TO BE DEMANDED IN "BULK"
BY D.A.Ds.O.S. OF FORMATIONS, WHEN SO INSTRUCTED
BY THE D.O.S.**

(See Sec. 10, para. 19, and Sec. 38, para. 34)

SECTION A1.

Bags, canvas rifle.
Bags, ration.
Bottles, water.
Carriers, water-bottle.
Covers, mess-tin.
Covers, rifle, breech.
Haversacks.
Steel helmets.
Tins, mess.

SECTION A2.

Anti-gas appliances.

SECTION B3.

Gauze, wire pieces.
Pull-through cords.

SECTION H1.

Dubbing.
Grease.
Mineral jelly.
Oil, lubricating.
Paint, service colour.
Soap.

SECTION J

Intrenching tools.
Kettles, camp.
Sheets, ground.

SECTION K

Blankets.
Cotton waste.
Flannelette.
Sponge cloths.

SECTION X.

Apparatus, sights, dial illuminating—Batteries, 3 cells.
Batteries, dry torch.
Lamps, electric, daylight, signalling—Batteries.
Lamps, electric torch (bulbs).

CLOTHING.

Badges and titles.
Boots.
Caps.
Chevrons.
Drawers.
Dressings, field.
* Greatcoats.
Grindery.
* Jackets, S.D.
Necessaries.
Shirts.
Socks.
* Trousers, S.D.

* Or corresponding articles peculiar to Indian units.

TABLE II.
CAMP EQUIPMENT FOR ONE INFANTRY DIVISION.
Including Officers' Mess Requirements.
(Manœuvre Scale.)

DESIGNATION	1 Divl. H.Q. (b)	1 Divl. Sect. Intelligence Corps.	1 Divl. Cav. Regt.	Royal Artillery.			Royal Engineers.			1 Divl. Sig. R. Sigs.	Infantry.		R.A.S.C.				R.A.M.C.		1 Provost Coy.	TOTAL	WEIGHT.				MEASURE- MENT.																					
				1 H.Q. Divl. Arty.	3 Field Regts. R.A.	1 Anti-Tank Regt. R.A.	1 H.Q. Divl. R.E.	3 Field Coys. R.E.	1 Fld. Park Coy. R.E.		3 Infy. Bde. H.Q.	9 Infy. Bus.	1 H.Q. Divl. R.A.S.C.	1 Divl. Supply Coy. R.A.S.C.	1 Divl. Petrol Coy. R.A.S.C.	1 Divl. Ammn. Coy. R.A.S.C.	3 Field. Amb.	1 Fld. Hygiene Sec.			1 Divl. Postal Unit.	Tons.	Cwts.	Qrs.	Lb.	Tons.	Feet.	Inches.																		
																													TOTAL	Tons.	Cwts.	Qrs.	Lb.	Tons.	Feet.	Inches.										
<i>Section F.</i> Hammers, sledge, S.P. 14-lb.	1	—	2	1	3	1	1	3	1	1	3	18	1	1	1	1	3	1	—	1	44	—	6	1	4	—	25	8																		
<i>Section J.</i> Latrine screens, Mk. III (complete) ..	4	2	7	4	24	8	4	18	3	8	12	117	4	7	8	8	18	3	3	3	265	5	13	2	8	24	11	8																		
Racks, arm	29	3	47	5	174	59	6	72	16	47	42	648	6	44	28	36	—	—	3	—	1,265	—	5	1	12	—	30	6																		
Shovels, G.S.	1	—	1	1	3	1	—	—	—	1	3	9	1	1	1	1	3	—	—	—	27	—	—	3	14	—	8	5																		
Stools, camp or Chairs, fold flat	2	1	1	1	3	1	1	3	1	1	3	9	1	1	1	1	3	1	1	1	37	—	2	1	7	1	0	6																		
Tables, trestle, complete	10	2	7	5	21	6	6	6	1	6	18	63	6	5	4	4	12	1	—	2	185	5	16	1	0	38	14	6																		
Tents, C.D., complete	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1	0	0	—	5	0																		
Tents, C.S., Mk. V, complete	45	4	64	10	216	69	11	84	19	57	66	774	12	51	35	43	84	5	5	24	1,678	60	13	2	7	167	32	0																		
Tents, marquee, G.S.S. complete	3	1	2	2	6	1	2	3	—	1	6	18	2	1	1	1	3	—	—	1	54	6	0	2	4	17	17	6																		
Wedges, sawyers	2	—	4	2	6	2	2	6	2	2	6	36	2	2	2	2	6	2	—	2	88	—	3	0	16	—	3	6																		
<i>Section K.</i> Blankets, brown, single (a)	154	10	477	26	1,827	573	31	756	175	504	210	6,975	29	456	300	389	687	29	25	114	13,747	30	3	3	20	89	15	0																		
Buckets, 13-in.	29	3	47	5	174	59	6	72	16	47	42	648	6	44	28	36	69	3	3	23	1,360	3	2	2	16	11	11	9																		
Lamps, hurricane	8	2	9	5	27	8	7	15	2	8	18	81	6	7	6	6	18	2	2	2	239	—	15	0	0	5	22	0																		
																				113	4	1	24	356	38	0																				
																				ALTERNATIVE WEIGHTS.				If double marquees and C.D. tents are issued in lieu of single tentage				143	0	0	15	450	29	6												

(a) If considered necessary. (b) Includes 1 Employment Platoon.
 NOTE.—Requirements for R.A.O.C. Light Aid Detachments are included as follows:—

- 1 Divisional Cav. Regt. .. 1 L.A.D.
- 3 Field Regts. R.A. .. 3 L.A.D.
- 1 Anti-Tank Regt. R.A. .. 1 L.A.D.
- 1 Field Park Coy. R.E. .. 1 L.A.D.
- 1 Divisional Signals .. 1 L.A.D.
- 3 H.Q. Infantry Bde. .. 3 L.A.D.

Table III.]

TABLE III.

Camp Equipment (showing approximate weight and measurement) required to accommodate a battalion at war strength, excluding items held in unit's war equipment.

STANDING CAMP SCALE.

Description.	No. re-quired.	Weight.				Measure-ment.		
		Tn.	Cwt.	Qr.	Lb.	Tn.	Ft.	In.
<i>Section E.3.</i>								
Posts, picket, 5 ft., Mk. III	10	—	1	0	11	—	3	6
<i>Section F.</i>								
Hammers, sledge, straight pane, 14 lb.	2	—	—	1	4	—	1	2
<i>Section H.2.</i>								
Twine, packing, coarse sisal lb.	16	—	—	—	16	—	—	11
<i>Section J.</i>								
Covers, waterproof, black, G.S., 15' x 15'	4	—	1	1	20	—	8	2
Forms, dining tent	12	—	2	2	20	—	14	0
Latrines, screens, Mk. III, complete	10	—	4	1	4	—	36	8
Latrine buckets, large (c)	83	—	11	3	12	5	21	4
Racks, arm	107	—	—	1	26	—	2	6
Sheets, ground, unserviceable	14	—	—	1	21	—	1	9
Spades, Mk. III	10	—	—	2	4	—	3	2
Stoves, soyers	11	—	15	0	3	3	4	8
Tables, trestle, complete	6	—	3	3	0	1	9	6
Tents, C.S., Mk. V, complete (a)	131	4	14	2	27	13	5	6
Tents, C.S., Bottoms, wood (d) sets	123	24	1	0	2	80	8	3
Tents, Marquee, G.S., single complete (a)	4	—	8	3	20	1	11	8
Tents, store, complete	2	—	12	2	4	1	30	0
Tubs, washing, round, 3½-gall.	98	—	4	3	7	—	20	6
Wedges, sawyers, 10-in.	2	—	—	—	8	—	—	—
<i>Section J. (N.I.V.)</i>								
Workshop shelter	1	1	4	0	0	6	4	0
<i>Section K.</i>								
Blankets, brown, single	775	1	14	—	5	5	1	6
Blankets, brown, single (b)	775	1	14	—	5	5	1	6
Blocks, chopping, small	1	—	—	2	14	—	2	6
Brooms, birch	8	—	—	—	24	—	4	6
Brushes, scrub, hand, union part worn	5	—	—	—	4	—	—	4

[Table III.]

STANDING CAMP SCALE—*continued.*

Description.		Weight.				Measure- ment.		
		Tn.	Cwt.	Qr.	Lb.	Tn.	Ft.	In.
<i>Section K—continued.</i>								
Buckets, 13-in.	65	—	3	0	0	—	22	0
Chairs, fold flat	13	—	—	3	20	—	8	3
Machines weighing 20 lb. S. B. (c)	1	—	—	—	16	—	1	11
Scales weighing I. B. 2½ cwt., Mk. II (complete with weights I. R.)	1	—	4	1	0	—	20	0
Stones, rub scythe	6	—	—	—	12	—	—	4
Stoves, oil, wickless	6	—	—	—	18	—	3	0
Tables, barrack, 4 ft. com- plete	6	—	4	1	4	1	1	5
Tables, barrack, 6 ft. com- plete	7	—	6	0	0	1	12	3
		37	15	3	23	128	26	9
<i>Alternative Weights.</i>								
If double marquees and C. D. tents are issued instead of single tents at (a) above		40	0	3	0	132	37	2

(b) If ordered by Medical Officer.

(c) If required.

(d) For accommodation tents if specially ordered.

Table III.]

OFFICERS' MESS ACCOMMODATION.

Description.	No. re-quired.	Weight.				Measure-ment.		
		Tn.	Cwt.	Qr.	Lb.	Tn.	Ft.	In.
<i>Section J.</i>								
Stoves, soyers	2	—	2	2	26	—	22	8
Tents, C.S., Mk. V, complete (c)	2	—	1	1	22	—	8	0
Tents, marquee, G.S., single, complete (c)	2	—	4	1	24	—	25	10
Tents, store, complete ..	1	—	6	1	2	—	35	0
<i>Section K.</i>								
Buckets, 13-in.	9	—	—	1	17	—	3	3
Brushes, scrub, hand, union	8	—	—	—	6	—	—	6
Chairs, fold flat	32	—	2	1	4	—	24	0
Dishes, meat tin, large ..	6	—	—	1	0	—	1	6
Lamps, hurricane	9	—	—	—	22	—	4	6
Safes, meat, large	1	—	—	2	4	—	6	6
Tables, barrack, 6 ft., com- plete	11	—	9	1	20	2	2	2
Tables, barrack, 4 ft., com- plete	4	—	2	3	12	—	27	8
Tubs, washing, oval, 8-gall.	4	—	—	1	22	—	4	0
		1	11	1	13	6	5	7
<i>Alternative Weights.</i>								
(c) If double marquees and C.D. tents are issued instead of single		1	16	0	21	6	32	8

[Table III.]

If dining accommodation is to be provided the following additional equipment should be despatched to the Camp.

FOR R. & F.

Description.	No. Re-quired.	Weight.				Measure-ment.		
		Tn.	Cwt.	Qr.	Lb.	Tn.	Ft.	In.
<i>Section J.</i>								
Forms, dining tent ..	180	2	0	0	20	5	10	0
Tables, trestle, complete ..	90	2	16	1	0	18	22	6
Tents, store, complete ..	6	1	17	2	12	5	10	0
<i>Section K.</i>								
Basins, soup, S.T.	704	—	6	3	0	—	5	10
Brushes, scrub, hand, union	28	—	—	—	21	—	1	10
Buckets, 13-in.	24	—	1	0	8	—	8	10
Cans, 3-gall.	15	—	—	3	16	—	6	5
Dishes, meat, tin, large ..	15	—	—	2	5	—	3	9
Forks, carving, fibre handled	29	—	—	—	11	—	—	6
Knives, carving, fibre handled	29	—	—	—	22	—	1	3
Plates, dinner, S.T. ..	704	—	6	3	0	—	16	0
Safes, meat, large	6	—	3	0	24	—	39	6
Tables, barrack, 6 ft., complete	14	—	12	0	0	2	24	6
Tubs, washing, oval, 8-gall.	24	—	2	2	20	—	24	10
		8	8	1	19	34	15	9

Table III.]

SERJEANTS' MESS ACCOMMODATION.

Description.	No. Re-quired.	Weight.				Measure-ment.		
		Tn.	Cwt.	Qr.	Lb.	Tn.	Ft.	In.
<i>Section J.</i>								
Forms, dining, tent ..	18	—	4	0	2	—	21	0
Tables, trestle, complete ..	9	—	5	2	14	1	34	3
Tents, store, complete ..	1	—	6	1	2	—	35	0
<i>Section K.</i>								
Basins, soup, S.T.	71	—	—	2	15	—	—	8
Brushes, scrub, hand, union	2	—	—	—	2	—	—	—
Buckets, 13-in.	2	—	—	—	9	—	1	0
Cans, 3-gall.	2	—	—	—	13	—	2	0
Dishes, meat tin, large ..	2	—	—	—	10	—	1	0
Forks, carving, fibre handled	3	}	—	—	4	—	—	—
Knives, carving, fibre handled	3							
Plates, dinner, S.T.	71	—	—	2	20	—	2	0
Safes, meat, large	1	—	—	2	4	—	6	6
Tables, barrack, 6 ft., complete	2	—	1	2	24	—	14	11
Tubs, washing, oval, 8-gall.	2	—	—	—	24	—	2	0
		1	0	0	3	4	0	4

A FULL CANTEEN.

Description.	No. re-quired.	Weight.				Measure-ment.		
		Tn.	Cwt.	Qr.	Lb.	Tn.	Ft.	In.
<i>Section J.</i>								
Tables, trestle, complete ..	2	—	1	1	0	—	19	7
Tents, marquee, G.S., single complete (a)	1	—	2	0	26	—	12	11
<i>Section K.</i>								
Buckets, 13-in.	2	—	—	—	9	—	1	0
Lamps, hurricane	3	—	—	—	8	—	1	6
M/C weighing 20 lb. S.B. ..	1	—	—	—	16	—	1	11
		—	3	3	3	—	36	11
<i>Alternative Weight.</i>								
If double marquee is issued instead of single at (a) above		—	5	3	18	1	9	4

TABLE IV.

Camp Equipment for a Rest Camp—1,000 Men—showing approximate weight and measurement required to accommodate 5 officers, 40 W.Os. and Serjts. and 960 R. and F.

STANDING CAMP SCALE.

Description.	Qty.	Weight.				Measure-ment.		
		Tn.	Cwt.	Qr.	Lb.	Tn.	Ft.	In.
<i>Section E.1.</i>								
Carts, water, tank (a) (fitted for M.T.)	2	1	10	1	10	13	19	0
<i>Section E.3.</i>								
Posts, picket, 5 ft., Mk. III	10	—	1	0	11	—	3	6
<i>Section F.</i>								
Crowbars, 3 ft. 6 in. ..	1	—	—	—	13	—	—	—
Hammers, sledge, straight pane, 14-lb.	2	—	—	1	4	—	1	2
<i>Section H.2.</i>								
Twine, packing, coarse, sisal lbs.	20	—	—	—	20	—	1	4
<i>Section J.</i>								
Axes, felling	5	—	—	1	2	—	1	3
„ hand	10	—	—	1	0	—	—	6
„ pick, 4½-lb., complete	10	—	—	2	21	—	2	0
Covers, waterproof, black, G.S., 15 ft. × 15 ft. ..	4	—	1	1	20	—	8	2
Forms, dining tent ..	12	—	2	2	20	—	14	0
Kettles, camp, oval, 12 qt.	125	—	12	2	0	1	20	5
Latrine screens, Mk. III ..	10	—	4	1	4	—	36	8
Latrine buckets, large (e) ..	101	—	14	1	20	6	29	4
Mauls, complete	2	—	—	—	26	—	1	4
Racks, arm	131	—	—	2	9	—	3	3
Sheets, ground, Mk. VIII..	1000	1	15	2	19	4	33	8
Shovels, G.S.	10	—	—	1	7	—	3	0
Spades, Mk. III	10	—	—	2	4	—	3	2
Stoves, soyers	15	1	0	1	27	4	10	0
Tables, trestle, complete ..	6	—	3	3	0	1	9	6
Tents, C.S., Mk. V, complete (b)	135	4	17	2	15	13	20	10
Tents, C.S., bottoms, wood (d) sets	133	26	0	0	14	86	30	1
Tents, Marquee, G.S., single, complete (b)	1	—	2	0	26	—	12	11
Tents, store, complete ..	1	—	6	1	2	—	35	0
Tubs, washing, round, 3½-gall.	122	—	5	3	27	—	26	0
Wedges, sawyers, 10-in. ..	2	—	—	—	8	—	—	—

Table IV.]

STANDING CAMP SCALE—*continued.*

Description.	Qty.	Weight.				Measure- ment.		
		Tn.	Cwt.	Qr.	Lb.	Tn.	Ft.	In.
<i>Section K.</i>								
Blankets, brown, single ..	2000	4	7	3	12	13	0	0
" " " (c)	1000	2	3	3	20	6	20	0
Blocks, chopping, small ..	1	—	—	2	14	—	2	6
Brooms, birch	10	—	—	1	2	—	6	0
Brushes, scrub, hand, union, P.W.	4	—	—	—	4	—	—	4
Buckets, 13-in.	68	—	3	0	15	—	24	0
Implements, butchers, cases, wood filled	1	—	—	1	9	—	—	1.
Lamps, hurricane	26	—	—	2	9	—	11	0
Machines, weighing, 20 lb. S.B.	1	—	—	—	16	—	1	11
Scales, weighing, I.B., 2½ cwt. Mk. II (Complete with weights I.R.) ..	1	—	4	1	0	—	20	0
Stones, rub, scythe	6	—	—	—	12	—	—	4
Stretchers, ambulance, Mk. II	1	—	—	1	0	—	8	0
Stoves, oil, wickless ..	6	—	—	—	18	—	3	0
		45	4	0	12	157	24	1

(a) Unless water is laid on to the camp.

(c) If ordered by Medical Officer.

(d) For accommodation tents if specially ordered.

(e) If required.

<i>Alternative Weight.</i>								
If double marquee and C.D. tents are issued in lieu of single tents at (b) above	47	3	2	12	161	10	8	

[Table IV.]

OFFICERS' MESS ACCOMMODATION—5 OFFICERS.

Description.	Qty.	Weight.				Measure- ment.		
		Tn.	Cwt.	Qr.	Lb.	Tn.	Ft.	In.
<i>Section J.</i>								
Stoves, soyers	1	—	1	1	13	—	11	10
Tents, C.S., Mk. V, complete (a)	1	—	—	2	25	—	4	0
Tents, marquee, G.S., single, complete (a)	2	—	4	1	24	—	25	10
<i>Section K.</i>								
Brushes, scrub, hand, union	2	—	—	—	2	—	—	—
Buckets, 13-in.	5	—	—	—	25	—	1	10
Chairs, fold flat	9	—	—	2	16	—	6	9
Dishes, meat, tin, large ..	4	—	—	—	19	—	1	2
Lamps, hurricane	6	—	—	—	15	—	3	0
Safes, meat, large	1	—	—	2	4	—	6	6
Tables, barrack, 6 ft. com- plete	5	—	4	1	4	—	37	4
Tables, barrack, 4 ft. com- plete	2	—	1	1	20	—	13	10
Tubs, washing, oval, 8-gall.	2	—	—	—	24	—	2	0
		—	14	0	23	2	34	1
<i>Alternative Weight.</i>								
If double marquees and C.D. tents are issued in lieu of single tents at (a) above		—	18	3	0	3	20	3

Table IV.]

If dining accommodation is to be provided the following additional equipment should be despatched to the Camp.

FOR 960 MEN.

Description.	Qty.	Weight.				Measure- ment.		
		Tn.	Cwt.	Qr.	Lb.	Tn.	Ft.	In.
<i>Section J.</i>								
Forms, dining tent ..	240	2	13	2	8	7	0	0
Tables, trestle, complete ..	120	3	15	0	0	24	30	0
Tents, store, complete ..	8	2	10	0	16	7	0	0
<i>Section K.</i>								
Basins, soup, S.T.	960	—	8	2	8	—	8	4
Brushes, scrub, hand, union	36	—	—	1	0	—	2	6
Buckets, 13-in.	32	—	1	1	20	—	11	0
Cans, 3-gall.	20	—	1	0	22	—	7	0
Dishes, meat, tin, large ..	20	—	—	2	25	—	5	0
Forks, carving, fibre handled	39	—	—	—	15	—	—	9
Knives, carving, fibre handled	39	—	—	1	2	—	1	8
Plates, dinner, S.T.	960	—	8	2	20	—	18	0
Safes, meat, large	8	—	4	1	4	1	12	8
Tables, barrack, 6 ft. com- plete	18	—	15	1	20	3	14	4
Tubs, washing, oval, 8-gall.	32	—	3	2	8	—	32	10
		11	3	1	0	45	24	1

SERJEANTS' MESS ACCOMMODATION—40 W.OS. AND SERJTS.

Description.	Qty.	Weight.				Measure-ment.		
		Tn.	Cwt.	Qr.	Lb.	Tn.	Ft.	In.
<i>Section J.</i>								
Forms, dining tent ..	10	—	2	0	26	—	12	0
Tables, trestle, complete ..	5	—	3	0	14	1	2	0
Tents, store, complete ..	1	—	6	1	2	—	35	0
<i>Section K.</i>								
Basins, soup, S.T. ..	40	—	—	1	12	—	—	5
Brushes, scrub, hand, union	2	—	—	—	2	—	—	—
Buckets, 13-in. ..	2	—	—	—	9	—	1	0
Cans, 3-gall. ..	1	—	—	—	7	—	1	10
Dishes, meat, tin, large ..	1	—	—	—	5	—	—	9
Forks, carving, fibre handled	2	}	—	—	3	—	—	—
Knives, carving, fibre handled ..	2							
Plates, dinner, S.T. ..	40	—	—	1	16	—	1	2
Safes, meat, large ..	1	—	—	2	4	—	6	6
Tables, barrack, 6 ft., complete ..	2	—	1	2	24	—	14	11
Tubs, washing, oval, 8-gall.	2	—	—	—	24	—	2	0
		—	15	0	8	2	37	7

A FULL CANTEEN.

Description.	Qty.	Weight.				Measure-ment.		
		Tn.	Cwt.	Qr.	Lb.	Tn.	Ft.	In.
<i>Section J.</i>								
Tables, trestle, complete ..	2	—	1	1	0	—	19	7
Tents, marquee, G.S., single, complete (a) ..	1	—	2	0	26	—	12	11
<i>Section K.</i>								
Buckets, 13-in. ..	2	—	—	—	9	—	1	0
Lamps, hurricane ..	3	—	—	—	8	—	1	6
Machine, weighing 20 lb., S.B. ..	1	—	—	—	16	—	1	11
		—	3	3	3	—	36	11
<i>Alternative Weight.</i>								
If double marquee is issued in lieu of single marquee at (a) above		—	5	3	18	1	9	4

HEADQUARTERS OF SERVICES—ORDNANCE.

DISTRIBUTION OF PERSONNEL.

(Referred to in Section 4.)

Detail (d).	Officers.										Clerks.					Armament Artificers.		Total all ranks.	Remarks.							
	O.O. 1st Class.	O.O. 2nd Class.	O.O. 3rd Class.	O.O. 4th Class.	O.E. Os.	O.M.E. 1st Class.	O.M.E. 2nd Class.	O.M.E. 3rd or 4th Class.	A.I.A.	Total.	W.O. I.	W.O. II.	Staff Sjts.	Sjts.	Rank and File.	Total.	Instruments.			Fitters.	Armourers.	Ammunition Examiners.	Draughtsmen Mechanical.	Drivers, I.C. R.A.S.C.	Attached (f)	
Administrative branch—																										
D.O.S.	1 (a)	—	—	1 (c)	—	—	—	—	—	2	1	—	1	1	2	4	—	—	—	—	—	—	—	6		
D.D.O.S.	1 (b)	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	6		
A. Ds.O.S.—	—	—	1	—	—	—	—	—	—	2	—	1	—	1	4	6	—	—	—	—	—	—	—	8		
Personnel (O.S.1)	—	1	—	—	1	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	8		
Artillery and Ammn. Small arms, R.E. and Signal Stores, etc. (O.S.2)	—	1	1 (e)	1 (f)	3	—	—	—	—	6	—	2	1	2	5	10	—	—	—	1 (h)	—	—	—	17		
Clothing and General stores (O.S.3)	—	1	1	—	1	—	—	—	—	3	—	1	1	1	4	7	—	—	—	—	—	—	—	10		
M.T. and Statistical branch (O.S.4)	—	1	2	—	2	—	—	—	—	5	1	1	2	2	16	22 (g)	—	—	—	—	—	—	—	27		
Total	2	4	5	2	7	—	—	—	—	20	2	6	5	8	32	53 (w)	—	—	—	1	—	—	—	74		
Drivers, I.C., R.A.S.C.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—	4		
Attached—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Batmen	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Total (including attached)	2	4	5	2	7	—	—	—	—	20	2	6	5	8	32	53	—	—	—	1	—	1	13	13		
Mechanical engineering branch (O.S.5)—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
P.O.M.E.	—	—	—	—	—	1 (a)	1 (j)	—	—	2	1 (q)	—	1	—	2	13 3 5 6	—	1 (m)	—	—	—	—	—	—	4	
C.I.W.S.	—	—	—	—	—	1 (b)	—	—	—	3		—	—	—	—		—	—	—	—	—	—	—	—	—	6
Specialist Inspection staff	—	—	—	—	—	—	4 (k)	—	1	5		—	—	2 (r)	3 (t)		—	—	—	—	—	—	—	—	—	14
Technical Records	—	—	—	—	—	—	1	—	—	1		—	1	—	5 (s)		—	—	—	—	—	—	—	—	—	10
Total	—	—	—	—	—	2	6	2	1	11	1	1	1	2	10	15 (x)	2	2	1	—	3	—	—	34		
Drivers, I.C., R.A.S.C.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—	4		
Attached—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Batmen	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Total (including attached)	—	—	—	—	—	2	6	2	1	11	1	1	1	2	10	15	2	2	1	—	3	4	7	45		
Total H.Qrs. of Services—Ordnance	2	4	5	2	7	2	6	2	1	31	3	7	6	10	42	68	2	2	1	1	3	8	20	136		

(a) Brigadier.
 (b) Colonel.
 (c) O.C. Detachment and i/c Secret papers.
 (d) The designations in brackets denote the branch at H.Qrs. of Services.
 (e) I.O.O. and i/c Ammunition.
 (f) Artillery, etc.
 (g) Includes 1 W.O. Class I, 1 Cpl., and 8 privates for Statistical branch.
 (h) Serjeant.
 (i) May be provided from personnel unfit for general service with fighting units.
 (j) P.A. to P.O.M.E.
 (k) "A" and "B" vehicles 1
 Armament and General 1
 Instruments 1
 Signalling equipment 1
 (l) Assistant to C.I.W.S.
 (m) W.O. Class I.
 (n) W.O. Class II, "A" and "B" vehicles and Armament and General.
 (o) W.Os. Class II—Instruments 1
 Sig. Equip. 1
 (p) W.O. Class II—Machine guns and Small Arms.
 (q) Chief Clerk to P.O.M.E. and C.I.W.S.
 (r) "A" and "B" vehicles; Armament and General 1
 Instruments and Signal Equipment 1
 (s) "A" vehicles 1
 "B" vehicles 1 } Include
 Armament 1 } 1 Cpl.
 Wireless Equip. 1
 (t) "A" and "B" vehicles; Armt. and General 1
 Instruments and Signal Equipment 1 } Includes
 Machine Guns and Small Arms 1 } 1 L/Cpl.
 (u) 1 Sjt. and 2 R. & F.—Drawing office.
 (v) Administrative branch 2
 Mech. Engr. branch 2
 (w) Includes 11 Shorthand typists.
 (x) Includes 2 Shorthand typists.

TRANSPORT

Cars, 4-seater, 4-wheeled 4 (v)

NOTES.—i. Cooks and General duty men are included in H.Qrs. of Services for allotment to Directorates as required.
 ii. Details of personnel for any projected force will be in the war box of the D.O.S. field force.

Tables XI and XII.]

TABLE XI.

CLOTHING REQUIRED BY AN ARMY IN THE FIELD.

(See Sec. 26.)

The following indicates roughly the requirements of the more important items of clothing for 1,000 men for one month. (For sizes and fittings, see Table XIII.)

				say
Greatcoats	..	..	..	30
Boots, ankle	..	..	prs.	310
Jackets, S.D.	..	..	..	140
Trousers, S.D.	..	..	prs.	100
Caps, F.S.	..	..	..	80
Shirts	..	..	..	260
Drawers, cellular, short	..	..	prs.	240
Socks	..	..	..	530
Anklets, web	..	..	..	150

TABLE XII.

CLOTHING—PROPORTION OF SIZES.

1—GREATCOATS 1939 PATTERN.

No. on Ticket	Size	1	2	3	4	5	6	7	8	9	10	11	12
Proportion per 1,000	..	26	21	132	70	174	82	223	62	82	12	13	3

[Table XII.]

2—BOOTS, ANKLE.

Size.	Fitting.	Proportion per 1,000
5	{ S M L	1
		2
		5
		8
		—
6	{ S M L	9
		25
		46
		80
		—
7	{ S M L	39
		100
		112
		251
		—
8	{ S M L	62
		154
		143
		359
		—
9	{ S M L	46
		96
		77
		219
		—
10	{ S M L	12
		27
		27
		69
		—
11	{ S M L	3
		5
		4
		12
		—
12	{ S M L	0.5
		1.0
		0.5
		2.0
		—

3.—S.D. BATTLE DRESS JACKETS.

Size	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Proportion per 1,000	20	28	17	108	59	29	193	92	33	184	72	27	82	18	9	12	10	2

4.—S.D. BATTLE DRESS TROUSERS.

Size	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Proportion per 1,000	16	27	32	58	91	74	101	137	71	117	80	51	74	22	16	20	5	8

5.—BONNETS TAM-O'SHANTER: CAPS F.S. AND HELMETS UNIVERSAL KHAKI.

Size	6 $\frac{1}{4}$	6 $\frac{3}{8}$	6 $\frac{1}{2}$	6 $\frac{5}{8}$	6 $\frac{3}{4}$	6 $\frac{7}{8}$	7	7 $\frac{1}{8}$	7 $\frac{1}{4}$	7 $\frac{3}{8}$	7 $\frac{1}{2}$
Proportion per 1,000	6	12	55	85	190	320	210	80	20	13	9

TABLE XIII.

LOADS FOR VEHICLES, PACK AND CARRIERS.

(Referred to in Section 74, para. 3.)

1. VEHICLE LOADS.

These can be ascertained by comparison with "List of Particulars of Weights and Packages of Ordnance Stores".

2. PACK LOADS.

(i) Carriers.

						lb.
West Africa—load on head	..	..	..	..	..	50
India—load on back	..	..	..	..	..	40
China—load on pole	..	..	..	..	..	40-80

In packing loads it must be remembered that sacks are apt to get torn by thorns in passing.

(ii) Pack Animals.

						lb.
Horse	..	..	..	..	..	200
Pack mule or pony	..	..	..	..	..	160
Donkey	..	..	..	..	..	100
Bullock	..	..	..	..	..	200
Camel	..	..	..	..	..	320
Elephant	..	..	..	..	..	1,000
Yak	..	..	..	..	..	200

(iii) Sleigh Transport.

						lb.
(a) Reindeer (team of three)	..	..	..	..	..	600
Dog	..	..	..	..	..	800-1,000

(a) Use limited to the vicinity of the moss beds on which the animals feed.

TABLE XIV

Ingredients required for Dyeing and Fixing Solutions for various Types of Tents.

For every	Tents, Store. Tents, Marquee, Hospital, Extending, 2 ends and 1 section.						Tents, C.S. Tents, Shelter, R.A.						Tents, C.D.						Tents, Marquee, G.S., Single Tents, R.D.					
	5			20			10			50			10			50			5			20		
	lb.	oz.	galls.	lb.	oz.	galls.	lb.	oz.	galls.	lb.	oz.	galls.	lb.	oz.	galls.	lb.	oz.	galls.	lb.	oz.	galls.	lb.	oz.	galls.
Dyeing Solution :—																								
Cutch	7	8	—	29	12	—	2	9	—	12	12	—	2	12	—	14	—	—	4	8	—	18	—	—
Soda, common	1	14	—	7	7	—	—	10	—	3	3	—	—	11	—	3	8	—	1	2	—	4	8	—
Water	—	—	38	—	—	149	—	—	13	—	—	64	—	—	14	—	—	70	—	—	22	—	—	90
Fixing Solution :—																								
Bichromate of Soda	2	8	—	10	—	—	1	—	—	4	8	—	1	—	—	5	—	—	1	8	—	6	—	—
Water	—	—	40	—	—	160	—	—	16	—	—	72	—	—	16	—	—	80	—	—	24	—	—	96

For every	Tents, Marquee, H.P., Large * Tents, Marquee, H.P., Extending, 2 ends and 2 sections with 2 porchways.						Tents, Marquee, H.P., Small Tents, Marquee, H.P., Extending, 2 ends						Tents, Telegraph.					
	5			20			5			20			5			20		
	lb.	oz.	galls.	lb.	oz.	galls.	lb.	oz.	galls.	lb.	oz.	galls.	lb.	oz.	galls.	lb.	oz.	galls.
Dyeing Solution :—																		
Cutch	8	—	—	32	8	—	5	12	—	23	—	—	—	12	—	3	—	—
Soda, common	2	—	—	8	2	—	1	7	—	5	12	—	—	3	—	—	12	—
Water	—	—	40	—	—	162	—	—	29	—	—	115	—	—	4	—	—	15
Fixing Solution :—																		
Bichromate of Soda	3	—	—	11	—	—	2	—	—	8	—	—	—	4	—	1	—	—
Water	—	—	48	—	—	176	—	—	32	—	—	128	—	—	4	—	—	16

* In dyeing the porchways and walls of this tent, care must be taken, when applying the cutch solution to the outside white doosootie, that the inner coloured doosootie is not affected. It is possible that future supplies of tentage will be made from iron-chromium-treated duck and camouflaged by means of spray paint.

PLATE I

Notes :—

- (i) A.D.O.S.P. communicates direct with D.O.S. on provision matters.
- (ii) —○—○— Indicates direct communication on technical matters concerning ammunition.
- (iii) Until an A.D.O.S. Ammunition is appointed his duties will be carried out by C.O.O.s Base Ammunition Depots & co-ordinated by D.D.O.S: L of C.

DIAGRAM SHEWING ORDNANCE SERVICES IN THE FIELD.

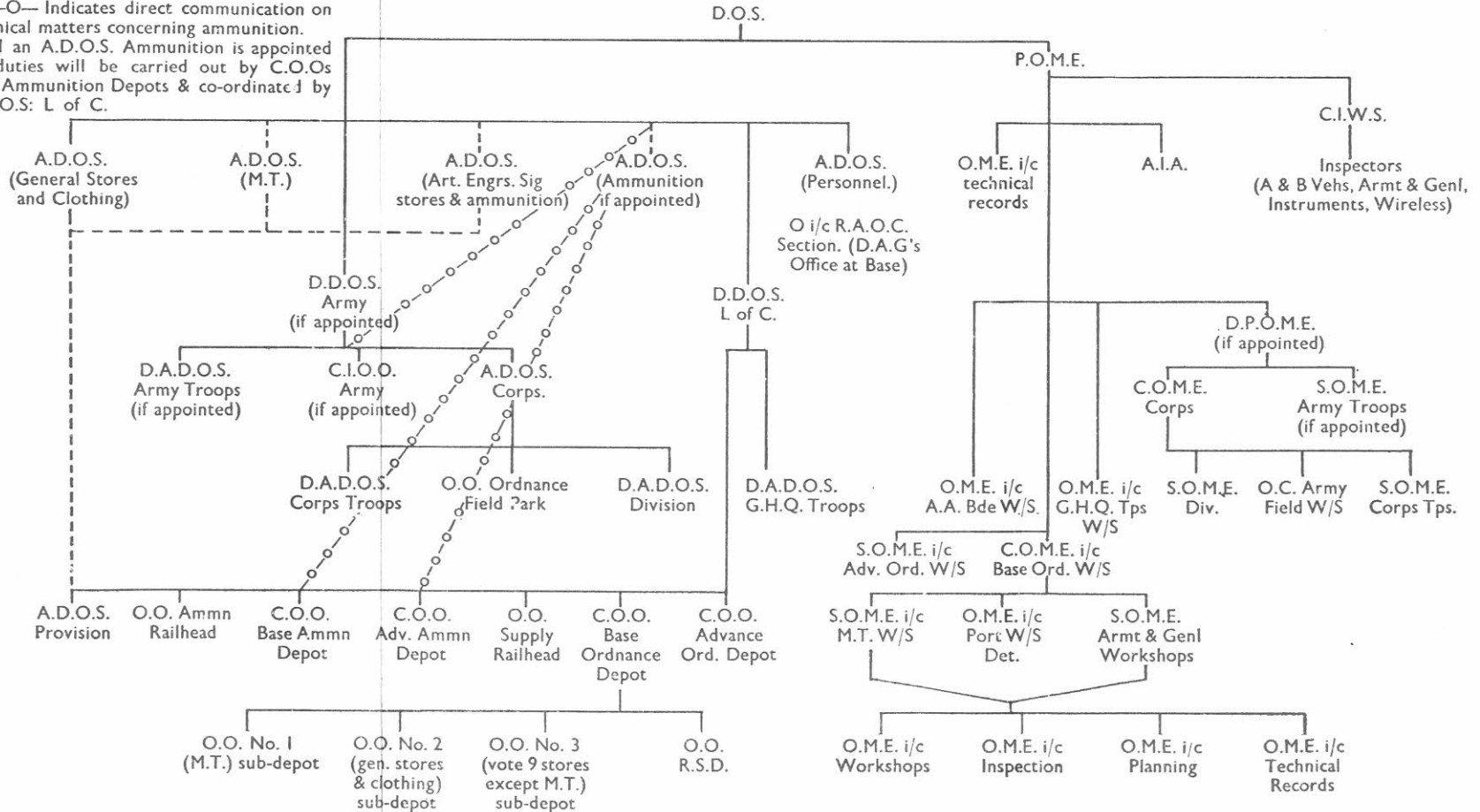


PLATE III

NORMAL SYSTEM OF SUPPLY OF ORDNANCE STORES IN WAR

(Referred to in Chapter IV, Section 34)

1. Indents are submitted by units to the D.A.D.O.S. of their formation who transmits them to the Base Ordnance Depot (or Advanced Ordnance Depot if established). Stores are sent forward by "Pack Train" to railhead where they are loaded up by R.O.O. into the lorries of the Corps Troops Supply Coy. or Divnl. Supply Column R.A.S.C. (working on a "shuttle" service on alternate days). They are conveyed to the delivery point and handed over to units' representatives.

2. Guns, carriages, vehicles, tractors and M.T. spares are supplied by the same source. Heavy vehicles, etc., are collected by units from railhead if drivers are available; if not R.A.S.C. will make special arrangements.

3. Ordnance field park holds stocks of "non-fighting vehicles, gun spares, M.T. spares, etc., for "urgent" issue to units and to Workshops.

4. ———— shows the demands from A.D.O.S.P. on home or local contractors.
 ———— shows the supply from Central Ordnance Depot to the Base Ordnance Depot and thence to units in the Field.
 —○—○—○— shows special lines of supply or instructions.

5. Any one link in the chain of supply from railhead to unit can be omitted.

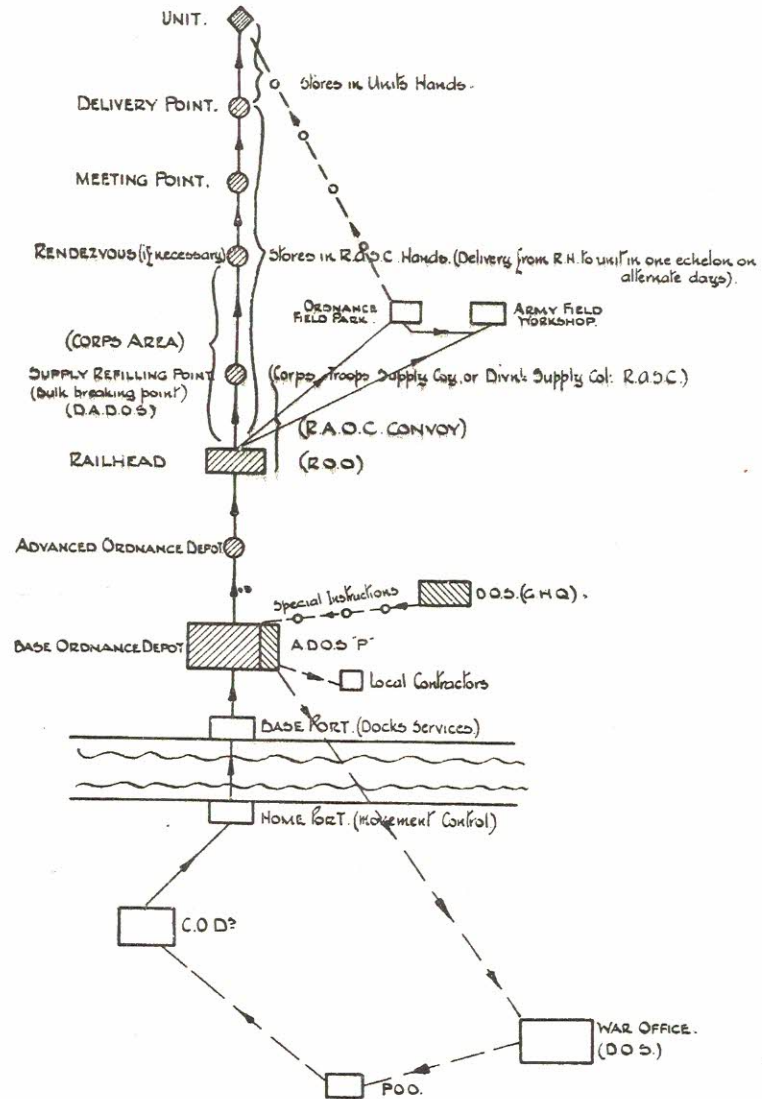


PLATE IV

BOARD SHOWING UNITS IN A FORMATION

(Referred to in Chapter IV, Section 38)

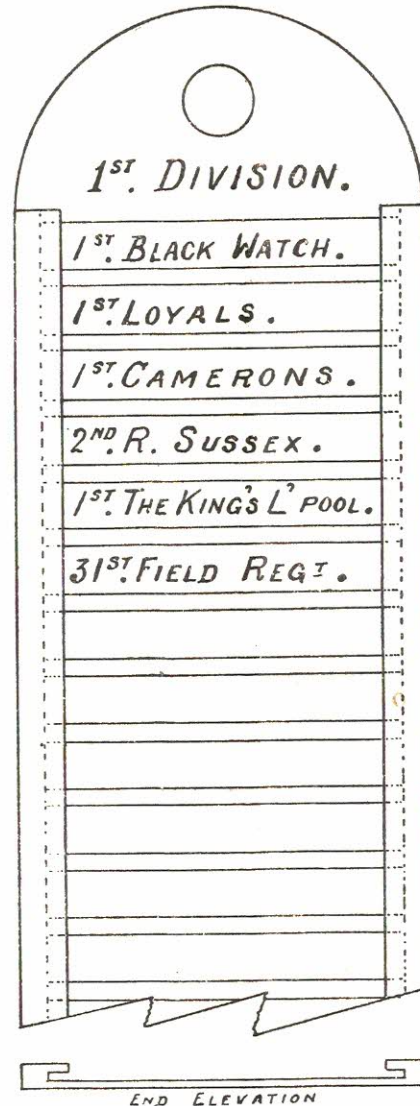


PLATE IX

SYSTEM OF AMMUNITION SUPPLY

NOTES ON R.A.S.C. ORGANIZATION.

Divisional Ammunition Companies are second line transport, organized in 3 operating sections and a workshop section. Operating sections have two sub-sections for Field Artillery ammunition; one for S.A.A. and A.T.; one for mortar, grenade, demolition and pyrotechnic ammunition.

Corps Troops Ammunition Companies are second line transport, with a workshop section. Operating sections are proportional to the Corps troops, and allotted to Army Field Artillery Brigades; Medium Artillery Brigades; Army Tank Battalion and miscellaneous.

Corps Ammunition Parks are third line transport, organized into Divisional Sub-Parks and a Corps Troops Sub-Park. Divisional Sub-Parks have sections and sub-sections which correspond to, and supply, those of the Divisional Ammunition Company; similarly the Corps Troops Sub-Park has sections which correspond to the Corps Troops Ammunition Company's sections.

Anti-Aircraft Brigade Companies are either "Base Defence Companies" or "Base and forward defence Companies." In the former case they are in single echelon of second line transport, in the latter they are in two echelons of second and third line transport. In both cases they are composite companies for supplies, ammunition and petrol.

A *G.H.Q. Company*, carries 2nd and 3rd line ammunition reserves for units of G.H.Q. Troops (other than Artillery Regiments). The company is a composite unit organized into sections, separate sections being provided for carriage of ammunition.

A *G.H.Q. (Artillery) Company*, carries 2nd and 3rd line ammunition reserves for Artillery Regiments in G.H.Q. Troops. The Company is a composite unit organized into composite self-contained sections for carriage of ammunition, petrol and supplies for individual Artillery Regiments.

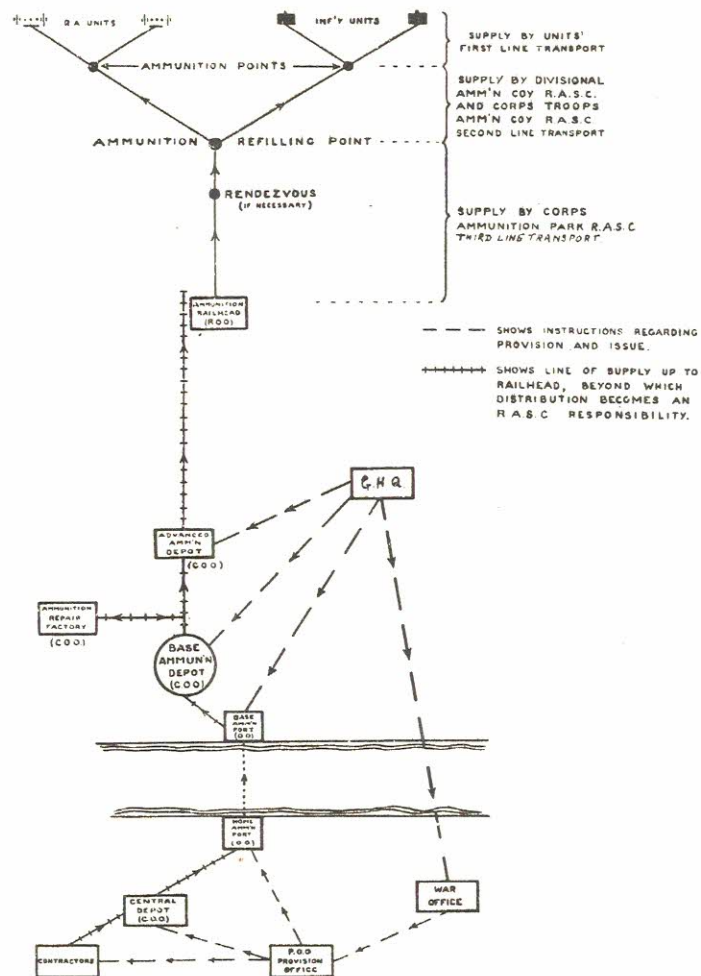
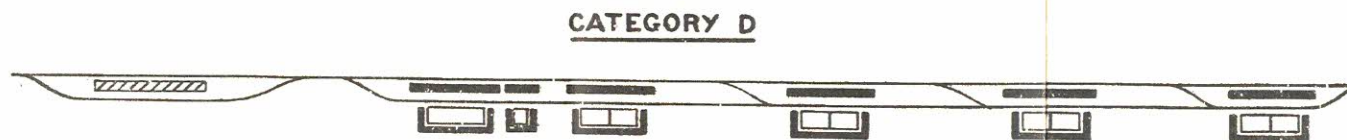
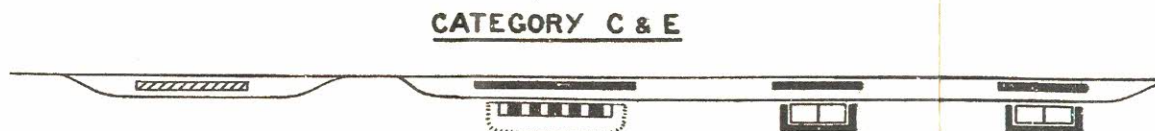
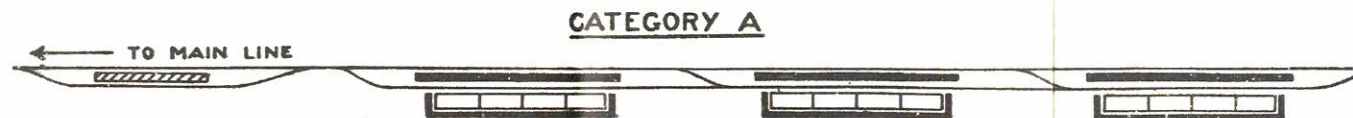


PLATE XA

LINES AND SHEDS FOR ONE SUB-DEPOT B. A. D.
[DIAGRAMMATIC]



100 0 200 400 600 FEET
(NOT APPLICABLE TO DISTANCES BETWEEN CATEGORIES)

1. Sorting platforms on this scale may not be necessary. Space should be left for them, and at least one such platform included in each sub-depot. Category "B" needs it most.

2. Stacking height. It should be possible to stack up to 9 feet high, except shell and bomb stores.

3. No Decauville or other light railway system is shown. Small power trolleys running over concrete paths will be found more efficient.

4. Details of contents of sheds are in War Box of the C.O.O. Base Ammunition Depot.

5. For details of Categories, see Magazine Regulations.

PLATE XB

TYPICAL LAYOUT OF A B.A.D.

1. Roads are not shown. Road access to offices (for light vehicles only), and to sub-depot sidings for lorries, is desirable. For one siding at least it is essential, in order to let L. of C. units draw direct from the depot.

2. Expansion, if found necessary, can be effected either by adding to sub-depots, or by adding fresh sub-depots.

3. R.E. yard and sidings, etc., are not shown.

4. Laboratories to be sited as convenient.

5. Total Depot Tonnage—21,000 tons.
Tonnage per Sub-depot—7,000 tons.

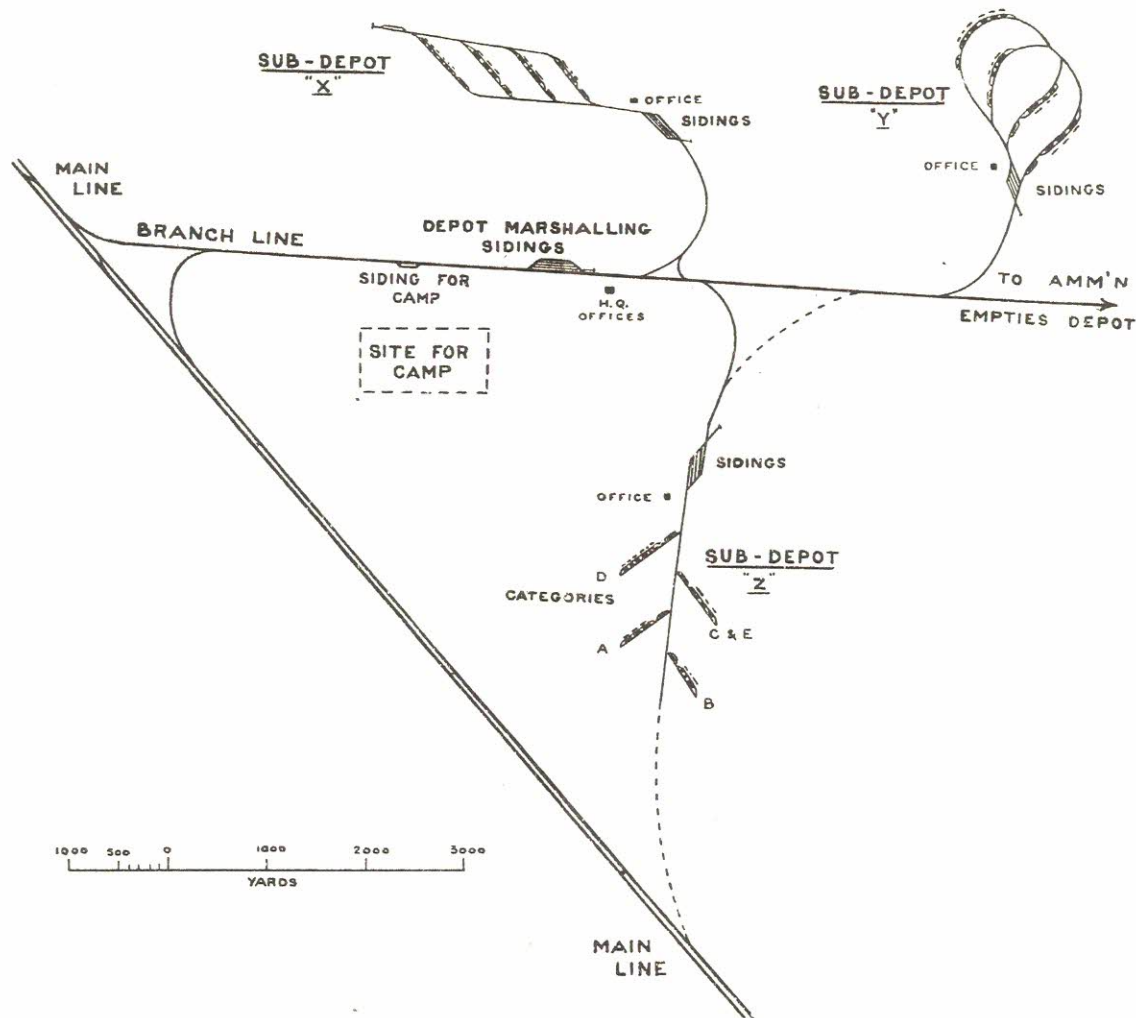


PLATE XIA

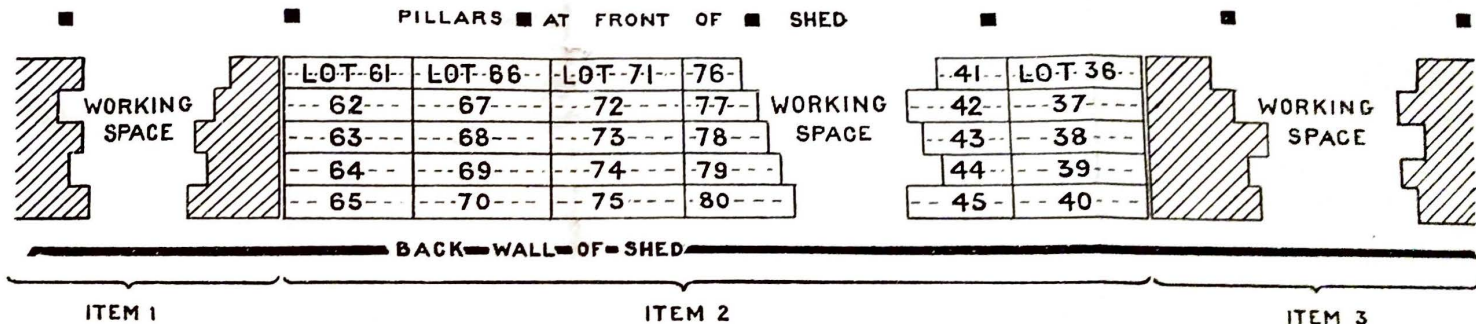
A STACKING METHOD PERMITTING CONTROL OF ISSUE BY SUB-VARIETIES.

In this plate three different items are shown, in each of which it is necessary to keep track of sub-varieties or lots.

Taking item 2 as the example, lots 41-45 are being issued (to 5 different consignees), and lots 76 to 80 have been received and are being unloaded. When lots 36-40 have been issued, the receipt and issue side of the working space are changed over, and the working space moves gradually towards lots 61-65.

This system ensures a regular turnover of stock, with a minimum allowance of working space in depots.

The same arrangement can be used at Railheads and dumps, but the total stock of each item will be smaller and the proportion of working space to stock will therefore be greater.



Loading of Ammunition Wagons

1. For general instructions as regards sealing, checking, and observing weight limits, see Chap. VI, Section 51, paras. 36 to 40. Wherever possible 16-ton wagons should be used for shell and bombs, and 20-ton wagons for boxed ammunition.

2. *Ammunition in Boxes, Cylinders, Crates, etc.*

Packages will be stacked evenly over the whole floor of the wagon; long, narrow packages, such as cylinders, will be so arranged that those in the centre of the wagon are end-on to the door, so that they cannot fall out when the door is opened.

3. *Loose Shell and Bombs.*

Should be evenly distributed over the floor, two layers deep in the case of smaller natures. (Generally speaking, one layer of larger or two of small shell will bring a wagon up to its maximum load.) Loose shell must be secured where necessary with scotches or battens.

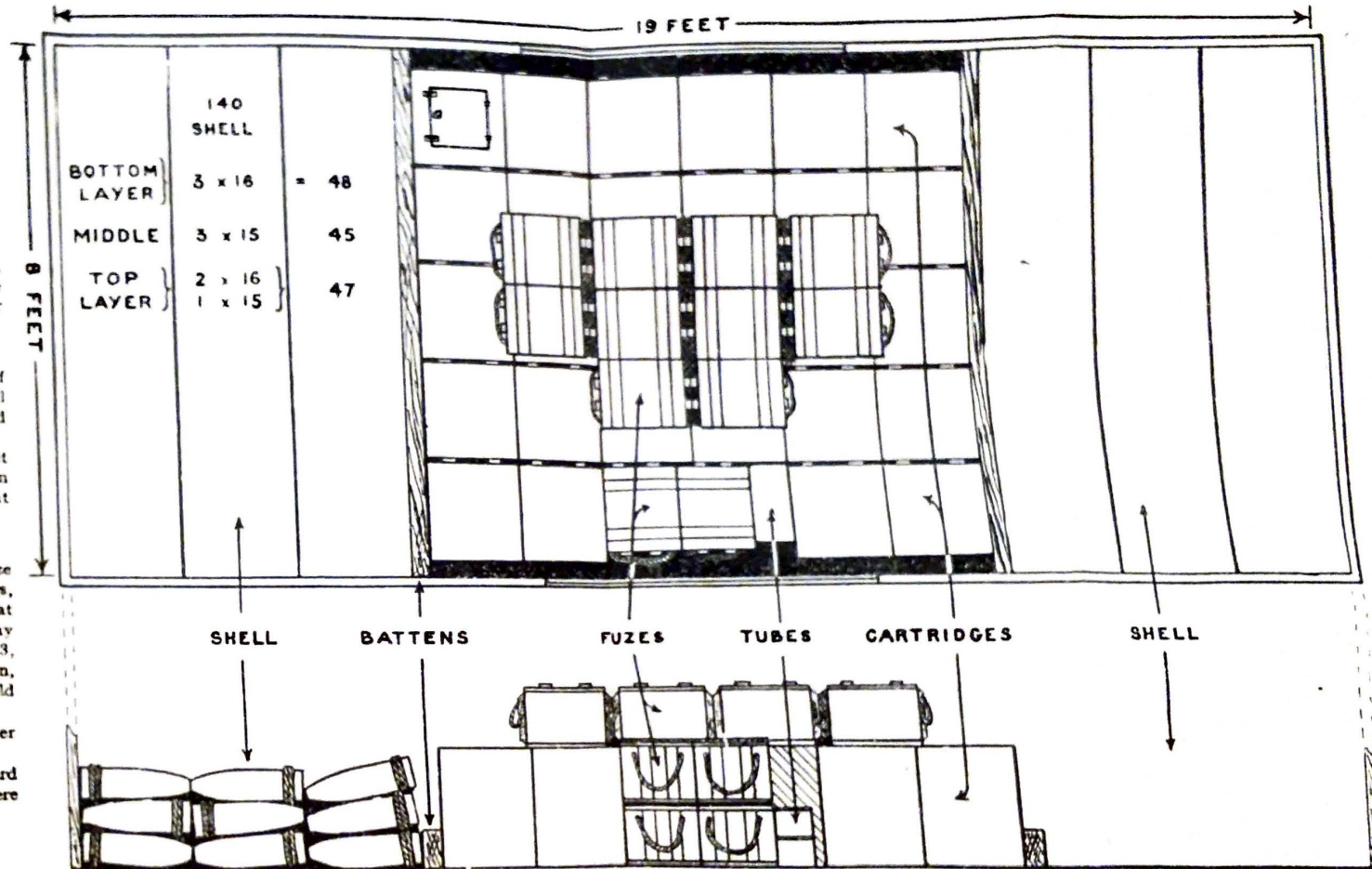
They must be so arranged that only the bases or sides come in contact with the end of the wagon, in order to minimize shunting damage. Those in the centre of the wagon must have their bases toward the doors, to prevent rolling out when the door is opened.

4. *Complete Rounds.*

There are two methods, dependent on the type of ammunition and size of wagon. In one method, shells are stowed at the ends of the wagon in tiers, with cartridges and fuzes in the centre of the wagon. It will be noted that in this case (if the maximum weight to be loaded in the wagon permits) it may be possible to stack shell in more than two layers; and the proviso in para. 3, that only bases or sides must come in contact with the sides of the wagon, need not be observed, because the cartridge boxes or cylinders serve to hold the shell steady.

The second method is to cover the floor with shell, and place the other components on top of the shell.

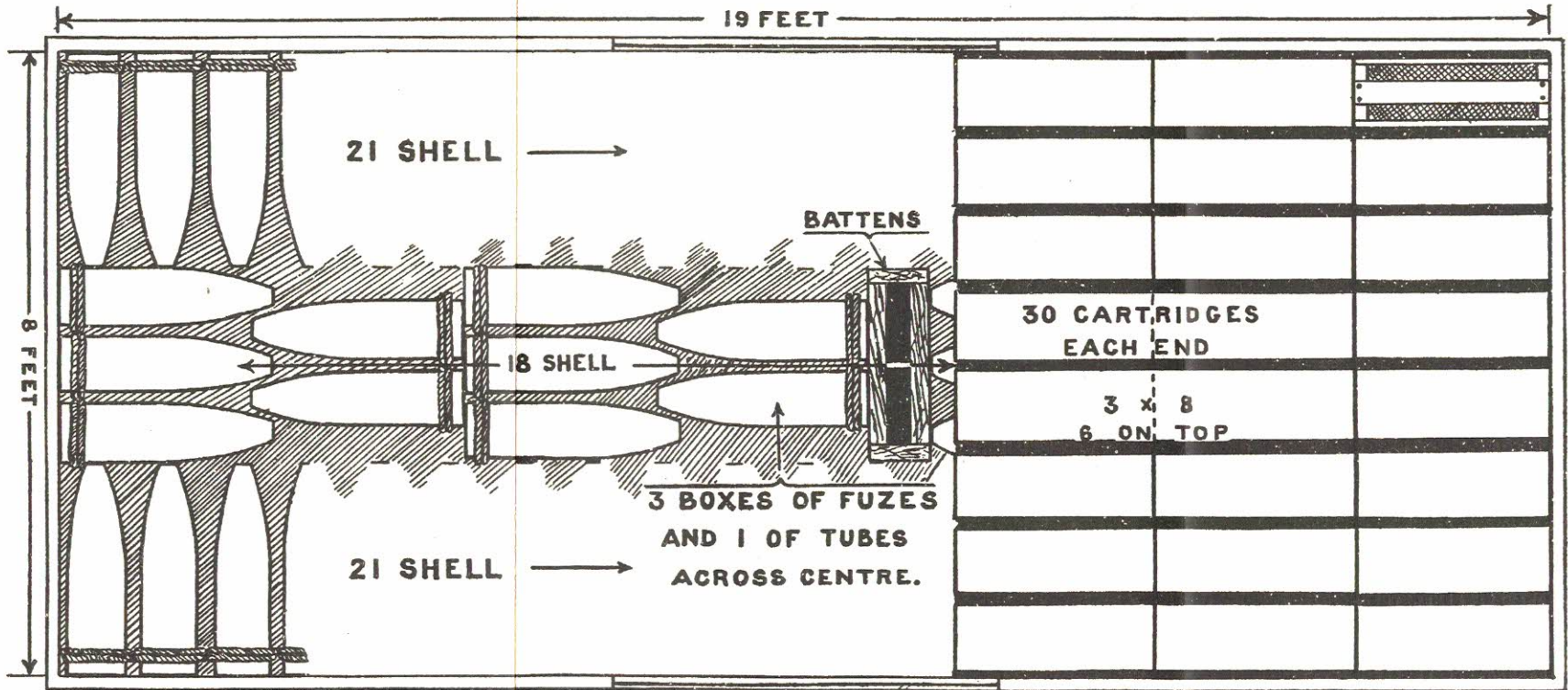
The two methods are illustrated in Plates XIb and c, for the standard continental type of wagon. The second is preferable for heavy shell, or where the cartridges are not in robust packages.



60-PDR. 280 RDS. 10 TONS.

[CARTRIDGES PACKED IN C.P.M.L. WHOLE]

PLATE XIc



9.2 INCH How. 60 RDS. 10 TONS.

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