

Copies of the reports made by Major General Eyre's Committee on Infantry Equipment to the Secretary of State for war; of the correspondence that has taken place between the committee and Lieutenant Colonel Carter; and, of the correspondence at the Horse Guards and War Office, which refers to the equipment proposed by Lieutenant Colonel Carter.

Contributors

Great Britain. War Office. Committee on Infantry Equipment.
Great Britain. Parliament. House of Commons.
Royal College of Physicians of London

Publication/Creation

London : [HMSO], 1871.

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G.B. War Office, Committee on
Infantry Equipment

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ARMY (INFANTRY EQUIPMENT).

RETURN to an Address of the Honourable The House of Commons,
dated 6 August 1870;—for,

“ COPIES of the REPORTS made by Major General *Eyre's* COMMITTEE ON
INFANTRY EQUIPMENT to the Secretary of State for War :”

“ Of the CORRESPONDENCE that has taken place between the Committee and
Lieutenant Colonel *Carter* :”

“ And, of the CORRESPONDENCE at the Horse Guards and War Office, which
refers to the Equipment proposed by Lieutenant Colonel *Carter*.”

War Office, }
9 February 1871. }

EDWARD CARDWELL.

(*Mr. Gourley.*)



Ordered, by The House of Commons, to be Printed,
6 March 1871.

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COPIES of the REPORTS made by Major General *Eyre's* COMMITTEE on INFANTRY EQUIPMENT to the Secretary of State for War:—Of the CORRESPONDENCE that has taken place between the Committee and Lieutenant Colonel *Carter* :—And, of the CORRESPONDENCE at the Horse Guards and War Office, which refers to the Equipment proposed by Lieutenant Colonel *Carter*.

LETTER from Sir *E. Lugard* to Major General *Eyre*.

Sir,

War Office, 2 May 1864.

EARL DE GREY and RIPON having decided, with the concurrence of his Royal Highness the Field Marshal Commanding in Chief, to appoint a Committee, consisting of the officers named in the margin, under your presidency, for the purpose of considering how far the large amount of lung and heart disease prevailing among soldiers of less than two years' service is attributable to the present system of drill and accoutrements, and of reporting as to the amount of drill to which recruits should be subjected on first joining the army, and the pattern of accoutrements and knapsacks best adapted to obviate the evils complained of, I am directed to apprise you of the same, and to state that the members of the Committee have been requested to attend to any instructions they may receive from you as to the time and place of meeting, and that accommodation can be afforded for such meetings in this office.

I am, &c.

Major General *Eyre*,
Commanding Her Majesty's Forces, Chatham.

(signed) *Edward Lugard*.

24,362.
486.

Major General Rum-
ley, Inspector Gene-
ral of Infantry.
Colonel Sir A. Hors-
ford, K.C.B.
Deputy Adjutant
General Dr. Logan,
Inspector General of
Hospitals.
Dr. Parkes, Army
Medical School,
Netley.

In a subsequent letter, the Committee were directed to take into consideration the mode in which the Field Companion, borne by serjeants of the Army Hospital Corps, can be best carried.

FIRST REPORT

24,362.
486.

OF THE

COMMITTEE appointed to inquire into the EFFECT ON HEALTH of the Present System of carrying the ACCOUTREMENTS, AMMUNITION, and KIT of INFANTRY SOLDIERS, and DRILL, &c. of RECRUITS.

To the Right Honourable the Earl *De Grey* and *Ripon*, Secretary of State for War, &c. &c.

THE Committee appointed "to consider how far the large amount of lung and heart disease prevailing among soldiers of less than two years' service is attributable to the present system of drill and accoutrements, and to report as to the amount of drill to which recruits should be subjected on first joining the army, and the pattern of accoutrements and knapsacks best adapted to obviate the evils complained of, and also the means by which the 'Field Companion' (which is borne by serjeants of the Army Hospital Corps) can be best carried, (see letter from Professor Longmore, Appendix No. 5)," have the honour to make the following report:—

Letter from Sir E. Lugard, 2 May 1864.

The subjects which the Committee had to consider may be conveniently divided according to the paragraphs in the letter of instructions quoted in the margin.

I.—THE AMOUNT OF HEART AND LUNG DISEASE PREVAILING AMONG SOLDIERS UNDER TWO YEARS' SERVICE.

(a.) *As regards Heart Disease.*—To enable us to answer this question, we have had before us some returns from the Invaliding Establishment at Fort Pitt during the years 1860-62, and a return prepared by the Statistical Branch of the Army Medical Department for the years 1861-63 inclusive (see Appendix No. 1); unfortunately this return refers only to ages and not to length of service.

The Fort Pitt returns show that in the men under two years' service, one man in every seven invalids was discharged for heart disease; the statistical return from the Medical Department shows that in men under 20 years of age (who may be assumed to have less than two years' service), one invalid out of every 5.45 invalids was discharged for heart disease.

The two returns are fairly accordant, the last giving, however, a greater number of heart cases, which may arise from only a portion of the invalids of the army passing through Fort Pitt.

There certainly appears to be a large relative proportion of heart cases among invalids of two years' service or under; and when it is remembered that every recruit is examined by a medical officer, and is then presumably entirely free from heart disease, it is difficult to avoid conjecturing that there must be some causes acting in early army life which give rise to affections of the heart.

But this conjecture could only become a certainty if we could know how many healthy young men, of 18 or 19 years of age, and free from heart disease, as the recruit is supposed to be, would become affected with heart disease within two years, supposing that they remained in civil life.

Unfortunately we have no means of getting this knowledge, as there are no available statistics of the amount of heart disease among the civil population. We can only fall back upon a general impression among the medical profession, which is, we are informed, that, apart from rheumatic fever, heart diseases of a permanent character do not commonly originate in young men of 18 or 20 years of age. Now, rheumatic fever appears, from some observations of Professor Maclean's, not to be a common cause of heart disease among young soldiers, and therefore they ought to be as free from heart disease as young civilians of the same ages are believed to be.

We

We can consider the point in another way.

Are heart diseases more common among young than old soldiers as causes of invaliding?

The Fort Pitt returns give 1 in 12·93 as the proportion of heart cases to invalids of all ages, while, as already said, in invalids under two years' service it was 1 in 7.

The statistical return, sent to us by the Director General of the Army Medical Department, gives the following average for the three years 1861-2-3:

Heart cases to total invalids under 20 years	-	-	1 in 5·45
" " 20 to 24	,"	-	1 in 6·44
" " 25	,"	upwards-	1 in 8

The two returns are not strictly comparable, as many of the invalids over 20 years of age may be under two years' service; but still this last return shows that the relative proportion of heart cases decreases with age. This must be either from an excess of heart cases among the young, or from an excess of other diseases among the older soldiers, which reduces the relative amount of heart disease.

To test this, we must take the absolute number of heart cases furnished by a certain number of men. We find, on the average of the three years 1861-63, that 1,000 men of the under-mentioned ages gave:

Invalids from heart disease:

Under 20 years of age	-	-	-	-	-	2·19
20 to 24	,"	-	-	-	-	4·57
25 and upwards	-	-	-	-	-	5·02

The significance of these numbers is not obvious at first sight. But it will be seen, on reflection, that the men aged from 20 to 24 give almost as many heart cases as the men aged 25 and upwards.

Many of the men in the last class must have been aged 25, 30, 35, or even 40 years. Now, as apart from rheumatic fever the prevalence of heart disease increases with age, we should have anticipated that the men over 25 would have shown a great excess of heart cases over the men of the ages 20 to 24, whereas they only show a difference of $\frac{1}{2}$ per cent.

The very slight increase of heart cases with age, may be seen by comparing it with the increase from all causes. As age advances the action of the causes of invaliding regularly advances also. Thus 1,000 men at the under-mentioned ages give:--

Invalids from all causes:

Under 20 years	-	-	-	-	-	11·93
20 to 24	-	-	-	-	-	29·45
25 and upwards	-	-	-	-	-	39·40

Compare the advance from 29·45 to 39·40 with that from 4·57 to 5·02. If the two had been equal the invaliding over 25 years of age would have been for heart diseases 6·1 instead of 5·02.

We believe, then, that there is an excess of heart cases among young soldiers, but then arises another very important question. Is not the number of heart cases among soldiers at all ages very great?

Is it not larger than among the male civil population of the same ages? We regret extremely that the imperfection of the civil statistics does not permit us to answer this last question; but as regards the number of heart cases among the soldiers, the following extract from a lecture, delivered by Professor Maclean, of the Army Medical School, in the Royal United Service Institution, on this very subject, will show how prevalent these diseases are.

Dr. Maclean says: "From the date of my assuming charge of the medical division at Fort Pitt, in April 1861, to the end of last year (1862), no less than 883 cases of disease of the circulatory system, or in other words a number nearly equal to the strength of a battalion, have passed under my observation and been lost to the service, and this from one class of disease; the great bulk of the cases being young men returned to the civil population (that is, cast upon their parishes), and incapable of earning their bread in any active employment."

These numbers, it must be remembered, represent only a portion of the actual invalids, as the invalids from the Guards, the Royal Artillery, and the troops in Ireland are not included.

Now, certainly, this does appear a very large number; and even if it were not greater than what would occur in civil life, which we doubt extremely, it would still require us to endeavour to determine the causes and see if there may not be some means of saving the State from so great a loss, and the parishes from so great a burden.

(b.) *As regards Lung Disease.*—To answer this question we have only the invaliding returns from Fort Pitt for two years (1860-62). It appears that of men under two years' service 29.99 per cent., or almost one man in every three, were invalids for lung disease (chiefly consumption), while in invalids of all ages only 19.8 per cent., or one man in every five, was invalided for lung disease.

We have no statistics among the civil population which can properly compare with these numbers, as the civil statistics merely record the deaths, but there is very little, or indeed, no doubt that lung diseases are much more common among soldiers than among civilians, and the above numbers seem to show that they are more common among young than old soldiers.

It appears from the Fort Pitt returns that in two years 304 invalids under two years' service were discharged for lung disease.

Now, every one of these men was carefully examined on enlistment. Is it conceivable that in that short space of time so many cases should have originated unless there were some conditions acting unfavourably on the health?

We are not prepared to state what part the pressure of accoutrements, and forced exercise under unfavourable conditions, played in the production of this lung disease, but it is only reasonable to believe it had some share.

II.—WHAT ARE THE CAUSES OF THIS EXCESS OF HEART AND LUNG DISEASE?

We now proceed to the second part of the inquiry. There being evidently a great number of heart and lung diseases among soldiers, probably more than among civilians, and such cases being apparently in greater relative amount among young soldiers, what are the causes of such prevalence?

As respects heart disease, the question has been carefully examined by Professor Maclean, a copy of whose lecture at the Royal United Service Institution we annex (*see Appendix 2*).

After examining into the various possible causes, Dr. Maclean concludes that the most probable reason is that the young soldier is called upon to make much exertion under unfavourable conditions.

During exertion, anything which constricts the lungs, or impedes the action of the heart, tends to produce disease of those organs, and especially so at an early age, when the bones and cartilages are not matured and yield when pressure is made upon them.

The young soldier of 18 or 20 years of age is but imperfectly grown and developed; many of the bones are not united, and an amount of pressure which would be unfelt by the older man, may be very injurious to him.

In order to see if the recruit is overworked, Major General Rumley obtained returns from all the depôt battalions, showing the amount of drill to which the recruit is subject. We have prepared an abstract of these documents (*see Appendix 3*).

From these returns it would appear that the system of recruit drill is nearly uniform at the several depôts.

About three hours a day are occupied in drill, and this is divided into three periods, viz., one hour from half-past 8 to half-past 9; again from half-past 10 to half-past 11, from 11 to 12, and again from 2 to 3 or from 2.30 to 3.30.

In one or two cases the periods are longer, but in no case exceed four hours.

The knapsacks are worn in most cases only during the last weeks of drill, and then usually only for an hour daily.

The drill extends over a period of about two months, when the recruit goes to rifle drill.

During rifle drill it appears that knapsacks are generally worn, and from this time the pack is carried by the young as by the older soldiers.

In addition to drill, in some stations the recruits go through a course of gymnastic instruction.

We do not perceive that the recruit is made to undergo any excessive labour, or is drilled in any way which is likely to injure him. Three hours' daily drilling is certainly not excessive, and the pack is seldom worn.

It is not, therefore, to the early drill period but to the subsequent time, when the recruit has joined the ranks and performs the same duties as the older soldiers, that we must look for the causes affecting him, if these are to be found in overwork or in the use of improper accoutrements and weights.

This is, in fact, indicated by the result of the Fort Pitt returns, which show that there are more heart and lung cases among the young soldiers during their second than during their first year's service.

The mode in which diseases of the heart, and in a less degree of the lungs, are supposed to be produced by exertion carried on under unfavourable conditions is, as described by the medical members of the Committee, as follows:—

During exertion the movements of the chest increase very greatly; deeper breathings are made, the diameter of the chest enlarges in all directions, causing greater expansion of the lungs; the blood flows through the lungs much more rapidly, and the changes in it, and the evolution of carbonic acid, are trebled or quadrupled in amount; the heart acts much more quickly and forcibly. If anything destroys the equilibrium between the powerful action of the heart and the capacity of the lungs to receive the blood propelled into them by the heart, the necessary consequence is an accumulation of blood in the cavities and walls of the heart, which leads to an imperfect action of that organ, and to organic changes in its cavities or walls. The special heart disease from which the young soldiers suffer is not, we are informed, disease of the valves, but an extreme excitability of the heart, combined with some, but not great, enlargement. During rest a heart of this kind beats easily, but on the least exertion its action becomes extremely quick, then weak and perhaps irregular, and the man becomes breathless.

Now this condition is just that which we should anticipate from the causes in action. The young soldier's ribs and breastbone, while still soft and pliable, are prevented from proper movement by tight-fitting clothes, and by the straps of accoutrements and pack. Of these the cross-belt bearing the pouch is the most objectionable, as it passes across the chest and impedes the movement forward of the breastbone. The waist-belt also, if too tight, hinders the expansion of the lower ribs. The knapsack straps are less hurtful in this way, but they also press to some extent on the collar bone and the first ribs.

It will be seen, therefore, that there is a combination of actions, all leading to the same result.

The mature soldier, with his bones all formed and his muscles full grown and strong, may perhaps bear these constrictions without injury, but not so the young man. It is probable, however, that more or less injury is done to all.

One fact has been mentioned to us of some significance. Of late years the attention of medical men has been much directed to a peculiar appearance on the heart.

It is called the "white spot," and is a round white patch seated on the external coat of the heart. It is now believed to be simply the result of pressure on the heart. In soldiers this spot is exceedingly common, in fact almost universal, as has been shown by the careful post-mortem examinations made at Fort Pitt and Netley by Professors Aitken and Maclean. These gentlemen are strongly inclined to believe, though at present they desire a larger collection of facts before they are quite certain, that this sign of improper pressure is much more common among soldiers than among civilians.

With respect especially to diseases of the lungs, some other causes have been mentioned to us which may be in action. The recruit and young soldier is a good deal exposed to cold during drill, and in the opinion of the medical officers his clothes are not sufficiently warm. It is therefore supposed that he may catch cold more frequently than he would otherwise do, and that in some cases this may bring on more serious diseases.

By the latest clothing warrant (2nd January 1865) the soldier's kit may contain three *cotton* or two *flannel* shirts. The latter article might be made compulsory for recruits.

III.—PATTERN OF ACCOUTREMENTS AND KNAPSACKS.

We proceed now to the third point, viz., to consider what is “the best pattern of accoutrements and knapsacks adapted to obviate the evils complained of.”

We may first say, that the effect on the health of the young soldiers is not the only objectionable point in the present accoutrements and packs. They are irksome and uncomfortable to all. The cross-belt, when 40 or 60 rounds of ammunition are carried, is not only felt tightly across the chest, but the pouch moves and sometimes bumps against the man; the knapsack straps cut under the arms, and cause swelling and numbness of the hands. So great are the discomforts, and so considerable is the loss of rapidity and strength of movement consequent on the pressure thus exerted on the chest and on so many muscles, nerves, and vessels, that all the nations in Europe but ourselves have of late years altered their system of accoutrements and packs. Various propositions have been before our own Government for a number of years, but none have been adopted, chiefly, we conceive, because none have come up to the requirements of a perfect system.

In fact, so many are the difficulties in getting a perfect pack, that there is not one to which some objection may not be taken.

But there is no doubt a great difference in point of ease in different systems. The present regulation pattern we conceive to be the worst of all, and if we cannot recommend an absolutely perfect knapsack and set of accoutrements, that is no reason why we should be content with the present pattern.

We have had under our consideration all the packs and accoutrements we could collect,* and have also had interviews with several inventors, and have perused various reports.† We have spent much time and spared no trouble in fitting and testing the various systems, with a view of selecting such plans as appeared most worthy of a practical trial.

In Appendix, No. 4, we have given a list of all the packs we have examined, and have added a few words stating the reasons why we have not selected them.

In our selection we have been guided by the following rules:—

(a) That the accoutrements and packs should be free from all chance of medical objection on the score of pressure or constriction on the chest, or on muscles, or blood vessels.

(b) That they should be simple, durable, and easily put on and taken off, and not objectionable for military reasons.

The conditions of simplicity and durability excluded some packs in which metal rods were used. If mechanical appliances are permitted, it is not difficult to carry considerable weights without injury; but then there is the disadvantage of the apparatus being liable to break. In two cases we have admitted packs in which metal supports are used, viz., Lieutenant Colonel Carter's and Colonel Sir T. Troubridge's system. In both these cases the risks of breakage of rods are, we are informed, not great, and the advantages of the plans are great, so that we have deviated from our rule, and recommended a practical trial of them.

It is essential to consider at the same time the system of carrying the packs containing the kit, the pouch containing the ammunition, the greatcoat, and the canteen.

The consideration of how the blanket, water-bottle, haversack, and provisions are to be carried is of less moment, as there is little difficulty in arranging for these if a satisfactory adjustment is made of the first weights mentioned.

We

* See Appendix IV.

† List of reports laid before the Committee: Report No. 1. Surgeon Wyatt's Pack; 2. Spiller and Berrington's Packs; 3. Spiller's Pack; 4. Colonel Carter's Pack; 5. Messrs. Silver & Co.'s Pack; 6. Report on Knapsacks and Accoutrements by Medical Officers at Fort Pitt, Chatham; 7. Colonel O'Halloran's Pack; 8. Sir T. Troubridge's Valise; also Report on Trials of Sir T. Troubridge's Valise, Colonel Carter's, Prussian, Colonel O'Halloran's, and the Committee's Packs, made at Netley in 1865, and Report of Trials made at Netley in 1865 with Messrs. Silver's Yoke.

We have proceeded on the supposition that for the infantry soldier the kit which he must carry will be the present field kit, viz. :—

1 cotton or flannel shirt.	1 brush.
1 pair trousers.	1 holdall.
1 „ boots.	1 tin blacking.
1 „ socks.	1 forage cap.
1 towel.	

The total weight being $7\frac{1}{2}$ lbs. to 8 lbs. Also that carriage for ammunition equal in weight to about $5\frac{1}{2}$ lbs. must be provided. The remaining articles of the kit are carried in a squad bag during peace, and in time of war would be left behind.

We have given full consideration to every plan, and have made some practical trials which Colonel Wilbraham had the goodness to superintend at Netley. Of the various plans we have selected the following for additional trial :—

A method of carrying the ammunition has been introduced into the Rifle Brigade which appears to be very successful. A pouch holding 50 or 60 rounds is carried by Lieutenant Colonel Carter's belts, viz., by a central strap which, passing up the middle of the back, goes over the shoulders and below the arm-pits, divides into two straps, one running back to the pouch, the other to the waist-belt. By an ingenious contrivance of Sir T. Troubridge the pouch opens at the side, as it cannot be opened at the top on account of the pack above it.

This plan is certainly open to the objection of bringing a large portion of the ammunition, and thus of concentrating weight, on one spot, but the ammunition is very much more easily carried than by the cross-belt, and the chest is not at all compressed. If this pouch is worn, the kit can be carried above it in one or two ways, either by the plan devised by Sir T. Troubridge, or by that of Colonel Carter.

Sir T. Troubridge's plan is to place the kit in a valise which lies on the loins, and is supported by a yoke which rests on the tops of the shoulders, and is connected with the valise by two curved metal rods which pass in front of and beneath the arms, which, however, they do not touch.

The weight is thrown in the line of the centre of gravity, and is more easily borne. The weight of the yoke and valise is $37\frac{1}{2}$ oz. or 2 lbs. $5\frac{1}{2}$ oz.

Lieutenant Colonel Carter's plan is briefly as follows: Two strong metal rods pass forward from the bottom of a framed pack, and are received into two leathern straps, which pass over the shoulders, and fasten to the metal rods; the arms are quite free. The weight of the pack and rods is about 90 ounces.

Of course the risk of breakage is an argument against such metal contrivances, and we do not disguise from ourselves the gravity of the objection. But, as already said, the ease of these two plans is so great as to lead us to desire a practical trial of them, so that the exact amount of risk of breakage may be fixed.

We beg, therefore, to recommend that the new rifle pouch, and Lieutenant Colonel Carter's pouch, shall be tried with Sir T. Troubridge's yoke, and Lieutenant Colonel Carter's pack respectively.

At the same time, we have been anxious to select some system in which no metal rods are used, and where there can be no risk of breakage and possibly of consequent injury, or, at any rate, of the soldier being suddenly deprived of the means of carrying his pack.

Of all the plans brought before us, that now in use in the Prussian army seemed the only system which appeared worthy of trial.

In this system a framed pack is cut to fit to the back, so that the weight is diffused over a large space; as the pack reaches low down, the ammunition is carried in front on a waist-belt, and two broad straps fixed to the top of the pack pass over the shoulders, and falling to the waist-belt, hook under it, and thus support the pouches. The pouches are then in part a counterbalance of the pack.

The two front pouches hold about 20 English rounds of ammunition each; the rest is carried in a partition at the top of the pack.

The pack is kept steady to the back by two straps running from the broad straps in front under the arms to the bottom of the pack. The weight of the pack is $89\frac{1}{2}$ ounces avoirdupois; the total weight of the pack straps, waist-belts, and pouches $130\frac{1}{2}$ ounces, or 8'1 lbs. avoirdupois.

The greatcoat is carried horseshoe-fashion over the pack or over the shoulder; the canteen is carried on the back of the pack.

There are some great advantages in this plan; the weight is thrown over a large surface; the plan of balance and counterweight is brought into play; there is no injurious pressure; the pack is easily put on and off. It has now been used for four years in the Prussian army, and has been well tested in the campaign with Denmark, and is highly thought of.

There are, however, some disadvantages; the pack is too heavy; it seems absurd to weight a man with a box weighing $5\frac{1}{2}$ lbs. to enable him to carry a weight of $7\frac{1}{2}$ lbs. Too great a space in the pack is given to the ammunition, and it is a question whether this plan of placing some of the ammunition in the pack is a good one. There are occasions when soldiers ought to carry as large a supply of ammunition as possible, yet without other weight.

Again, there are no means of carrying the ammunition without the pack, except on the waist-belt alone; and there is no plan for carrying the greatcoat without the pack, except in a roll over the shoulder.

Struck, however, with the advantages of the Prussian system, we have endeavoured to adopt some of its principles, and have tried to devise a plan of our own, which, though in many respects a borrowed one, is yet, in some points, original, and the results of numerous trials and alterations. We have endeavoured to perfect a plan which might meet the following requirements:--

1. The first requirement is, that 60 rounds of ammunition should be carried alone. The best way of doing this is, we believe, not to concentrate the weight at one point, but to distribute it, and we have therefore made use of three pouches, the largest behind to carry 30 rounds, and two others in front to carry 15 rounds each. We have placed them on a Berrington hip-belt, so that, if necessary, they may be in part carried on the strong arch of the hip bones. To the centre of the back-pouch a strap is buckled which passes up the centre of the back, then divides and passes over the shoulders to the pouches in front. The weights before and behind thus balance each other, and the result is that 60 rounds are carried with extraordinary ease; the pouches are all made to fit close to the body, so that no part of the weight is thrown to a distance.

2. The next requirement is to carry the greatcoat and the ammunition, but without the pack.

By means of two additional straps, which are applied to other uses when the pack is carried, we have contrived a plan of carrying the greatcoat with the ammunition, so that in forced marches or night expeditions the men might take their greatcoats with one or two necessaries rolled inside, without the necessity of carrying the pack.

3. The third requirement is to carry the field kit at the same time that the ammunition, greatcoat, and canteen are carried. We have made a small light pack, cut to the back like the Prussian, which is so arranged as to be buckled to the same straps which carry the ammunition.

The greatcoat straps are now applied for another purpose; they are buckled to the bottom of the pack, pass under the arms through a slit in the strap in front, and then over the shoulder to the top of the pack, so that the bottom of the pack is kept steady, and the top is brought close to the back near the centre of gravity. The plan must be seen to be understood, but it is very simple, and has several advantages. The arm-pit is quite cleared, the bottom of the pack is steadied and raised, the top of the pack is brought close to the neck, so that there is no dragging back. The straps are reduced to a minimum, there is perfect freedom to the chest, there is no pressure anywhere, and the weights are universally diffused.

In front, where the cloak-straps pass through the broad strap running down the front of the chest, a small iron plate, about two inches in length, is introduced to prevent the leather belt from twisting, but this is not in the way, and would not indeed be perceived.

The coat is carried on the top of the pack, and is covered with waterproof. The canteen is carried on the top of the greatcoat, so that all the weights are brought close to the body.

The haversack and water bottle can be carried on the waist belt in front.

The waist-belt can be unbuckled at pleasure, and, if necessary, the coat opened in front when marching.

The pack is put on and taken off with the greatest ease, and without assistance.

This pack has been well tried at Netley, and has been found to be the easiest of any ever tried. The respiration is perfectly free, and no nerves or muscles are pressed upon.

The weight of the pack is 41 ounces, of the pouches and belts 48 ounces, making a total of 5 lbs. 9 ounces.

We believe this pack and the manner of carrying the ammunition to be a great improvement on the Prussian, but of course a more extended trial than we have given to it is necessary.

In fixing the dimensions of the pack, we have assumed that it is required to hold only the articles of the field kit as given on page 9.

In conclusion, we beg to make the following recommendations, and if your Lordship should see fit to authorise practical trials of the knapsacks and accoutrements we have selected, we shall be prepared to draw up a paper of instructions, and, if necessary, to undertake the general superintendence of the trials, and to make a final report when they have been made on a sufficient scale.

We beg to recommend that such a number of knapsacks and accoutrements of the four under-mentioned patterns be provided, and sent to such station or stations, as may be considered necessary to secure a fair trial, proper instructions being forwarded, so that the trials may be conducted on some uniform and comparable plan.

1. Sir Thomas Troubridge's yoke knapsack and accoutrements.
2. Lieutenant Colonel Carter's knapsack and accoutrements, the latest improvements being introduced.
3. The Prussian pack and accoutrements.
4. The pack and accoutrements devised by the Committee.

With regard to the procuring of these patterns for trial, the Committee suggest that authority be given to Sir Thomas Troubridge and Lieutenant Colonel Carter to provide their own patterns. The Committee will undertake to provide the requisite number of patterns of their own and the Prussian pack on receiving authority to do so.

When these various patterns are ready, we would suggest that they be inspected by the Committee for the purpose of seeing that they conform to the patterns chosen by them.

With respect to the Field Companion carried by the serjeants of the Army Hospital Corps, we have requested Professor Longmore to make some experiments in this point, and when they are completed we will make a special report on the subject. Professor Longmore will, however, defer his experiments until some definite conclusion has been come to in respect of the infantry accoutrements and pack.

(signed) *Henry Eyre*, Major General.
R. Rumley, Major General.
A. H. Horsford, Deputy Adjutant General.
T. G. Logan, Inspector General of Hospitals.
E. A. Parkes, Professor of Hygiene.

J. J. Frederick, Secretary,
 War Office, 28 July 1865.

APPENDIX TO FIRST REPORT.

No 1.

STATISTICAL TABLE in regard to HEART DISEASE in the ARMY.

Year.	Ages.	Strength.	Died of Heart Disease.	Discharged for Heart Disease.	Deaths from all Causes.	Discharged as Invalids, from all Causes.	Ratio per 1,000 Strength.				Proportion of Heart Disease to	
							Died of Heart Disease.	Discharged for Heart Disease.	Deaths from all Causes.	Discharged as Invalids, from all Causes.	Total Deaths.	Total Discharged as Invalids.
1861	Under 20	5,363	-	15	14	87	-	2.79	2.61	16.22	-	1 in 6.
	20 to 24	10,456	2	48	71	366	.19	4.59	6.79	35.00	1 in 35	1 in 8.
	25 and upwards	10,900	16	63	120	482	1.47	5.78	11.01	44.22	1 in 7	1 in 8.
1862	Under 20	4,427	-	11	6	41	-	2.48	2.03	9.26	-	1 in 4.
	20 to 24	12,420	1	49	69	289	.08	3.95	5.56	23.27	1 in 69	1 in 6.
	25 and upwards	12,592	18	59	119	427	1.44	4.72	9.52	34.15	1 in 7	1 in 7.
1863	Under 20	3,004	-	2	3	25	-	.67	1.00	13.19	-	1 in 12.
	20 to 24	10,200	1	54	47	319	.98	5.29	4.61	31.20	1 in 47	1 in 6.
	25 and upwards	11,792	21	55	138	481	1.79	4.66	11.70	40.79	1 in 7	1 in 9.
Average, 1861-3.	Under 20	-	-	-	-	-	-	2.19	2.03	11.93	-	1 in 6.
	20 to 24	-	-	-	-	-	.12	4.57	5.65	29.45	1 in 7	1 in 6.
	25 and upwards	-	-	-	-	-	1.56	5.02	10.66	39.40	1 in 7	1 in 8.

No. 2.

THE INFLUENCE OF THE PRESENT KNAPSACK AND ACCOUTREMENTS ON THE HEALTH OF THE INFANTRY SOLDIER.—By *W. C. Maclean*, Esq., M.D., Deputy Inspector General, Professor of Military Medicine, Army Medical School, Netley. (From the Journal of the Royal United Service Institution, vol. viii.)

Mr. Chairman and Gentlemen,

I PURPOSE this evening to call your attention to the influence of the present knapsack and accoutrements on the health of the infantry soldier.

Whatever may have been the case in times past, it is certain that everything bearing on the health and happiness, the moral and physical well-being of the soldier, is now a subject of anxious consideration to the authorities, and of interest to the community at large.

After much careful inquiry into barrack and hospital accommodation, including important subjects of ventilation, drainage, and surface space, very considerable improvements have been carried out, with the results of diminishing sickness and mortality in a very remarkable manner. Increased attention to clothing, food, moral and intellectual training, and wholesome recreation, has gone hand in hand with the other improvements, and materially contributed to the end in view.

Among the improvements just mentioned, few were more imperatively called for than those affecting clothing. If time and the occasion admitted, it would not be a difficult task to show that for a long period of time the inventive genius and good sense of this country were not seen to much advantage in military costume. The "follies of the wise" have often been conspicuous in the clothing and equipment of our soldiers. The generation familiar with heads laboriously soaped, powdered, and pigtail-tied, has only just passed away. The satirist who sang—

"God bless the Guards, tho' worsted Gallia scoff;
God bless their pigtails, tho' they're now cut off,"

has not long disappeared from the clubs of London.

It is only within the last few years that any difference worth naming was to be seen in the dress of the British soldier in Calcutta, and one quartered at Chatham.* A very few years ago I saw a batch of unhappy recruits learning their drill at Arcot, the hottest station in the hot Carnatic, buttoned up in red jackets, lined with stout serge, that had been served out to protect them from the cold of the English Channel.

The great bulk of the British army embarked for service in the Crimea clothed in tight-fitting

* Professor Longmore assures me that the tunics and trousers issued to his old regiment in Bengal during the Mutiny were heavier than those worn in Canada.—*W. C. M.*

allowed to such short service men is but a pittance, and that pittance is granted only for a limited period. Let me remind you again that in the figures I have given, the invalids of the Royal Artillery, the Guards, and the troops serving in Ireland, are not included; they were discharged without being seen by us at all.

Surely, gentlemen, you will agree with me, after hearing a statement so startling, that it behoves us to look narrowly into a question involving such an amount of suffering, costly invaliding, and inefficiency, with a view to the adoption of a remedial measure.

Before I address myself to an examination of the accoutrements and knapsack, and show the evils they induce, I must advert for a moment to three causes which are supposed to exercise a disturbing influence on the organs of circulation, and to act either as pre-disposing or exciting causes of disease of the heart, viz., rheumatism, intemperance, and excessive smoking.

Rheumatism affects the fibrous structures of the frame; these structures enter into the formation of the delicate valves of the heart, and these valves are apt to suffer from this disease, to have their mechanism injured, and so to interfere prejudicially with the working of the heart, the central moving power. Now, many cases of heart disease can be traced to this cause; and soldiers, from the very nature of their calling, are of course much exposed to rheumatism; but, making a fair allowance for this, particularly among old soldiers, an immense number of cases remain that cannot be accounted for in this way. A vast number of the young soldiers discharged the service for heart disease have never suffered from rheumatism at all.

With regard to intemperance, it is undeniable that the presence of alcohol in the blood exercises a prejudicial influence on the heart and great vessels, as well as on other organs, but here we have the same difficulty to meet, viz., that a large proportion of our young lads are lost to the service from heart disease ere they have contracted the baneful habit of spirit drinking.

Nor do I deny that excessive abuse of tobacco may in many cases result in an irritable condition of the heart, incapacitating a man from much exertion; but I think there is no proof that young soldiers smoke more than other classes of the population.

Is it that soldiers are called upon to make greater exertions than the labouring and manufacturing classes? Doubtless the soldier has at drills, marches, and field-days to put forth considerable exertion; but is this more than, or so much as, we see daily done by our "navvies," and others of the labouring classes? I think not. We must look, then, to the different conditions under which the two classes work. A labouring man or mechanic, when he addresses himself to his work, lays aside every weight, and every article of dress that can in the slightest degree interfere with the free movement of his chest and limbs. In like manner, the sportsman, or the Alpine tourist, adapts his dress to the work in which he is engaged. But the soldier, on the other hand, is called on to make the severest exertions, at the utmost possible disadvantage as regards the weight he has to carry, the mode in which he has to carry it, and the entire arrangement of his dress and equipment.

The function of respiration in health, when we are not unduly exerting ourselves, is carried on with so much ease and regularity, that we are hardly conscious of the action of its complicated mechanism; we draw air into our lungs and expel it without an effort. It is only when we experience in our own persons, or witness in others, the effects of even a momentary interruption to the due performance of this function, that we become aware of its vital importance to our very existence. Three minutes' total suspension of respiration, and we die. So essential is respiration to existence, that it is placed under the control and guidance of a part of the nervous system apart from the will, and it is only when the function is interfered with by disease or excessive exertion, that the assistance of muscles, under the direct control of that will, is called in to aid us in the struggle for the free admission of that air, without which we die. Let us glance for a moment at the chest and its contents.

I have here the framework of the torso or trunk. Within the elastic walls of the chest are placed the lungs, the heart, and the great vessels leading from it, and these fill it equally in all its alterations of size; it is so contrived as to shield these vital parts from injury (save of course from injury of an extreme degree), and yet to give them that free play without which their functions cannot be performed. You observe its construction, consisting of the spinal column behind, itself made up of many separate pieces, with an elastic fibro-cartilaginous cushion interposed between its separate parts, represented artificially here, the breast-bone in front, and the ribs or osseous arches enclosing the chest. Note that each rib has a cartilage of prolongation; these are of great strength, and very elastic. By their means the seven true ribs are connected directly to the breast-bone, those of the remaining ribs merely to each other. You cannot fail to observe that there is here unequivocal evidence of a provision for motion. Let us look now at the movements to which this anatomical arrangement points.

During inspiration the collar bones, first ribs, and through them the breast-bone and all the annexed ribs are raised; the upper ribs converge, the lower diverge, the upper cartilages form a right-angle with the breast-bone, and the lower cartilages of opposite sides from the seventh downwards move further asunder, so as to widen the abdominal space between them just below the point of the breast-bone; the effect being to raise, widen, and deepen the whole chest, to shorten the neck, and apparently to lengthen the abdomen. During expiration the position of the ribs and cartilages is reversed; the breast-bone and ribs descend, the upper ribs diverge, the lower converge; the upper cartilages form a more obtuse angle with the breast-bone, and the lower cartilages of opposite sides approximate

so as to narrow the abdominal space between them just below the point of the breast-bone; the effect being to lower, narrow, and flatten the whole chest, to lengthen the neck, and apparently to shorten the abdomen. During inspiration the movement of the lungs and heart is downwards.*

Let us now inquire whether there is anything in the mode in which the soldier is weighted and accoutred likely to interfere with these natural movements more or less at all times, and particularly when making severe exertions. And here I must take the opportunity of saying that this question has been very carefully examined by the professors of the Army Medical School; and, after mature consideration and inquiry into the whole question, we have arrived at the conclusion that the present accoutrements are highly injurious to the health of infantry soldiers, and have a large share in producing many affections of the lungs and heart common among them; in fact, so impressed have we been with the importance of the subject, that, in conjunction with Major Deshon, 2nd Depot Battalion, an officer who has paid a great deal of attention to these points, we made two reports on the pack and accoutrements of the infantry soldier, which reports were presented to the General commanding at Chatham. From these reports I shall quote largely in the course of the following observations. It will perhaps be well for me to mention that two great military nations, France and Prussia, have experienced the inconvenience of a faulty system of accoutrements to such an extent that they have introduced improvements intended to relieve the soldier from injurious pressure upon his chest and abdomen, and to interfere as little as possible with the free action of his muscles and organs.

The weight of the British soldier's clothes, greatcoat, field-kit, and canteen, with 60 rounds of ammunition and 75 caps, havresack, bayonet, rifle, and sling, pack and straps, pouch, &c., &c., is 48 lbs. 5½ oz.

If the soldier has to carry his blanket, as in the field, with rations for three days and his water-bottle, an addition of 12 lbs. is made, making in all 60 lbs. 5½ oz.

Let us now look a little closer at the regulation pack. In the diagram before you (page 16, Fig. 1) is a drawing of it. You cannot fail to see that the whole weight of the pack is thrown on the straps passing under the arms; the pouch and a small packet for caps are carried on the belt, which runs diagonally across the chest, and the bayonet and ball-bag are carried on the waist-belt; the belts are therefore so disposed as to press most injuriously on the chest; the cross-belt, stretched by the great weight of the pouch, impedes the forward movement of the ribs; the waist-belt hinders the expansion of the inferior false ribs, which, as we have just seen, in the state of unrestricted movement, is very great; and the pack-straps press on important muscles, arteries, veins, and nerves to a degree which only those who have carried the loaded pack can appreciate. The weight, especially when the greatcoat is strapped on, falls to a great extent behind the line of the centre of gravity. Now these objections are by no means merely theoretical; soldiers universally complain of the sufferings they endure from the pack and present accoutrements, and if you closely question the sufferers from heart disease, you will find how closely they connect their complaints with these belts and packs.†

It is certain that at no period was the pack more worn than at present. I find that it is worn at least once a day on regimental parade, and on all brigade and field days at all the camps in this kingdom. I have been at some pains to ascertain from regimental medical officers the effects observed on the men, particularly on field days. Some do not appear to have paid much attention to the subject, but the majority seem alive to the ill effects of the pack and accoutrements.

Many men fall out in a state of extreme distress, and many surgeons assure me that nothing but a strong feeling of *esprit de corps* prevents many more from doing so. In all well-disciplined regiments the practice of falling out at drill or on the line of march is discouraged, and men will bear and suffer much, rather than incur the imputation of being "soft"; some, to my own knowledge, have worked on through a field-day, and have died rather than give in. An instance of this occurred at Aldershot on a field-day last summer.

In the first of the reports on packs submitted for the consideration of the general commanding at Chatham, by the professors of the Army Medical School, the following were the general principles insisted on:—

1. To distribute the weight, as far as practicable, over the body.
2. To bring the weight, as far as possible, within the line of the centre of gravity.
3. To allow no pressure on the principal muscles, nerves, arteries, or veins.
4. To avoid most carefully all impediment to the fullest expansion of the lungs, and to the action of the heart.

This rule is a cardinal one. Unless the circulation through the lungs be quite free, continued exertion becomes impossible. The commonest experience shows that the number of respirations, and the amount of air drawn into and expelled from the lungs, is enormously increased by exertion. Late physiological inquiries have shown that the elimination of carbonic

* *Vide* Sibson's "Medical Anatomy." Here Dr. Maclean showed a figure in outline, displaying the extent of these movements, and also a skeleton of a trunk, showing its framework, &c.—*Ed.*

† Here the Professor showed a preparation of a human heart taken from the body of a soldier, with a white spot or corn on it, which he explained arose from the pressure and friction to which the organ had been exposed. He further stated that this "corn," rare in civil life, is the rule and not the exception in the bodies of elderly soldiers.—*Ed.*

carbonic acid is also prodigiously augmented, and this is a necessary sequence of the muscular contraction. If this elimination be prevented by any interference with respiration, no amount of energy or volition on the part of the man will enable him to continue his exertion. Trainers, both of men and horses, have long been aware of this fact.

I have just shown you how impossible it is to carry out such principles as these with the regulation pack, which is constructed as if for the purpose of transgressing them all.

Fig. 2 shows the French pack, that worn by the Chasseurs de la Garde. It is secured by straps going under the arms, as in the English pack; but it is an improvement on the latter, as two straps run down from the arm-straps to the waist-belt, and so relieve in great measure that excessive pressure on the arm so much felt by our men. It approaches the Prussian pack, but is not so good; the pouch (which is small) is carried on the waist-belt behind, and there is no cross-belt whatever; the lungs have therefore very fair play with this pack, the amount of ammunition is, however, smaller.

Fig. 3 shows the Prussian pack and accoutrements. You see that they are arranged differently from any of the others. The ammunition is carried in two pouches attached to the waist-belt, capable of carrying each 20 rounds of English ammunition, and 15 of Prussian. The pack fits to the back, to which it lies as close as possible. Two broad straps pass from the top of the back over the shoulders and fall to the waist-belt, to which they are joined by two brass hooks.

Two other straps run from the lower part of the pack and join these shoulder-straps, so that the pack is quite steady, and its weight is counterbalanced by the pouches in front.

This pack is much superior to ours; it exerts only moderate pressure on the lungs, and none on any muscles or vessels; the weights are close to the body, and the weight of the pack falls within the centre of gravity. The arms have full play. In the trials conducted by us, this pack was invariably preferred by the men to our own, although it was not rated so highly as others.

Figs. 4 and 5 show front and back views of Lieutenant Colonel Carter's accoutrements. Fig. 6, side view of accoutrements and pack. The pack is supported by two straps passing over the shoulders and hooking on to two iron rods, which project forward from the lower end of the pack; the front of the pack is concave, and is made of wicker work; its weight is very great, and it is altogether too large.

It is, however, a vast improvement on the regulation pack. It is borne on the shoulders, and does not press at all on the lungs, or upon any muscles, nerves, or vessels; the arms are quite free. The pouch, which is a large one, hangs away from the body too much. It is, however, carried easily. The belts are too heavy and complicated. In our trials the men reported favourably on this pack, all who tried it declaring it to be an immense improvement on the regulation pack.

The next is Berrington's pack, adapted with Colonel Spiller's rods by Colonel O'Halloran (Fig. 7). The belt represented in this drawing as passing across the chest is done away with in Colonel O'Halloran's improvement pack.

It is carried by means of two flexible steel plates lying in front of the chest, and having attached to them two straps passing from the lower end of the pack beneath the arms. Two rods, with a broad strap between them, support the lower part of the pack against the small of the back; no muscles or vessels are pressed upon, and the arms are perfectly free. The weights are tolerably close to the centre of gravity. With this pack, the pouch and bayonet are carried as in the regulation pack. The steel plates were thought by us an objection to this pack, as by their breadth they, in some degree, press on the ribs in inspiration. The pack, however, in our trials was favourably reported on.

A pack contrived by my colleague, Dr. Parkes (Fig. 8), was also tried. The principle of it is to throw the weight in part on the hips, by means of two straight iron rods running from the bottom of the pack, and fitting into two sockets in a hip-belt. The principle of this pack is sound, but there is a great objection in this, as in the others, to the iron rods, which, if broken on service, cannot easily be replaced. They are also dangerous, for if struck in action the fragments would almost certainly be driven into the body of the wearer, or that of a comrade in the ranks. The conclusion come to by us, after a careful examination of all these packs, and carefully-conducted trials with them all, was, that the regulation mode of carrying the pack was the worst of all; but good as some of the proposed plans are, none of them seem perfectly to answer all the required conditions.

Lieutenant Colonel Carter and Colonel O'Halloran were not the only officers who saw the necessity of introducing a new and a better mode of carrying the pack.

Sir Thomas Troubridge exhibited at the last Great Exhibition a valise, which I now show you (Fig. 9), and on which we (the professors) made a special report to Major General Eyre, commanding at Chatham, an officer who has taken a great interest in this question, and who gave us his cordial co-operation in investigating it.

This pack is carried in a mode different from any of the others. A yoke, on the principle of the milkmaid's yoke, is fixed on the shoulders; from this, two metal rods of tubular copper or of steel, pass down in front of the armpits, which they do not touch, and are hooked behind to a round bag or valise (without any frame), which is carried on the small of the back, or just above the hips. The weight of this valise is chiefly thrown on the shoulders, but it is also partly thrown on the strong hip-bones, in this resembling Dr. Parkes'. There is not the least pressure, either on the chest or on the arm-pits.

As the valise is thus carried so low down, the ammunition cannot be carried in a pouch behind. It is, therefore, placed in two pouches in front (each intended to carry 30 rounds), and a strap passes round the back of the neck, and hooks into each pouch.

A waist-belt

A waist-belt carries the bayonet, and keeps the two pouches steady; the pouches thus balance one another, instead of, as in the Prussian plan, the pouches balancing the pack.

The greatcoat can be carried either on the top of the valise, or in a roll over the shoulder.

On considering the mode in which the weights are distributed on this plan, it is evident that it satisfies all the conditions which we formerly enumerated as essential to a perfect system.

Not the slightest pressure is made on the lungs; no great muscle, vessel, or nerve is pressed upon; the weights are close to the centre of gravity, and are as near the line of the centre of gravity as they can be; while the strongest parts of the body, viz., the tops of the shoulders and the hip-bones, carry the weights.

As far as mechanical and physiological principles are concerned, we see nothing wanting in this plan. The weight, in pounds and ounces avoirdupois, of Sir Thomas Troubridge's valise, with kit, ammunition, &c., is 17 lbs. 12 $\frac{3}{4}$ oz.

Anyone who has seen the enormous weights carried by the Canton water-bearers, or the bhangy burdars and palankeen-bearers of India, all borne on the shoulder, in such a way as not to interfere with the free play of the chest, will see that Sir Thomas Troubridge has thus hit on the right principle for carrying the soldiers pack and ammunition. We submitted this plan to a trial against O'Halloran's pack, as improved and exhibited in the last Great Exhibition.

Four experienced non-commissioned officers and privates, after being carefully examined by me to see that they were free from chest disease, were marched 11 or 12 miles accompanied by Major Deshon, who closely watched them; they used the pack and valise alternately, and on returning, their unprompted statements were taken down by me verbatim. Without going into details, I may say that the reports of all the four men were identical; they all praised Colonel O'Halloran's pack, and thought it much better than the regulation, but they reported of the valise that it was as superior to Colonel O'Halloran's pack, as that was superior to the regulation.

The ease of breathing, the freedom of the arms, the apparent lightness of the weights, the absence of fatigue or exhaustion at the end of the march, with Sir T. Troubridge's accoutrements, were all points strongly insisted upon by these experienced non-commissioned officers and soldiers; nor did they hesitate to affirm that the efficiency of the soldier would be increased to an immense extent by their adoption throughout the service.

In conclusion, I trust that some of the distinguished officers present may be induced to inquire into this subject for themselves, to make comparative trials with the packs just exhibited, and with the contrivance of Sir Thomas Troubridge; if any can be induced to do so, and to investigate it thoroughly, I feel convinced they will find that my colleagues, and the gallant officers who have co-operated with us, have not exaggerated its importance. I am quite aware that the introduction of a new knapsack into the service would be a very costly measure; but if once the fact is established that the present knapsack is costly from the amount of invaliding it entails, and cruel from the suffering it causes, enough will be done to warrant, at least, the gradual introduction of a better. To an audience such as this, I need hardly add that the tendency of modern tactics, all over the world, is to rapid movements in the field, and if it is insisted on that modern soldiers shall march and fight with their kit on their backs, it is obvious that this should be so placed, as to embarrass their movements to the smallest extent, if not, they must fight and march at a grievous disadvantage.

The Chairman.] I am sure Dr. Maclean will be ready to answer any question that any gentleman may wish to put, or should any gentleman wish to illustrate the subject by mentioning the results of his own experience, we shall be very glad to hear him. If no one has any observations to make, I am sure you will now join me in a vote of thanks to Dr. Maclean for the interesting lecture we have had, and for the able manner in which he has delivered it.

No. 3.

DAILY DRILL Season, from November to April, inclusive.

Depôt Battalion.	Station.	Hours.	Distribution.	Period with Packs.
1	Chatham - - -	3.20	8.30 to 9.30 10.30 " 11.50 2 " 3	Only after marching order parade.
2	Ditto - - -	3 on 3 days 2.30 1 day 2 " 1 " 1 " 1 "	8.30 " 9.30 11 " 12 2 " 3	Half-hour on Thursdays. Those sufficiently advanced to take duty in the ranks for drill, with the battalion, from one hour to one and a-half hours. Recruits drilling in rifle drill (which takes place in seven weeks) drill throughout the course (three weeks) in their packs.
3	Ditto - - -	3 on 5 days	8 " 9 10.30 " 11.30 2.30 " 3.30	At rifle drill (2.45 for six days per week) the pack is worn. Those not at rifle wear their packs, from 10 to 10.30, a.m., for the first five days of the week, i. e. two and a-half hours per week.

No. 3.—Daily Drill Season, from November to April, inclusive—*continued.*

Depôt Battalion.	Station.	Hours.	Distribution.	Period with Packs.
4	Colchester - -	3 (Actual drill)	8.45 to 9.45 10.45 " 12.15 2 " 3.15 (The excess over the three hours is taken up in marching).	Twice a week (Tuesdays and Thursdays) at $\frac{1}{2}$ to 11; the recruits parade with packs, but after inspection take them off, except the first squad. During the last week at drill the pack is worn at all drills. During rifle drill worn.
5	Parkhurst - -	3	8.30 to 9.30 11 " 12 2 " 3	Packs inspected on Wednesdays; taken off for drill. At rifle drill (commenced at six weeks or two months) they wear packs; first squad, after rifle drill, are drilled in packs, from 11 to 12. If a recruit is approved, if under age or slight, he wears no pack for four or six months, even at rifle drill.
6	Walmer - -	3	8.30 " 9.30 11 " 12 2.15 " 3.15	Drill, with packs for the last two or three days before being dismissed to drill. Wear their packs during musketry drill.
7	Winchester - -	3	8.45 " 9.45 11 " 12 2 " 3	Only at musketry for 1.30 hours daily.
8	Pembroke - -	3.15	8.30 " 9.30 10.30 " 11.45 2 " 3	First and second class wear packs without greatcoats, from 2 to 3, p.m.
9	Colchester - -	2.45	8.30 " 9.15 10.15 " 11.15 2 " 3	Never with packs.
10	Ditto - - -	3	8.45 " 9.45 11 " 12 2 " 3	Packs worn for one hour each day for about three weeks before being dismissed to drill.
11	Preston - - -	4	8.30 " 9.30 10.30 " 12 2 " 3.30	With packs from 10.30 to 12; the first half occupied with inspection.
12	Athlone - - -	3.15	8.15 " 9.15 10.30 " 11.30 2 " 3.15	All wear packs at the second drill. About one-fifth preparing for musketry drill, wear packs at the third drill.
13	Birr - - -	2.45	8.30 " 9.15 11 " 12 2 " 3	First squad wear packs for one hour on Wednesdays and Fridays. At rifle drill wear packs.
14	Belfast - - -	3	9 " 10 11 " 12 2 " 3	Wednesdays and Fridays, from 11 to 12, with packs.
15	Buttevant - -	3	8.20 " 9.20 10.30 " 11.30 2 " 3	Packs on Wednesday and Friday, from 10.30 to 11.30.
16	Templemore - -	2.15	10.15 " 11.30 2 " 3	During the last month wear packs, once a day from 2 to 3. During the last fortnight wear packs at both drills.
17	Limerick - -	3.20	9 " 9.45 10.30 " 11.30 2 " 2.30	Mondays and Thursdays parade with packs, but do not drill in them.
18	Fermoy - - -	2.45	8.30 " 9.15 10.30 " 11.30 2 " 3	First squad wear packs at 10.30 to 11.30, for 10 or 14 days, before going to musketry.
20	Cork - - -	3	8 " 9.30 10.30 " 11.30 2 " 3	One hour on Monday and Wednesday. Before they go to musketry they wear their packs continually.
22	Stirling - - -	3	8.30 " 9.30 11 " 12 2 " 3	No packs.
23	Aberdeen - -	3.45 (but about 35 minutes occupied in marching to drill-ground).	6.30 " 7.30 10.15 " 12.30 2 " 3.30	One drill daily for about three weeks before going to musketry.

No. 4.

ENUMERATION OF THE VARIOUS PLANS OF CARRYING THE KIT AND AMMUNITION
SUBMITTED TO THE COMMITTEE.

MILITARY PACKS.

1. *British Regulation*.—Ammunition carried by cross-belt; pack carried by straps passing under arms.

Objection.—Chest compressed by cross-belt; pack straps cut the armpits; cause swelling and numbness of the hands; weights badly distributed, so that there is great discomfort and unnecessary fatigue.

2. Ditto, with altered arm-straps of pack.

Objection.—As above, the alteration of the straps failed.

3. *Pattern proposed by Colonel Daubeny*.—The British regulation, with waterproof cover for the greatcoat; all the straps are sewn on, so that there is no fear of loss.

Objection.—As above.

4. *French Regulation* (pattern of 1860).—Ammunition carried on waist-belt behind; pack carried by straps passing under arms, but relieved by additional straps passing to waist-belt.

Objection.—Ammunition too small in quantity; waist-belt drags up, or is made very tight; too much weight thrown still on the armpits.

The plan is, however, a great improvement on the British.

5. *Italian Regulation*.—Identical in principle with the French.

6. *Prussian Regulation*.—Ammunition carried partly *in front*, in two pouches; partly in the knapsack; the pouches are carried on the waist-belt. Pack cut to and supported on the back, and in part carried by straps passing over the shoulders to waist-belt and hooking under the pouches.

Advantages.—Great ease; no pressure on chest; weights tolerably well distributed; pack easily put on and taken off.

Objections.—Pack too heavy; reaches too high, so that the canteen must be carried on the back of the pack. The carrying of ammunition in the pack objectionable.

Recommended for trial.

7. *Danish Regulation*.—Mode of carrying is in principle the same as the French.

8. *American (Federal) Regulation*.—This is a bag which opens in the centre, something like a saddle-bag. It is carried by straps passing over the shoulders and under the arms, as in the British regulation, and is liable to the same objection.

In addition to the above all the accoutrements and knapsacks in the Royal United Service Museum were inspected, but it is not considered necessary to enumerate these; they are all similar in principle either to the French or Prussian.

PLANS PROPOSED BY INVENTORS.

9. *Lieutenant Colonel Carter's Accoutrements, Pouch and Pack*.—Described in Report. Recommended for trial.

10. *Sir Thomas Troubridge's Yoke and Valise*.—Described in Report. Recommended for trial.

11. *Accoutrements and Pack devised by the Committee*.—Described in Report. Recommended for trial.

12. *Colonel O'Halloran's Pack*. (Berrington's Pack, with Colonel Spiller's rods).—A framed pack with leathern straps passing from the top of the pack over the shoulders, and ending in two steel plates which lie on the chest. At the bottom of the pack are two short curved rods, between which stretches a broad band which lies upon the small of the back.

Advantages.—The weight is well distributed on the shoulders and back, and slightly on the chest. The pack is away from the back, and there is good ventilation.

Objections.—The steel plates in part press on the ribs, and restrict their movements after the pack has been worn for some time and the muscles are tired. The rods behind might break and injure the bearer, and are objectionable.

On practical trial it has been found that, although very comfortable, and a great improvement over the regulation pattern, it is not so easy as the packs selected by the Committee.

13. *Mr. Brady's Pack*.—A framed pack, rather larger above; in front, at the lower part, is a small bag, which can hold two or three articles, such as a shirt and pair of socks, which can thus be got at without the pack being opened. The projection thus caused rests on the back.

Carried like the British regulation, or like the Prussian.

As the peculiarity consists merely in the shape of the pack, and as the proposed advantages of this shape did not appear of importance to the Committee, it was not considered necessary to try this pack further. If carried like the British regulation it is open to the same objection; if carried like the Prussian, it has no advantage over this, but is indeed inferior in shape.

14. *Captain Goold's Plan*.—A framed regulation pack, with curved metal springs fixed to the top, and hooking on to the shoulders and front of chest.

Objection.—Opposed by the medical members of the Committee, on account of the compression of the upper part of the chest.

15. *Mr. Fyfe's Plan*.—A framed pack, with straight iron rods projecting from the top and passing over the shoulders; leathern straps run from these to the bottom of the knapsack.

Objection.—Tried at Chatham, and found to press very uncomfortably on the shoulders.

16. *Mr. Silver's Plan*.—A leathern yoke is fitted to the upper part of a framed pack, and is intended to rest on the shoulders.

Objection.—The yoke does not fit all men; in some cases it fits well, in others it is useless, in some inconvenient. As it would have to be cut carefully to fit the back of every wearer, the advantage gained is not commensurate with the cost and trouble.

17. *Mr. Truss's Plan*.—Two strong metal rods hook on to the top of the pack, and then pass upon and rest, by means of curved padded plates, on the shoulders; then passing forward, are screwed into a strong ring in front of the chest; thence a single rod passes to the waist-belt. The rods nowhere touch on or compress the chest.

Advantages.—The weight is thrown fairly on the tops of the shoulders, and is very easily carried; there is no compression anywhere.

Disadvantages.—The apparatus is awkward and cumbrous, and although strong, it is quite possible that it might be broken. These objections are fatal to its introduction into the army, but it has been referred to Dr. Longmore to see if it can be made use of in the carriage of the "Field Companion" of the Army Ho-pital Corps.

18. *Colonel Baxter's Frame*.—Colonel Baxter, of the American army, has invented a wooden frame, which in principle is similar to the frames sometimes used by glaziers in carrying glass.

The frame lies on the back, and has straps above for holding the knapsack. Below the pouch is carried in the same way. The frame itself is carried by two straps running over the shoulders, and then to the bottom of the frame, which is so low down that the armpits are quite cleared. The two straps are connected by a cross breast-strap, to remove all risk of pressure on the armpits. Below a broad strap rests on the loins, on which a portion of the weight is thus thrown.

The plan is mechanically a very good one, but is objectionable on account of the possibility and indeed probability of the breaking of the frame. This renders it quite inadmissible.

19. *Havesac lit Militaire*.—Under this name a French invention has been brought to the notice of the Committee, in which, however, no new principles of carriage are introduced. The idea is simply to attach to the knapsack a waterproof sheeting which may be spread out and used as a bed, while the pack serves as a pillow.

The length of the waterproof is 3 ft. 6 $\frac{3}{4}$ in, and with the pack the total length is 4 ft. 8 in. The waterproof reaches to just below the hips; this plan would no doubt save the soldier to a certain extent, but in our opinion not sufficiently. We do not doubt the importance of the object, but question whether this is the best way of attaining it.

20. *Havesac lit*.—This invention is somewhat similar to the last, but is not intended for soldiers.

A bag is attached to a waterproof which forms either a sheet to be placed on the ground or which can make a sort of coat to protect from rain. The whole thing is carried by a strap over the shoulder, like the common havesack. This is proposed for officers. It is a good attempt, but does not go far enough; the arms are quite unprotected. If the covering were more complete, the plan might be a great service, but some better mode of carrying the sheet and bag would have to be adopted.

No. 5.

LETTER from Professor Longmore.

Sir,

Royal Victoria Hospital, Netley, 22 July 1865.

I HAVE the honour to report that I have lately been trying the manner in which the "Medical Field Companion" and tin water-bottle (see page 238 of Medical Regulations) will have to be worn in case of troops being sent on active service in Europe. I find that the "Companion" cannot be put to its intended use when the knapsack is worn also; and as I am not aware that any provision has been made for the conveyance of the knapsack of the orderly by whom the "Medical Field Companion" is to be carried, I have thought it right to call your attention to the subject.

The manner in which this very useful small case of medicines, &c., is slung across the chest, in connexion with the knapsack itself, might perhaps be a subject proper for the consideration of the Knapsack Committee, of which Inspector General Dr. Logan is a member.

In the medical history of the late war in China, by Inspector General Dr. Muir, c.b., the "Field Companions" are described as "unexceptionable" and "invaluable" (see Army Medical Reports, 1860, page 394); but in China the men did not wear their knapsacks with the "Field Companions," as they would, I presume, be required to do in European campaigning.

I have had two photographs taken to indicate the manner in which the knapsack interferes with the use of the "Field Companion."

No. 1 photograph shows the "Companion" closed, and as it is carried when not in use. The strap over the left shoulder stands out from the back, its direction depending upon the manner in which it is attached to the "Companion."

No. 2 photograph shows the "Companion" after it has been brought round to the front and opened for issue of any of its contents.

When the knapsack is worn, the strap over the left shoulder is found to be so tightly pressed towards the back that the sliding movement which is necessary in order to bring the "Companion" to the front is prevented.

If the greatcoat and a few field necessaries wrapped in it could be worn in the fashion of a knapsack, but without the knapsack itself, the strap of the "Field Companion" would not then be so tightly pressed as to impede its movement to the front. But as the greatcoat, when not worn on the knapsack, is now to be carried rolled, it was found on trial that the projecting of the roll in front was a source of inconvenience by preventing the man from looking fairly into the part of the "Companion" near the waist-belt.

When the greatcoat is worn over the opposite shoulder, the ends of the roll interfere with the movement of the "Companion" from back to front, and *vice versa*.

In the photograph the serjeant major is represented wearing his havresack and sword, and carrying the water-bottle, in addition to the "Medical Field Companion."

The Director General of the Army,
Medical Department.

I have, &c.
(signed) T. Longmore,
Dep. Insp. General.

SECOND REPORT

OF THE

COMMITTEE appointed to Inquire into the Effect of the present System of ACCOUTREMENTS and KNAPSACKS on the HEALTH of the INFANTRY SOLDIER.

To the Right Honourable the Secretary of State for War.

Sir,

IN our first report on the effect produced on the health of the infantry soldier by the present system of carrying the ammunition and kit, we showed that serious injury to health, and considerable inconvenience and discomfort, are produced by the present regulation system. We advised that a change should be made, and that experiments should be instituted to determine the best arrangement. After examining the plans in use in the armies of Europe and America, and a great number of others proposed by different inventors, we selected four systems for trial, viz. :—

1. A plan devised by Colonel Sir T. Troubridge, Bart.
2. A plan devised by Lieut. Colonel Carter.
3. The Prussian regulation system.
4. A modification of the Prussian system, arranged by ourselves.

We have already reported to you that, on trial in London by the Grenadier Guards, at Aldershot, and at Colchester, defects were found in all these plans, and the reports of the trials already furnished, and which are given in the appendix, will prove that some other arrangement had to be sought.

As soon as we learnt that these four systems were unlikely to meet with approval, we recommenced the consideration of the question. In the meantime events had occurred which had an important bearing on our conclusions.

In the first place, the Bohemian and Italian campaigns of 1866 had again shown how necessary it is not to overload the infantry soldier. Even the Prussian knapsack, the best in Europe, did not answer the expectations conceived of it. We need not discuss a matter notorious to all the world, but may state, without fear of dispute, that the conditions of modern war demand that the marching powers and endurance of the soldier must not be lessened by unnecessary weight, or by a defective mode of carrying that weight. *Ceteris paribus*, the army that is least weighted, and that can move with the greatest rapidity, must have the advantage.

In the second place, the introduction of the breech-loading system and the rapidity of fire that can be thereby obtained, has rendered it most desirable to supply to each man a larger quantity of ammunition. But ammunition is very heavy, and thus the two requirements of lessening weight and increasing supply of ammunition, are in direct opposition.

Under these circumstances, it has been supposed by some that the difficulty might be solved by doing away with the soldier's kit in time of war, that is to say, either by leaving him entirely without a kit while on active service, or by carrying it for him.

We are not able to agree with either of these suggestions. To leave the soldier without some articles of his kit on active service would not only deprive him of comfort, but would be injurious to his health; while the attempt to carry his war kit for him would be simply impracticable nine times out of ten.

We need not point out the difficulty which an army, under any circumstances in war time, must experience in providing transport for its indispensable stores, and

reference to first report.

trials made of certain knapsacks.

consideration of the question.

cases suggested by the German War.

breech-loading system and the quantity of ammunition required to be carried.

public opinion respecting soldiers' equipment.

opinion of the committee.

the question of carrying the field kit on carts.

and its daily supplies of food, forage, ammunition, &c. It might, therefore, often be impossible to find conveyance for the field kits, which would have to keep up with the troops. Suppose, however, that carts for carrying them *could* be provided and attached to regiments, it is obvious that, in the countless uncertainties and difficulties of active war, these carts might not always be able to keep up.

It is needless to enumerate the various contingencies that might occur to leave the troops without their kits at the moment when they might most need them. In short, it seems to us beyond all question that a man should himself carry the few articles of kit he really wants in the field, and no more.

Although we thus conclude that the men must carry a war kit, we would reduce this kit to the smallest possible amount. We have done our best, by reference to both old and recent wars, to determine what is really necessary. We find an unanimous opinion that very little is wanted. We believe that the following articles would suffice:—

Kit should be reduced to the smallest possible amount.

- 1 flannel shirt.
- 1 pair socks.
- 1 towel.
- 1 pair boots or shoes.
- 1 hold-all, with comb, razor, soap, and brush.
- 1 soft forage cap, without any stiffening or tuft.
- 1 brush.
- 1 clasp-knife in his pocket.

This differs from the present field kit only by not including trousers and blacking. We have omitted the trousers because they add much to the bulk and weight, and because it may reasonably be presumed that, in these days, protracted separation of the troops from their resources would be rare, at all events exceptional, and that, as a rule, they might fairly rely on having access to their regimental baggage, or to the general stores from time to time, as well as on all occasions of lengthened halts; but under very exceptional circumstances, such as a complete separation from the army stores at a bad season of the year, it might be considered desirable that the soldier should carry a pair of trousers (of the summer woollen material) in his bag. The present regulation boots being very bulky, as well as heavy, we suggest whether a pair of shoes in the bag might not suffice, instead of the boots on service; indeed, we believe the men would often derive great comfort from the change, especially in warm weather and in camp.

Suggestions about the kit.

Every day rapidity of military movements and facilities of transport, and of telegraph communication, are on the increase everywhere. All these are arguments against putting any avoidable weight upon the soldier, and we are of opinion that his efficiency and health suffer far more from his carrying too many things, than from his occasional and temporary absence from any two or three articles of his kit.

Great injury done to the soldier by over-weighting him.

After the late German war, the special military correspondent of "The Times" with the Prussian army wrote, that "the knapsacks were rarely looked into," and we received similar testimony respecting the Austrians and their knapsacks, but that war was too short, and too peculiar in its character, to prove that soldiers on active service can dispense with a certain light field kit. We repeat, however, that it can scarcely be made too light.

The little to be made of knapsacks in the German war.

Field kit can be scarcely too light.

With regard to the ammunition, while we think that on ordinary occasions during war only 60 rounds should be carried, provision should be made for the possibility of carrying about 90 rounds on an emergency, such as the chance of an immediate action.

Provision made for sufficient ammunition.

We have now the pleasure of informing you, that we believe we have devised a plan which will meet these requirements, and which is not only easy to the soldier and free from any possible medical objection, but has a smart serviceable appearance. It certainly deviates considerably from the existing patterns, but we feel sure that its great practical advantages will soon cause any novelty of appearance to be overlooked. It has been tried by Colonel Tidy, at Colchester, and by General Hay, at Hythe; but before we quote the opinions of these officers,

A wholly new system proposed.

we shall describe fully the nature of our arrangements, and the reasons which led us to adopt them.

Keeping in view the conclusions we have already stated, as to the kit and ammunition, we found we should have to provide for a total weight of about 20 to 23 pounds, irrespective of the apparatus itself, or of the rifle, haversack for provisions, water bottle, and blanket, viz. :—

Weight that a soldier must carry.	For the kit - - - - -	6 to 7 lbs.
	For the greatcoat - - - - -	6 lbs. nearly.
	Ammunition (90 rounds) - - - - -	9 or 10 lbs.
	Canteen - - - - -	1½ „
	Bayonet - - - - -	1 „
	Total - - -	23 or 24 lbs.

On ordinary occasions the weight would be considerably less than this, as less ammunition would be carried.

Weight of proposed pack.

The weight of the apparatus for carrying all these has been reduced to about 4 lbs. 3 ounces, instead of 10 lbs. 2 ounces, the weight of the regulation pack and accoutrements.

At least the weight is considerable.

Such a weight as the above (say, 27 lbs.), in addition to the man's clothes (10 lbs.) and his rifle and sling (9½ lbs.), is no doubt considerable, but we do not see how to lessen it. It must however be borne in mind that on ordinary occasions during peace the men would only carry 20 rounds of ammunition, and probably during war seldom more than 60. This would lessen the weight in peace more than 6 lbs., and nearly 3 lbs. on ordinary occasions in war.

The principles on which the weight should be carried by the soldier.

In our first report we laid down the principles on which all weights must be carried, and we have endeavoured to follow them out.

We are convinced that the best system for carrying the greater part of the burden is the yoke principle of Sir Thomas Troubridge, by which the weight is brought fairly on to the shoulder blades, where it can best be borne and is directly over the centre of gravity. We have accordingly adopted a yoke, making it of leather instead of metal, thus obviating any risk of breakage.

Distribution of the weight.

We have distributed the ammunition so as to diffuse the weight. In addition to the ease thus obtained there is another advantage. If 60, still more, if 80 rounds are carried in a single box or pouch there is not only the great inconvenience of concentrating weight (which no plan of carriage altogether removes), but when there is no necessity for carrying the full amount of ammunition the box is quite disproportioned to its small contents. During ordinary service, for example, the soldier only carries 20 rounds; supposing his pouch holds 60 or 90, he is burdened during peace with an unnecessary amount of apparatus. By having several pouches, on the other hand, one or more of these can be left off during peace, and the above objection removed.

Arrangement for the ammunition.

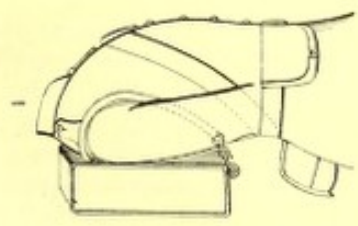
We have found it necessary to place a large portion of the ammunition in front; this has been done not only to facilitate other arrangements, but because the breech-loading system necessitates front pouches to ensure rapidity of loading. We have avoided all the usual objections to front pouches by having two long narrow pouches made of soft black leather and meeting in front. Each of these holds 30 rounds. They project so little from the body as not to be in the way of the rifle, and being made of soft leather they take the curve of the body. They are carried, not by the waist-belt, but by the yoke, and the weight is thus borne on the shoulders, and not by the ribs and stomach.

No weight on the stomach.

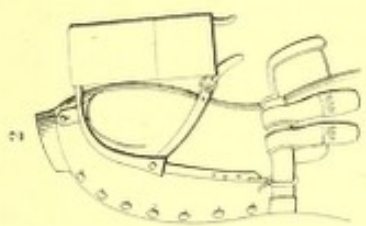
A theoretical objection may at once be raised that these pouches will press on the stomach. Nothing can be more fallacious. They should scarcely touch the stomach, and should hang from the shoulders. It is quite true that no great weight of this kind can be carried in front on a waist-belt; that would cause too much pressure, but when the yoke bears the weight the objection disappears.

Only one pouch to be used in peace, two in war, and mode of carrying them.

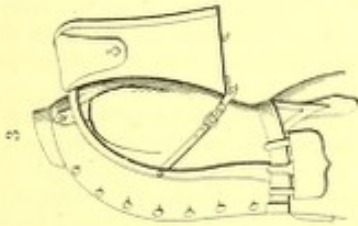
The ease with which 60 rounds are carried in this way is remarkable. These two pouches are made exactly alike. During peace we propose that only one should be issued; this would be borne exactly in the centre in front, and be then



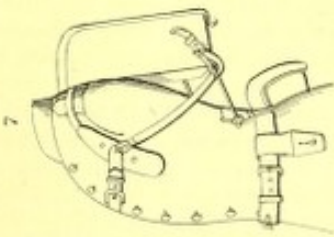
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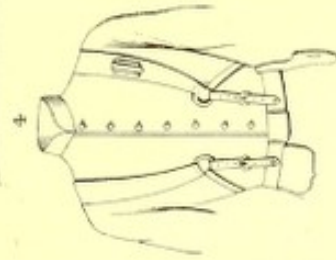
French.



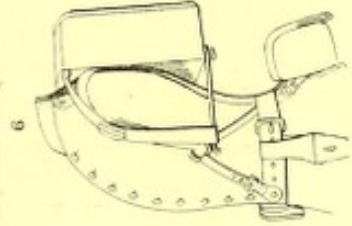
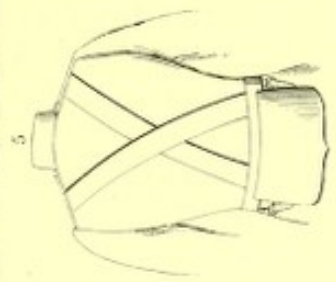
Prussian.



Col. O'Halloran's.



Lieut. Col. Carter's



Dr. Packer's



Sir Thos. Troubridge's

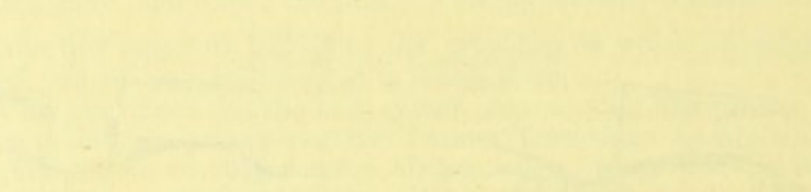
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DURING THE YEAR 1900-1901



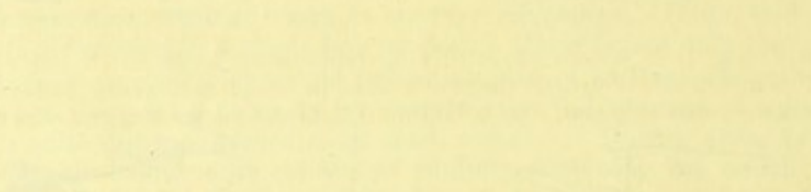
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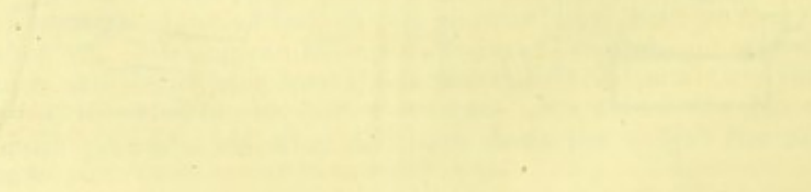
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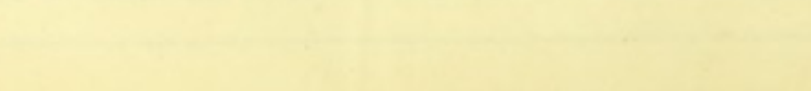
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then supported by the yoke, or at pleasure it may be traversed to the right side, or worn behind when the kit is not carried. When a regiment is called on active service a second pouch (a supply of which would be in store) would be issued, and as no other addition is necessary a few minutes would see a regiment supplied with its war equipment.

In addition to these pouches, containing 30 rounds each in packets of 10, a small bag to contain 10 loose rounds is proposed by General Hay to be worn on the right side, and in addition we have placed two small pouches, each to contain 10 rounds, on the bag which carries the kit.

Extra accommodation for ammunition if required.

Thus the amount of ammunition that *can* be carried by the soldier in war is:—

The amount of ammunition carried in war and in peace.

In two front pouches	-	-	-	60 rounds
In kit bag pockets	-	-	-	20 „
*In expense bag	-	-	-	10 „
				90 „

On all ordinary occasions, however, during peace no ammunition would be carried in the kit bag pockets or in the expense bag. In fact, only one pouch with 20 rounds would be used, and even in war it is presumed that generally no ammunition would be carried in the loose cartridge or kit bag pouches; they would be reserved for days of action, and be filled at the proper moment.

We are perfectly satisfied with the ease of this arrangement, and are convinced that no injury can be done to the men, even if they were called on to carry this large number of 90 rounds for long distances. But we again repeat that our object is not to load the men on all occasions with so great a weight, but merely to provide the means for carrying it on emergency.

The ease and advantages of this plan.

We now come to the question of carrying the kit. We have found ourselves obliged to abandon the framed knapsack. The frame gives an appearance of neatness, but at the expense of increasing the weight and of rendering it impossible to fix the knapsack with that degree of comfort that is essential to the soldier's health and efficiency. In fact we find that the object we have all along had in view is not to be reached with the framed knapsack. Not only to secure perfect expansion of the lungs, but to allow free action to the great muscles of the shoulder and back (action so necessary in the use of the rifle and in the bayonet exercise), it is necessary to remove the stiff framed knapsack from the back.

Insurmountable objections to the framed knapsack.

Free action of the lungs and limbs impossible with it.

The more we considered this point the more we became convinced that the true plan is to place the kit low down, so as to leave the freest action to the muscles moving the neck, shoulders, and shoulder blades. After various trials we have accordingly adopted a bag which holds easily the kit we propose, and will, in fact, on emergency hold the full field kit. On the outside of the bag (as already stated) two pouches have been placed for additional ammunition. The plan, as far as the yoke is concerned, is identical in principle with the valise proposed some years ago by Sir Thomas Troubridge, and in fact we have closely trodden in his footsteps, although we have largely altered all the details.

A yoke bag proposed.

The weight of the bag is distributed in no less than three directions. By means of straps passing to studs fixed on the yoke strap in front and to the yoke at the back of the neck its chief weight is brought on the yoke. It rests, secondly, in part on the sacrum, a strong connecting bone of the hips, and at pleasure it may almost be carried there to relieve any pressure of the yoke. It is also strapped to the waist-belt in front, and is thus partly borne by the belt, partly by the yoke.

How the weight should be distributed.

If

* We think it may be worthy of consideration whether on active service, a pocket below the waist-belt in the man's tunic might not with advantage be adopted for his loose cartridges, thus avoiding an extra article of equipment.

Carried with great ease.

If filled with only the articles we have named we are confident that no man would feel distressed or tempted to throw away his kit, even in the heat of action. It contains all a soldier can want in war time, and at the expense of a slightly increased weight he might carry in it a portion of his food.

Suggested that surplus articles be carried in squad-bags as at present.

During peace we would also advise that he should not carry more than the above-mentioned articles except on special occasions; and that the remainder of his kit should be carried for him in accordance with the present system of squad bags.

Greatcoat, &c.

We have not yet spoken of the greatcoat and canteen. We have placed the greatcoat folded on the back, and attached it to the yoke by a strap, which will also carry the canteen.

The balance system of great value.

One advantage of the system we have proposed is that when the two front pouches are full of ammunition the principle of balance is brought into play, and a considerable increase of weight can be carried behind.

We have already stated that Colonel Tidy at Colchester, and subsequently General Hay at Hythe, have practically tried this system.

They report as follows:—

“ My Dear General,

“ Colchester, 1 March 1867.

“ THE yoke bag had not been here a week before I became aware that a solution was at hand of how to ease the soldier's burthen, and relieve him from a great danger of which he was entirely unaware.

“ After several trials I requested the commanding officer of the 4th battalion to make a longer march than usual, and on its return to camp I questioned a soldier who carried the experimental pack closely. His answers were very satisfactory. ‘ I can not only march with ease, sir, but I can run and jump with this pack.’ I put it on myself and found it very easy of carriage; and I very sincerely hope that it may replace the present pack, for which, to my own personal knowledge, we have been trying for nearly 40 years to find a substitute. I was met here by remarks (theoretical) of those who do not carry packs, that it would never do, it was not like a British knapsack, it was too low on the back, &c. I am only too glad to find that such prejudices are likely to be overcome, and that I may yet live to see the soldier carrying his kit in a way that is not dangerous to his vital functions. All honour to the man who first thought of the plan.

General Eyre.

“ Believe me, &c.
(signed) “ T. H. Tidy.”

MEMORANDUM on the subject of the Yoke Bag sent to me by Major General Eyre for trial.

SEVERAL weeks' trial of the comparative merits of the yoke bag and the present knapsack, pouch belt, and pouch, have most fully confirmed the opinion I at once formed of its value the day I first saw it.

The advantages are so various and striking that I am much surprised they have not long since forced themselves on our attention; the importance of the subject as regards the efficiency of our infantry in the field can hardly be overestimated.

I have allowed the yoke bag to remain in the barrack-room to be tried by any soldier who wished to put it on. Many of the serjeants of the staff of this establishment, men who have for years been invited and encouraged to reason and think for themselves, have also tried it; both serjeants and privates are unanimous in its favour, and speak in the strongest terms of the comparative ease and comfort it affords. Serjeants have worn it several days at position drill.

The perfect freedom given to the arms and shoulder blades, the absence of pressure from pouch belt, and the admirable principle by which the weight is suspended are peculiarly apparent in this drill. The shooting, both individually and in platoon firing, must be improved by its adoption. The pouches are not in the way of the loading, which should be effected from a bag or expense pouch which

which I have recommended, and which should hang like a pocket from the waist-belt or right side. The arrangement of the pouches and pocket in bag, together with this expense bag, admit of 90 rounds of ammunition being easily carried.

A serjeant who has worn the bag for several days at drill declared to me that he would rather drill in the yoke bag with full light marching order kit in it than in the present knapsack without said kit, and this I can quite understand.

There is ample room at each side of bag (inside) to carry a small oil bottle and cleaning rags, jag, &c.; the arrangements to carry a canteen and water bottle require some consideration, but there can be no difficulty in effecting this. The canteen and water bottle, particularly the latter, which appears to me to be too heavy, are of the worst possible shape, and require alteration.

I consider the waterproof capote* which was sent with the bag would be of great advantage on service; it is light, and would keep both greatcoat and blanket dry, and in heavy rain would be valuable to wear or to lie down on.

The advantages possessed by this yoke bag, with its pouches, &c., are so manifest as affecting the comfort and efficiency of the infantry soldier on service, that I venture to hope a practical trial of it on an extended scale may be authorised.

School of Musketry, Hythe,
1 March 1867.

(signed) *C. Hay,*
Lieutenant General.

N.B.—The yoke bag, with pouches, &c., complete, with light marching order kit, weighs 6 lbs. less than the present knapsack with pouch belt and pouch with same kit.

C. H.

We have not yet settled how the havresack can be best carried; we consider the present plan objectionable, as the strap crossing the chest somewhat impedes respiration. We believe that if made a little smaller the havresack might be suspended from the waist-belt; or possibly good pockets in the front of the tunic in time of war might do away with the necessity of the havresack. Havresack.

The present water bottle is objectionable in every way; it is heavy and very inconvenient; a better contrivance ought to be substituted. Water bottle.

Believing that (subject to minor alterations in detail) we have succeeded in finding a servicable, easy, and, as far as health is concerned, an unobjectionable mode of carrying the field kit, greatcoat, canteen, and ammunition, a question arises as to material.

We have employed good black bridle leather for the yoke, as we fear that buff would yield too much after rain. For the pouch we have also used good soft bridle leather, and for the bag enamelled leather. The straps are also all black. The question of material is, however, one which can be hereafter considered. The advantage of black leather is, that it can be well dyed from time to time at small expense, and thus the regiment is kept in uniform tint, which is not the case with the brown leather; and the inconveniences of buff, so great on service when pipeclay cannot be procured, are also avoided. Material.

In conclusion, should our recommendations be approved of, and should any sets of the equipment be made up for use according to the pattern now submitted, we advise that only one pouch be given out, and that we be allowed to examine the first sets before they are distributed. Concluding suggestions about making up and fitting.

We shall be very happy to give commanding officers and others engaged in making the first trials, or afterwards, every assistance by explaining to them the manner of fitting the appointments and the reasons for everything in the proposed arrangements. When the accoutrements and bag have been once fitted to the man (which is done easily), he will have no further trouble, and can put them on and take them off without assistance.

In addition to the infantry equipment, a question was referred to us connected with the Army Hospital Corps. The serjeants of that corps carry in the field a "Field Companion" of the Medical Department.
box

* The capote alluded to by General Hay has not been forwarded, as we consider it a separate subject from the one before us.

box containing bandages, splints, medicines, and medical comforts. At present some difficulty is experienced in carrying these articles, in addition to the framed knapsack. Whenever the knapsack question is finally settled we think that the adaptation of the said field box may then be more usefully considered by experienced members of the Army Medical Department than by our Committee, at the same time we shall always be ready to consider any question respecting it to the best of our judgment, if required.

(signed) *Henry Eyre*, Major General, President.
T. G. Logan, Inspector General of Hospitals.
R. Rumley, Major General.
A. H. Horsford, Brigadier General.
E. A. Parkes, M.D., F.R.S., Professor of Hygiène.

J. J. Frederick, Secretary,
 War Office, 16 March 1867.

APPENDIX TO SECOND REPORT.

Sir, Horse Guards, S.W., 10 November 1866.
 I AM desired by his Royal Highness the Field Marshal Commanding in Chief to transmit, for your information, the accompanying reports which have been received from the general officers commanding the brigade of Guards and the troops at Aldershot on the experimental knapsacks, &c.

I have, &c.
 (signed) *W. Paulet*, A.G.
 Major General Eyre,
 President of the Committee on Knapsacks, &c.

P.S. The report of the officer commanding at Colchester has now been received and is enclosed.

REPORT ON FOUR EXPERIMENTAL KNAPSACKS AND ACCOUTREMENTS issued to the GRENADIER GUARDS.

ON the 9th June four different descriptions of knapsacks, four of each description, were handed over to the 1st Battalion Grenadier Guards, in order that a trial should be made of their merits.

Sixteen men have worn these knapsacks, changing them with each other at fixed periods, so as to compare the merits of the various systems.

No. 1

Is carried by means of a leather yoke upon the shoulder, and the front straps are attached to irons fitting round the waist so as to keep the pressure off the shoulders. The men complain that the yoke presses upon the neck, and that the pack, after long wearing, hangs away at the top, and therefore cuts into the lower part of the back. The irons are a defect, as if broken or lost on service it would be difficult to replace them.

The man's chest is left free, and the tunic may be thrown open without difficulty.

The mode of lengthening the waist-belt, although it gets rid of the buckle, is not so simple or secure as the present method. The pouch, which is made to hold 40 rounds, is not well supported, and hangs heavily, but it is moveable, and can be slipped to one side when required. A small expanding pouch in front on the waist-belt can hold 10 rounds.

This knapsack is preferred to the regulation one.

No. 2

Is carried by means of straps passing over the shoulders hooking to irons attached to the knapsack. In addition to the objection already made to irons, these are so fixed to the pack that they have become loose from wear, and do not support the pack at all, which therefore falls on the small of the back.

At the request of the wearers I have discontinued the use of these packs.

Colonel Carter has an improved system of fixing the irons by means of a nut and screw,
 which

which seems to make them firmer, but the nut is liable to be lost, and the pack thereby rendered useless.

The belts belonging to this pack are very good; they carry the pouch and bayonet easily and are very simple. The pouch is a large one, as there is no front pouch.

The soldier is able to open it from the side and take his cartridges from it with ease.

The kettle is an improvement upon the present kettle, from the mode of fitting the tins.

During the time this pack was worn, before the irons gave way, it was preferred to the regulation pack.

No. 3

Is the most popular with the men, who prefer it to all the others.

The shape of the pack fits the back; it is easily carried, the straps passing over the shoulders, and being attached to the waist-belt so as to prevent the pressure on the arm.

The specimens sent for trial are not made of the best leather; they are rather small for Grenadier guardsmen, and being narrow, the straps are too close for men with thick necks; the mode of lengthening the waist-belt is not so good as the present, and the frog for the bayonet is fixed instead of sliding.

All these are defects that may be easily remedied.

There is a small space for ammunition at the top of the pack. If all the ammunition were carried in the pouches, this space thrown into the knapsack would make it large enough, or it might with advantage be made two inches wider.

The ammunition is carried in two front pouches, only one of which is carried on ordinary occasions, as the left pouch interferes with the movement of the rifle in our present drill.

These pouches might be expanding, and therefore take no room when empty. If the ammunition be removed from the pack, it must be placed in a third pouch behind, made something like No. 2 pouch, to open at the side.

The greatcoat is best carried rolled on the top of the pack.

No. 4

Is the smallest of the packs, and does not appear to sit easily. The wearers prefer the other packs, and even the regulation pack, to this, which cannot contain their whole kit, and is uncomfortable to carry.

The wooden bar at the top presses against the back, and the small strap that passes under the arm cuts it worse than the regulation pack strap.

The straps leave the chest free, and permit the tunic to be opened, but they are somewhat complicated.

There is a pouch behind, and two in front, which, when full, are intended to balance each other, but as in ordinary cases only one-third of the ammunition is in a man's possession, the front pouches are empty, and the belt slips up, unless fitted inconveniently tight.

The pouch is not easily reached, and the ammunition not easily abstracted.

The knapsack cannot be taken off without all the belts being taken off at the same time, and it takes longer to put this pack on than any of the others, and requires assistance.

(signed) *Henry F. Ponsonby,*
Major and Colonel Commanding 1st Battalion
Grenadier Guards.

London, 5 September 1866.

I HAVE inspected the four knapsacks on the men who have worn them, and spoken to them on the subject. They unanimously prefer their present knapsacks to any of the four experimental ones, and I fully agree with the men that none of them, as a whole, are superior to the knapsack now in use. It still remains to hit on some expedient to ease the pressure of the strap of the present knapsack under the arm.

(signed) *J. Yorke Scarlett,*
Lieut. General Commanding, Aldershot.

To the Adjutant General, Horse Guards,
1 November 1866.

Sir,

North Camp, Aldershot, 11 October 1866.

I HAVE the honour to forward herewith the reports on the knapsacks which have been tried in two regiments of the Third Brigade (together with the enclosures marginally noted).

The officer commanding 71st Highland Light Infantry, founding his judgment on that of the men who have worn the packs, and from his own observations, has formed an opinion unfavourable to the four packs.

He condemns decidedly Nos. 1, 2, and 4.

The irons in patterns Nos. 1 and 2, "rub the clothing, injure the stocks of the rifles," are easily lost, and the pack then becomes useless, "and the irons hurt the men's sides."

No. 4 is too cumbersome, and has far too many straps.

No. 3 Colonel Hope considers to be the least objectionable, but of this pattern the wearers report, "That it hurts them across the chest," "in small of back," "sides."

Colonel Hope advocates a lighter kit; the residue, if necessary, to be carried in waggons. The officer commanding 89th Regiment reports that Nos. 1, 2, and 4 are undesirable.

Nos. 1 and 2, for reasons as given above by 71st Regiment.

No. 4. Too many straps.

No. 3 is the best, but requires alterations about the pouches and shoulder straps before it could be adopted.

I also enclose charges for alterations, repairs, &c., to the packs in question, and request the favour of their speedy settlement.

The Assistant Adjutant General,
&c. &c. &c.
Head Quarters.

I have, &c.
(signed) *A. Horsford*,
Brigadier General Commanding
3rd Brigade.

Sir,

Aldershot, 27 August 1866.

I HAVE the honour to report, for the information of the Brigadier-General, that the experimental knapsacks and accoutrements issued to the regiment on the 4th June have been regularly in use since that time.

There are eight sets of accoutrements and eight knapsacks, of four patterns, and each set has changed hands four times.

I enclose the opinions of the men as noted from time to time. It will be perceived that they are not very favourable to any of the equipments.

While fully aware of the defects of the present regulation pattern knapsack and accoutrements, I am forced to concur in opinion with the men with little exception.

I do not approve of the knapsacks cut to the shape of the back as in patterns Nos. 1 and 2.

The straps and fastenings of No. 4 are objected to as too complicated and requiring assistance in putting them on.

The small pouches (as in pattern No. 4) are inconvenient in two things; they move about when the wearer is in motion, and they are in the way when performing the rifle exercise.

The large pouch of this set is extremely good, fitting as it does close to the body. I think small pouches might be made not of the same but of a similar pattern.

The irons (patterns Nos. 1 and 2) which passing under the arm are used for fastening the knapsack I consider very objectionable. They rub the clothing, injure the stocks of the rifles, and if lost on the line of march, there are no means of carrying the knapsack.

The men also complain of these irons as pressing their sides.

It appears to me worthy of consideration, whether it will not be necessary to reduce the load carried by the soldier, the less he carries the fresher he will come into action, and light carts could easily follow the regiment wherever it goes, conveying the men's kits.

Should such a system be adopted, a small sack, easily slung, would be sufficient to contain all that a soldier actually requires for daily use.

The Major of Brigade, 3rd Brigade,
Aldershot.

I have, &c.
(signed) *Wm. Hope*,
Colonel Commanding 71st Light Infantry.

No. 1 Pattern.

1. Private *James Smith*.—Cuts the small of back, straps press on the top of shoulders, the irons press on sides. Would much sooner wear his own.

2. Private *James Brown*.—Very bad knapsack; cuts small of back and top of shoulder. Would sooner wear his own.

3. Serjeant *Andrew Fiddes*.—Hard to carry; hurts him in small of back, the rods press against the side; the whole weight of ammunition in large pouch presses against the stomach.

4. Serjeant *Charles McPhail*.—Hurts the small of back, no support for the ammunition pouch in rear. Would sooner carry his own.

5. Lance Corporal *Hutton*.—Hurts him in the small of back; whole weight of accoutrements lie on the stomach on account of back pouch lying so badly; the rods interfere with shouldering arms, and wears the clothing.

6. Corporal *Duncan McCowan*.—Likes the knapsack well; it would be easier if it was closer to the shoulders. The large pouch hangs badly in rear, too loose from the waist-belt; the iron rods wear the clothing, and interfere with the shouldering.

7. Private

7. Private *Edward Pickett*.—Straps hurt the shoulders, knapsack hurts the small of the back, the accoutrements uncomfortable, weight on the side. Prefers his own.

8. Private *Aithen*.—Very sore across the shoulders and on small of back. Very awkward in running, and waist-belt very sore on stomach. Prefers his own.

No. 2 Pattern.

1. Lance Corporal *William Hutton*.—Hurts small of back, the irons wear the clothing; the knapsack, when doubling, moves about and does not lie steady; the buckle and irons prevent shouldering arms.

2. Corporal *Duncan M' Cowan*.—The knapsack and accoutrements very tiresome to carry; the iron bars wear the clothing. Would much sooner wear his own.

3. Serjeant *Charles McPhail*.—Would sooner carry his own, but thinks the new one better than any of the others. Does not like the accoutrements.

4. Private *Aithen*.—When doubling the knapsack falls back, and the whole weight comes on the small of the back; the iron rods most objectionable, they hurt the sides and wear the clothing; the buckle on the strap impedes the rifle in shouldering.

5. Private *Edward Pickett*.—Same remarks as above.

6. Private *James Brown*.—The iron rods hurt the sides and impede the rifle in shouldering; too many straps; very unhandy. Prefers his own.

7. Private *James Smith*.—Rods destroy the rifle; accoutrements too complicated; very awkward in skirmishing. Prefers his own.

No. 3 Pattern.

1. Corporal *Duncan M' Cowan*.—Rather small for kit; the knapsack light and easy to carry. Would sooner wear his old one.

2. Lance-Corporal *Hutton*.—Too small to hold kit; a little easier to carry than any of the others. Would sooner carry his own. Does not like the accoutrements.

3. Private *A. Aithen*.—Too small for present kit; the waist-belt hurts him on sides; no place for caps in accoutrements; the bayonet liable to fall out of belt in kneeling position.

4. Private *Edward Pickett*.—Large enough for field-kit; hurts him across the shoulders; when skirmishing, small pouches hurt him by jogging up and down; can only hold his rifle as a rear rank at position of "ready," on account of small pouch; in kneeling the small pouch on left side presses the brass of belt into the stomach. Would much rather wear the old knapsack.

5. Private *James Brown*.—Hurts him across the chest, and is too small for his kit; hurts him also on the small of the back.

6. Private *James Smith*.—Same remarks. No place for caps in accoutrements; bayonet not secure in its place, liable to come out when kneeling or doubling.

7. Serjeant *Andrew Fiddes*.—The knapsack easy to be carried; accoutrements are troublesome; pouch in front awkward; knapsack too small for present kit.

8. Serjeant *Charles McPhail*.—Likes it better than his own; sits easier on back; accoutrements not good, hurt the side.

No. 4, Pattern.

1. Corporal *Duncan M' Cowan*.—The knapsack is easy to carry, but there are too many straps, and it requires assistance to put it on; the accoutrements are easily carried.

2. Lance-Corporal *Hutton*.—Too complicated in straps; requires assistance to put it on; accoutrements good.

3. Private *J. Aithen*.—Very hard to get on and off; all the weight on small of back; too small for kit. Would sooner wear his own.

4. Private *Edward Pickett*.—Inconvenient; requires two men to put it on; weight on small of back; the two pouches inconvenient in front. Would much sooner wear his own.

5. Private *James Brown*.—All the weight lies on small of back; very unhandy in placing on; takes two men to harness him every morning; too many straps. Would sooner wear his old one.

6. Private *J. Smith*.—Too many straps; uncomfortable to wear. Would sooner wear his old one.

7. Serjeant *Andrew Fiddes*.—The knapsack lies comfortably; rather complicated in straps; does not come off and on easily; would rather carry it than his own; side pouches in the way when shouldering arms; large pouch good, lies close to the back, and does not shake about when running.

8. Serjeant *Charles McPhail*.—Does not like it; hurts his back and shoulders; considers the large pouch the only good thing about it.

Sir, Aldershot, 29 August 1866.
I BEG herewith to forward the report on knapsacks, and beg to state that Dr. Galbraith will send in his report himself this evening.

The Major of Brigade
3rd Brigade, Aldershot.

I have, &c.
(signed) *J. A. Gore*,
Maj. 71st Reg. Commanding 71st Reg.

Sir, North Camp, Aldershot, 29 August 1866.
I HAVE the honour to offer a few observations for the consideration of the Brigadier General, on the new pattern knapsacks which have been lately tried in the regiment.

The chief objections to the present regulation knapsack are the weight being thrown on the collar-bone and the large muscles of the chest, and the compression of the nerves and vessels at the armpit, benumbing and sometimes swelling the hands.

In the knapsacks numbered 1 and 2 these faults are tried to be got rid of by a balancing of the packs by means of iron side rods, so as to throw the weight on the top of the shoulder, and so relieve the chest and armpit. They are found, however, to be very uncomfortable, the men complaining much of the great pressure on the shoulders and in the small of the back. In moving quickly they sit unsteadily, and with No. 2 particularly I observed that the adjustment of the knapsack to the back was very apt to become disarranged, so that the upper part falls backwards, and still more of the weight is thrown on the loins. The iron rods are awkward additions to the knapsack, inconvenient in various ways, and particularly objectionable for active service, when, in the case of an accident to the wearer, they would be liable to distortion or fracture, which might cause him serious injury. The pouch worn with No. 1 evidently occasioned painful counter-pressure in the pit of the stomach.

No. 4 appears to sit comparatively easily on the back, but owing to the complication of straps and buckles, and the consequent difficulty of putting on and taking off, I should think it would not be suitable for ordinary use.

No. 3 is, in my opinion, the best of the four, and I think an improvement on the present knapsack, in so far as it sits comparatively comfortable on the back, and is retained there without compressing the armpit. The men object, however, to the pouches attached to the waist-belt, as being extremely in the way.

With respect to the knapsack question generally, my opinion is, that instead of exercising mechanical ingenuity in trying how most conveniently to suspend a heavy weight on the soldier's back, which, particularly with the framed knapsack, I consider it impossible to effect, so as to give sufficient ease and freedom of chest and arms to the wearer, the question ought rather to be, whether it is really necessary for the soldier at any time to carry the weight he is now required to do, a weight which, in not a few instances, prematurely breaks down men who, more carefully used, would for years have proved useful soldiers. I believe, in fact, that the large framed knapsack ought to be done away with, and replaced by a small soft valise, in which a certain number of articles considered the most indispensable might be carried on the back, while the rest of the soldier's kit would be stowed in some serviceable kind of bag, to be conveyed for him when on the march. By disencumbering the soldier of at least great part of the burden which now sits on his shoulders, like the "Old Man of the Sea," it seems plain that he would last longer, and be more serviceable for all the purposes for which he is required, both in battle and in times of peace.

The Officer Commanding
71st Foot Light Infantry.

I have, &c.
(signed) *George T. Galbraith, M.D.*,
Surgeon Maj., 71st Foot Lt. Infantry.

Sir, North Camp, Aldershot, 9 October 1866.
I HAVE the honour to enclose remarks on the merits of the several patterns of new knapsacks and accoutrements which have lately been tried in the regiment under my command, as I have taken them down from the lips of the wearers.

I am myself collating these remarks of the wearers, and from my own observation inclined

clined to agree generally with their estimate of Nos. 1 and 2 patterns as undesirable for adoption. I would, however, remark that the man who found most fault with No. 1 is a fine young man of 5 feet 11 inches nearly in height, and good width of shoulders, with a large chest measurement, therefore it is possible that pattern No. 1 may suit middle-sized men better than what we call "Grenadiers."

No. 3 pattern of both kinds seems to be a general favourite with the men, and I think it combines many advantages and improvements. I have great doubts, however, of the durability of the material of either kind, especially of that with the magazine outside; this last seems to me to be the better way of carrying ammunition in the pack; the method of carrying the greatcoat rolled round the top and sides of this pack seems to me the easiest and best, but it is not easily reconcileable with our present "touch" in the ranks. There seems some objection to the mode of joining the supporting strap by a black strap to the pack, as a kind of knot there might, it seems to me, hurt a man who was under arms for several hours.

The back pouch of No. 4 pattern seems much liked and very good, and a combination of it with the waist-belt of No. 3 pattern would be popular, I fancy, with the men.

I have, &c.

(signed) *W. Boyle*, Colonel,
Lieut. Col. Commanding 89th Reg.

The Brigade Major,
3rd Brigade, Aldershot.

REPORT from 89th REGIMENT ON EXPERIMENTAL KNAPSACKS.

1st Wearer, Lance Corporal *Haurahan* (5 feet 11 inches in height), states, after wearing all four patterns:—

No. 1 pattern.—Found it too narrow, and that it hurt the ribs, and that the large pouch with 50 rounds in it is not sufficiently borne up, and the whole weight is on the hips; does not like it so well as the present pack and belts.

No. 2 pattern.—Considers that it is not preferable to the present pattern knapsack, the weight being thrown into the small of the back; the triangular brass fastening on the belt supporting the pouch, which fastening comes a few inches below the neck, above the middle of the back, is highly objectionable, as it is pressed into the back when the pack is full, and bruises it; pouch not steady enough when the man runs.

No. 3, with the magazine outside.—This is a very comfortable pack, with freedom to the chest and arms; but the shoulder straps are too broad for firing, and the two pouches interfere with the present system of manual exercise (and platoon too). No. 3 pattern, with magazine inside, is also a comfortable knapsack; the greatcoat is worn in this rolled round the pack; the material of this is better than that of the first No. 3.

No. 4 pattern is not preferable to the present pattern; the straps are complicated; the supporting straps lift the waist-belt up, which throws the weight of the knapsack back; the pouches in front are of too slight material.

2nd Wearer, Private *A. Hartney* (nearly 5 feet 8 inches in height), has worn all, and states:—

No. 1 is a very severe pack on a soldier's back (this man corroborates most of *Haurahan's* statement as to this pattern).

No. 2 pattern.—Has almost precisely the same opinion as *Haurahan* of this pattern.

No. 3, with magazine inside.—The most comfortable pack he ever wore; found this by experience at divisional field days; but the supporting straps are too broad when firing; the greatcoat is easier rolled round and quicker than the present folding method; it is easily put on and taken off.

No. 4 pattern.—The stick or board at the bottom of this pack hurts his back; there are too many straps; there is more to keep clean about it than in the present pack, and it is not to be preferred to it.

3rd Wearer, Private *J. Powell* (about 5 ft. 7 in.), has worn all, and states:—

No. 1 pattern.—Opinion same as the two preceding men.

No. 2 pattern.—Same fault as the first man as to weight being thrown back; but did not find the pouch unsteady when doubling. A very good mess tin is with this pattern.

No. 3 pattern, magazine inside.—A very good pack, and to be preferred to the present one; does not think the pouches should both be worn in front, as they are in the way; butt of the rifle also slips off the shoulder strap, which it would probably not do if it was narrower.

No. 4 pattern.—This knapsack has a tendency to slip down on the back and touch the pouch; does not prefer this pattern to the present regulation one; but the waist-belt and hind pouch are superior to any he knows.

4th Wearer, Corporal *J. Catling* (under 5 ft. 5 inches in height), has worn all, and states :—

No. 1. pattern.—Objectionable, the weight being on the small of the back ; pouch is not kept steady, and the belt is not strong enough for its purpose.

No. 2 pattern.—Will not sit properly ; straps cut the front part of the shoulder ; pouch also he found unsteady.

No. 3, with magazine inside.—Approves of this pattern, and would prefer it to the present ; has similar doubts, however, to the other men, about the two pouches in working with arms, although they are very good for marching.

No. 4.—As in No. 1, the pack leans into the hollow of the back ; and, except the pouches, he does not like this pattern.

Makes this remark, that none of these new patterns, when worn, cause the numbness to the arm and hand which the present regulation pack does.

6th Wearer, Private *G. Brooker* (height 5 ft. 8 in.).

Speaks specially of No. 3 magazine inside, as the only one affording real ease ; has, however, the same objection as others to the breadth of shoulder straps ; could not speak favourably of any of the others.

7th Wearer, Lance-Corporal *Munro* (5 ft. 6 in.).

Does not like No. 1 pattern (for same reasons as others) ; fired at the butts wearing No. 2, fired well enough with it, but considered it heavier than the regulation pack ; pouch he found unsteady ; the mess tin has an improved handle.

No. 3, with magazine outside, is the best of the lot, and better than the present pack, easily put on, easily taken off ; he does not complain of the breadth of the straps, but admits he did not fire wearing it ; two pouches rather in the way ; this man wore the greatcoat folded flat behind within the flap, and preferred it so to the present pack.

No. 4 pattern.—It takes a man to dress the wearer of this ; does not like it at all ; the pouch, however, is a good one.

8th Wearer, Serjeant *Montgomery* (5 ft. 6½ in.), 19 years 9 months' service.

Wore the whole of these patterns (that is, Nos. 1, 2, 4, and 3, with magazine inside), and considers the last-named as the only really easy one of the lot ; but does not prefer the whole equipment to the present one ; finds that the waist-belt has a tendency to be dragged up in front, but is not supported behind ; the knapsack is good, the belts not so desirable.

Aldershot, October 1866.

(signed) *W. Boyle*, Colonel,
Lieut. Col. Commanding 89th Reg.

REPORT ON KNAPSACKS.

Sir,

Colchester, 10 November 1866.

WITH reference to the knapsacks, four descriptions of which were sent to Colchester for trial, I have the honour to report to you that a careful trial has been made of the whole of them ; this trial was interrupted by the move of several depôts during the summer, and the report has been delayed in consequence. I cannot think it necessary to trouble you with the opinions of the individuals who have worn the knapsacks, which of course have been frequently changed. I have seen and frequently questioned each soldier ; their answers are most perplexing, but this much is certain, that there is no universal feeling that a change from the present to any of the four experimental packs would be entirely satisfactory. Of the four packs the Prussian, or No. 3, indubitably found most favour. I do not think there was a single man but confessed that this pack was a little easier than his usual one, and that but for the pouches in front he could handle his rifle better with this pack on his back than any other. This particular advantage of handling the rifle arises from the pack being narrower and giving the soldier more room in the ranks.

I should say, therefore, that the Prussian pack is the best of the four which were submitted for trial ; as to the pouches, a modification from solid to soft leather would be a simple matter.

The Adjutant General, Horse Guards.

I have, &c.
(signed) *T. H. Tidy*,
Col. Commanding E. Dist.

THIRD REPORT

OF THE

COMMITTEE appointed to Inquire into the Effect of the Present System of KNAPSACKS and ACCOUTREMENTS on the HEALTH of the INFANTRY SOLDIER.

To the Right Honourable the Secretary of State for War.

Sir,

IN their last Report the Committee mentioned that they had prepared a plan based on the yoke principle for carrying the field kit and ammunition of the infantry soldier, and described fully the arrangements they proposed. An extended trial of the yoke equipment was subsequently ordered, and in July last from five to 15 sets were sent to each of the following regiments, a large number of regiments being selected in order that the plan might receive as searching a trial as possible.

Five regiments (the 44th, 56th, 68th, 70th, and 72nd) were at Aldershot, three at Portsmouth (the 34th, 97th, and 98th), and one (the 92nd) at Dublin.

Sets were also sent to the dépôt battalions at Colchester and Parkhurst, to the Royal Marine Artillery at Portsmouth, and to the Royal Marines at Gosport, Chatham, and Woolwich. In all 16 corps received the equipment.

The trials lasted for a month, and in some corps, as in the Royal Marine Artillery, the equipment has been subsequently kept in wear by the men, in order that it might be still further tested.

The reports are given in the Appendix; only one corps (the 92nd) reported unfavourably of the equipment. This report shall be noticed presently.

All the other regiments (15 in number) reported very favourably indeed; and it is only necessary to glance through the reports, and especially the statements of the men themselves (when these are given), to be satisfied of the great advantages of the system. It will be seen that not only is the desirable end attained of carrying the weights comfortably, and without compression of the chest, but that all the other important objects in view are gained.

If, during the ordinary marches and exercises which have been recently made with this equipment, the men have experienced that great relief and comfort which is described in the reports, how incalculable would be the advantages to the soldier in these respects during forced marches on active service. The firing is also remarkably easy, and the perfect freedom of action attained enables the bayonet and all other exercises to be performed with the utmost efficiency.

The generals in command, the commanding officers of regiments, indeed all the officers engaged, appear to have been impressed with the importance of the trials, and took the greatest interest in them.

The Committee consider, therefore, that the matter has been very fairly tested, and that the result may be depended on.

Among the reports will be found one from Colonel Schomberg, C.B., R.M.A., forwarding a report from Lieutenants the Hon. H. Aylmer and La Trobe Cock-craft,

craft, who volunteered to wear the equipment and to drill and march with the men. They did this for a month, and the report gives their opinion as well as that of the six men selected to make the trials. Trials so practically made by officers who possess so thorough a knowledge of the requirements of the service and of the objects sought for, and who are actuated by no other wish than to get the most efficient equipment, can be fully relied on. In confirmation of this, the Committee may state that Lieutenant Cockcraft has constantly superintended the men who have continued to carry the yoke equipment up to this date, and that he has himself made long marches with it and with the altered plans sent for trial, and that he still remains satisfied of the correctness of his report. (*See Appendix, p. 64.*)

Although the yoke equipment received almost unanimous approval, several valuable improvements in detail were suggested during the trials.

The Committee have endeavoured to profit by all criticism, and have succeeded in meeting most of the suggestions.

After making the alterations the equipment was again transmitted to the same regiments, with the exception of the 92nd and of the 70th and 72nd which had left Aldershot. Altered sets were sent to the 34th, 44th, 56th, 68th, 97th, and 98th regiments, to the dépôt battalions at Colchester and Parkhurst, and to the Royal Marines, in all 13 corps.

Although it is not necessary to describe the alterations in detail, the Committee think it right to mention one change of importance.

In the original plan it was proposed to carry during war two 30-round pouches in front, besides the ball bag, so that, including the reserve in the valise, from 90 to 100 rounds could be carried. But very strong opinions were expressed that this was attempting too much, and that two large pouches in front would be inconveniently bulky, and might bring too much weight on one point.

In accordance with these opinions the pouches have been reduced to contain 20 rounds each. In the present arrangement, therefore, from 70 to 80 rounds can be carried, of which 50 or 60 would be in front as in the first plan; but it is proposed that only one pouch to hold 20 rounds, and the ball-bag when necessary, shall be carried during peace, and that every man shall be supplied with the second pouch, so that the war equipment may be complete at any moment.

In the second trials two patterns were sent out, both of them being based on the yoke principle, one for the sake of distinction called the "Brace" plan, as the arrangement of the straps resembles that of a common pair of braces. This alteration was adopted in consequence of observing that in some men the yoke fell back a little, thereby causing the centre of it to become lax, although this was found not at all to interfere with the comfort of the plan. By cutting away the centre of the yoke it was found that the carrying power was not lessened, and a plan, identical in principle with the yoke, but more simple, was arrived at, by which the occasional drooping of the centre of the yoke was obviated.

The altered plans were almost unanimously preferred to the original pattern. (*Vide Appendix V.*)

It will be seen from the Reports that opinions were divided as to the respective merits of the two plans last tried, viz., the modified yoke, and the brace, or rather the brace-yoke equipment.

The majority, however, were in favour of the latter, and judging also from numerous trials made by the Committee, they agree with the majority, and entertain no doubt of the superiority of the brace.

But as some officers of great experience preferred the modified yoke, the Committee have felt it a matter of great difficulty to decide between the two, and under the circumstances they think the best course will be to send out a small number of the modified yoke pattern, say, one set to every four of the brace, so that comparative trials may be made. The alteration from one system
to

to the other can be afterwards made at very little expense, as the pouches and the valise are identical, or nearly so.

As the valise is only intended to carry the field kit, the soldier should be provided with some means of disposing of the remaining articles. A separate painted canvas bag might be supplied for this purpose, as is already done in some corps.

Here the Committee desire to say a few words concerning certain knapsacks and accoutrements which require to be noticed, in addition to those referred to in their former reports.

A plan of carrying the ammunition has been proposed by Assistant Surgeon Oliver, 60th Regiment. It is very ingenious and carries a part of the ammunition easily, but it is not well adapted for the infantry soldier. The Committee have specially reported upon it, and have recommended that if at any time there be a question of altering the cavalry equipment Mr. Oliver's plan may be borne in mind.

Lieut. Colonel Young has sent in a knapsack and accoutrements which are in many respects very clever, and resemble some of the various contrivances proposed by the late Colonel Sir T. Troubridge, C.B. It has been tried at Netley, Portsmouth, and Parkhurst, and was not approved of.

Another plan which the Committee think it necessary to allude to, is the knapsack of Lieut. Colonel Carter, which has been already tried and reported upon (*see* former Reports), and which has also been in use by the 92nd Regiment for some time.

As previously stated the only regiment which reported unfavourably of the first yoke plan was the 92nd. They preferred Lieut. Colonel Carter's knapsack. The Committee believe that as the regiment was in Dublin and could not be visited for the purpose of being instructed in the fitting of this new equipment, the mode of carrying it was not well understood by the officers and men. Be this as it may, the Committee think it right to bring to special notice the report of the 92nd Regiment. At the same time they cannot overlook the reports contained in the Appendix to their Second Report, which refer to the trials made during the summer of 1866, with the four sets of equipment selected by the Committee, including the pack of Lieut. Colonel Carter. These Reports are very clear and unmistakable as regards the system of iron rods. The opinion of the Committee upon the question of framed knapsacks with irons has already been recorded, and remains unaltered.

The Secretary of State for War having lately referred to the Committee a letter from the Adjutant General signifying that the Field Marshal Commanding in Chief is of opinion that the next step should be to test the yoke plan on a more extended scale in certain regiments, or in parts of regiments, the Committee, in accordance with the wish of his Royal Highness, forward herewith patterns of the two plans they propose, viz., the modified yoke and the brace; and they will be prepared to superintend the fitting of the equipment, in order to show exactly how it should be worn, and its capabilities. Should the Secretary of State for War and the Field Marshal Commanding in Chief desire to have further trials made of any knapsack, with the view of instituting a comparison with the plan herewith submitted, the present might be considered a favourable opportunity for doing so.

If such a competition is decided on, two sets of the new Prussian knapsack and accoutrements, which have just been received but not yet tried, might be issued for trial at the same time.

There are some other points connected with the equipment which require notice; viz.; the mode of carrying the water bottle, havresack, and blanket; and various suggestions have been made by Colonel Lambrick, R.M., Colonel Greer, C.B., and other officers.

The present regulation water bottle is a bad one, inconvenient in shape, and far too bulky. An imperial pint (20 ounces) is quite as much as a man need carry on a march; indeed a soda-water bottle which holds much less is now often used in India.

With respect to the present regulation havresack, it is unnecessarily large; and the Committee believe that it might be reduced in size; there would still be room enough for biscuit, tea, sugar, salt, &c., the meat being carried in the canteen.

Colonel Greer and Colonel Lambrick have suggested plans of carrying the havresack on or in the valise. They are identical in principle, and the Committee suggest that a few sets (say four per company) shall be made with Colonel Lambrick's havresack for trial.

The blanket can be either rolled or folded in the greatcoat straps, or carried in a roll over the shoulder.

The blanket, however, is of considerable weight (5 to 6 lbs), and is also very bulky, and it is a question whether it should not always be carried for the soldier when practicable.

When the proposed method of carrying the greatcoat is finally approved, it will be a very simple matter to supply a waterproof cover or cape as suggested by some commanding officers.

During the trials many conflicting opinions were expressed respecting the relative merits of buff or brown leather for the straps, and in the last trials opinions were invited on this point.

These opinions were strongly divided, and the most experienced officers differed from each other; under these circumstances, and as, in addition, the Committee are informed that the military train which have hitherto worn brown leather, have now applied for buff, they are not prepared to advise the introduction of brown leather. At the same time the buff has its disadvantages. They cannot help believing that suitable leather may hereafter be found, and they submit whether further attention should not be directed to this point.

Before ending this Report the Committee desire to advert to the circumstances which originally caused the Right Honourable the Secretary of State for War to order a committee on this subject.

The great number of cases of diseases of the heart and vessels, and of the lungs, especially in young soldiers, had attracted his attention, and he desired to see if the equipment of the infantry soldier had, as commonly supposed, an injurious influence in this respect. In the first report, evidence was given to show that there was really a large amount of disease of the organs of circulation, which was attributed in great measure to exercise under unfavourable conditions. The Committee may direct attention to an interesting table given in the Report from the Royal Marines at Gosport, and compiled from observations by the surgeon of that division, which will give an idea of the way in which the heart labours during severe exercise (page 63). The Committee believe that by supplying an equipment to the infantry soldier which relieves his chest, future statistics will show a more favourable result.

The constant efforts of the Committee have been directed, and their anxious desire has been, to discover a system of equipment which should meet all the requirements of the service, more especially during active operations in the field. And since the several plans brought under their consideration have failed to fulfil the conditions, which in their opinion are essential to the attainment of this end, they have been compelled to devise another system. They think it due to the memory of the late Colonel Sir Thomas Troubridge, c.b., who had for years devoted himself to this subject, to state that the entire merit of the principle is due to him. Their efforts have been directed to perfect his invention, and in this they have been greatly assisted by the valuable suggestions offered by all ranks of the army.

The Committee have only further to observe, that the difficulties of this question have been very considerable, and the experiments and trials requisite to establish a satisfactory conclusion have been necessarily very numerous, and consequently protracted.

Another subject was referred to them by the Secretary of State, viz., the equipment of the serjeants of the Army Hospital Corps in the field. A letter
from

from Professor Longmore, c.B., of the Army Medical School, on this subject, will be found in the Appendix to the First Report.

They would advise that the Director General of the Army Medical Department be instructed to appoint a committee of officers of his department to examine and report to him how the points indicated in Professor Longmore's letter can be met.

The Committee cannot conclude this report without expressing their thanks to all who have taken an interest in the subject, and rendered assistance during the trials.

(signed) *Henry Eyre*, Lieut.-General, President.
R. Rumley, Major General.
A. H. Horsford, Major General.
T. G. Logan, Director General Army Medical
Department.
E. A. Parkes, M.D., F.R.S., Professor of
Hygiene, Army Medical School.

J. J. Frederick, Secretary,
War Office, 20th February 1868.

APPENDIX TO THIRD REPORT.

APPENDIX I.

PRELIMINARY TRIALS of the YOKE SYSTEM.

MEMORANDUM on the subject of the YOKE BAG.—See Memo. at page 26.

APPENDIX II.

INSTRUCTIONS for trying the YOKE PATTERN EQUIPMENT, and for FORM of REPORTS.
(In the following Copy the Drawings are omitted.)

OBJECTS.

The reasons which have led to the yoke system and front pouch being proposed as a substitute for the present regulation knapsack and pouch are these:—

1. There is no injurious pressure anywhere, and no possibility of any injury to the heart and lungs; there is no cutting under the arms or constriction across the chest.
2. Ease and facility of movement are given by the distribution of the weights in various directions, so that no one part is subjected to excessive pressure.
3. The muscles of the arms and back are left uncovered as much as possible, so as to give them perfectly free action in using the rifle and in going through the bayonet exercise.
4. Facility of loading is ensured by the adoption of the front pouch and ball bag.
5. The whole equipment is put on and taken off with great ease, or the different parts of it can be readily removed; for instance, the bag can be taken off without removing the greatcoat and pouch, and the greatcoat can be taken off without removing the pouch or bag. On emergency another front pouch of the same size can be worn, and 20 rounds can also be carried in the kit bag, which contains two pockets for that purpose, so that a very large amount of ammunition can be carried if desired.
6. The weight of the whole is reduced nearly 6 lbs. as compared with the existing regulation equipment.

DESCRIPTION.

The appointments consist of the following parts:—

1. A *yoke* which is passed round the neck, and which being flexible soon adapts itself to the shape of the man. As the buff is at first rather stiff, it is recommended that it be not pipeplayed till it has been worn a few days and become pliable.

2. A *kit bag* which is intended to hold the following articles, or such articles as may be considered essential:—

One pair of boots or shoes (which are best packed by being placed upright at the sides, with the heels below and the sole outwards);

One flannel shirt, pair socks, and towel (which should be placed on the side nearest the body, so that no hard substance may be felt);

Hold all, forage cap, brush, oil bottle (for which a small receptacle will be seen on the right hand side).

The bag is made large enough to hold also a pair of summer trousers, if actually required, or a portion of the rations, but it is advised on ordinary occasions to make the field kit consist of only the above-named articles.

All other articles will as at present be carried for the soldier in squad bags, or in separate bags for each man.

The kit bag is placed at the lower part of the back, the flap side outwards; it is attached by the upper strap (which goes round the bag and buckles below) to the yoke studs in front, and by the lower strap to the waist-belt stud in front; the back strap of the yoke is passed through the D on the top of the bag, and is then fastened at a comfortable height.

The

The top of the bag should not be too high; the most comfortable position for most men is when the bag rests a good deal on the back, but the place varies, and the rule is to try the different holes on the back strap till the most easy position has been determined. There should be no great pull on the front yoke studs, and the yoke straps in front should be nearly straight.

3. A *pouch* (capable of containing 30 rounds) to be worn exactly in front when the yoke and bag are carried, but which can be worn behind if desired, when 20 rounds only are carried, as during drill, sentry, &c.

4. A *ball-bag*, to hold loose cartridges when firing, to be fixed just to the right of the pouch, when carried in front. The bag is made large enough to hold 20 or even 30 rounds when necessary, and to admit the hand easily. It should not be used for carrying ammunition, except on emergency. For ball or blank *practice*, the *ball bag* alone might be carried without the pouch.

5. *Coat straps.*

The manner of fixing the coat is obvious. In order to keep the coat steady the back strap of the yoke is passed over the transverse strap. When the bag is not worn this back strap is passed round the waist-belt. There will be no difficulty in covering the greatcoat with a waterproof, or carrying a waterproof cape if considered desirable. In the Prussian army it has been found an easy plan to carry the coat bandolier fashion, and that plan might also be tried.

6. *Waist-belt.*

7. *Canteen and strap.*

When the greatcoat is carried, the canteen is placed on the top of the coat. When the greatcoat is worn, the canteen is placed on the back strap of the yoke where two runners (one of them moveable) will be seen, the canteen strap is run through them.

All the straps of this equipment are made of full length in order to provide for their being used by men of different heights and sizes. It may therefore happen that on short men the straps may be longer than is necessary; but if the system be adopted the straps to be attached to the waist-belt studs might be made of various lengths, so as to suit men of different sizes; superfluous ends would thus be avoided.

Instructions for fitting.

1. Fit the waist-belt (but not too tight, so as to cause any pressure against the stomach from the pouch when carried in front), then run on the pouch, and place it exactly in front.

2. Place the yoke over the back of the neck, and fasten the straps in front to the two studs on the waist-belt at either side of the pouch, so as to allow the weight of the pouch to be borne by the yoke without dragging the pouch upwards.

3. Put on the kit bag by attaching the ends of the strap which goes round the bag to the yoke studs in front; this strap can be adjusted to the desired length by means of the buckle below the bag on the left side. The lower straps of the bag are then attached to the waist-belt studs (over the yoke straps), and can be adjusted at pleasure by means of the side buckles; these straps should be tolerably tight, but the upper straps to the yoke not so tight as to drag the front yoke straps too much to the sides. Pass the back strap at the yoke through D on the bag, and when the bag is in a comfortable position fix the stud in the strap.

4. The greatcoat folded is carried by the greatcoat straps passed through the two D's on the yoke from below upwards, keeping the transverse strap near the bottom of and inside the greatcoat. The straps are then buckled round the coat, and the back strap of the yoke is passed between the transverse strap and the coat, for the purpose of keeping the latter steady.

5. The canteen, when carried with greatcoat, is placed with its flat side on the top of the coat. The canteen strap being passed under the greatcoat straps is secured on the right side. When the greatcoat is worn the canteen is placed with the flat side to the man's back, and the strap is passed through the two runners on the back strap of the yoke and secured.

To take off the Equipment.

1. If the whole, undo the right hand runner of the pouch; slip the pouch to the right past the stud, and secure the runner again; then unbuckle the waist-belt.

It can be carried thus on the march unbuckled, or at pleasure the whole equipment can be thrown off like a coat, one arm being first slipped out, and then the other. It can be slipped on in the same way.

2. To take off the bag alone, unstud the back strap; then the lower straps which run to the waist-belt, and then the upper straps.

Instructions for Reports.

The points at which it is especially desired that inquiries shall be made and answers recorded respecting the equipment are these:—

1. Is there any constriction on the chest, or any disagreeable pressure anywhere?
2. Is it comfortable during marching and at the double, and what is thought of it in this respect as compared with the regulation equipment?
3. Can the rifle be properly handled, and what facilities of firing are given as compared with the regulation equipment?
4. Can the bayonet exercise be gone through with greater ease than when the regulation knapsack is worn?
5. Would it be an improvement to have the front pouch made to carry 20 rounds only; it being understood that in war time two pouches would be carried, either of 30 rounds each as at present proposed, or of 20 rounds each if the pouch be reduced?
6. During the trials, have any suggestions been made which point out imperfections in principle or detail or indicate possible improvements?
7. Speaking in general terms, is the proposed plan an improvement on the present regulation system, and, if so, is it sufficiently good to be worthy of general adoption for infantry regiments?
8. Has the coat been tried *en bandolier*, and with what result?

War Office, 14 June 1867.

Henry Eyre, Major General,
and President of Committee on Knapsacks, &c.

APPENDIX III.

PRÉCIS of REPORTS of the TRIALS of the FIRST YOKE PATTERN in August 1867.

BY WHOM MADE.	SUCCINCT OF REPORT.								
The General Officer commanding at Aldershot.	Generally preferred by the men to the present pattern knapsack. Slight modification necessary. Recommends a further trial and report at October inspection.								
General Renny, commanding 1st Brigade, Aldershot.	A great improvement on present system, but brown leather belts preferable. The front pouches should be reduced to carry 20 rounds, as two pouches of 30 each would be inconveniently large. <table style="margin-left: auto; margin-right: auto;"> <tr> <td>In Pouches.</td> <td>In Ball Bag.</td> <td>In Valise.</td> <td>Total.</td> </tr> <tr> <td>40</td> <td>+ 30</td> <td>+ 40</td> <td>= 110</td> </tr> </table>	In Pouches.	In Ball Bag.	In Valise.	Total.	40	+ 30	+ 40	= 110
In Pouches.	In Ball Bag.	In Valise.	Total.						
40	+ 30	+ 40	= 110						
Colonel Lacy, commanding 56th Regiment.	Proposed way of carrying the mess tin not good; great heat, and consequent chill when taken off caused by bag resting in the small of the back. Considers flannel belts necessary.								
Colonel Lacy, commanding 56th Regiment.	Far superior to present pack. Front pouches to be reduced to 20 rounds. Brown leather belts, &c. Shape of mess tin to be altered.								
Major Rice, commanding 72nd Regiment.	A very decided improvement on present system. Greatcoat cannot be worn over belts and ammunition in wet weather. Canteen in wrong place; should be on the bag.								
Major Geddes, commanding 44th Regiment.	A great improvement over the old pattern knapsack. Very hot after a field day. Mode of attaching mess tin objectionable. Front pouch interferes with the rifle. So many buff straps objectionable. Enamelled leather of wallet not serviceable.								
Colonel Greer, commanding 68th Regiment.	Is most satisfactory. A great improvement on the old system, and is in fact the best and easiest method for the soldier that he is aware of. Mode of carrying mess tin does not answer. Smaller buff straps not substantial enough.								
Lieutenant Colonel Cooper, commanding 70th Regiment.	An improvement on the present pattern. Excessive heat at back. Mode of carrying canteen objectionable. 30-round pouches to be reduced to 20 rounds.								
Lieutenant General Sir George Beller, commanding South-western District.	A decided improvement on the regulation system of equipment. Its general adoption in infantry regiments would be one of the greatest practical benefits ever conferred on the service. 20 instead of 30-round pouches recommended, and minor improvements suggested. Mode of carrying canteen bad.								

BY WHOM MADE.	SUCCINCT OF REPORT.
Officer commanding 34th Regiment.	The best in every way that could have been selected. The men are unanimous in saying that the new equipment is as comfortable as they can imagine it can possibly be made. Can be taken off and put on by the soldier with the least possible delay. Canteen requires a runner to keep it in its place. 20 instead of 30-round pouches recommended.
Officer commanding 97th Regiment.	More comfortable and more adapted to service than the present regulation equipment. A decided improvement, and worthy of general adoption. The ball bag when filled with ammunition is liable to knock against the hip.
Officer commanding 98th Regiment.	My own opinion is decidedly in favour of the new system. The men all say that the change from the present to the proposed equipment is an immense relief, worthy of general adoption in infantry regiments; 20 instead of 30-round pouches recommended.
Officer commanding 92nd Regiment.	All the men state they do not like the valise on account of its being awkward to put on, and when on it is not so comfortable as their own knapsack, which they prefer. They likewise complain of the complication of straps and of the heat.
Royal Marines, Woolwich -	Highly approved by all the men who have tried it. The Colonel Commandant, however, fears that the valise may produce an injurious pressure on the spine.
Royal Marines, Chatham - -	A very great improvement on the present system. The men state they can march quite as freely and as easily with as without the yoke and valise. Brown belts strongly recommended.
Royal Marines, Gosport - -	The men are unanimous in considering the new accoutrements the best that could be devised, and earnestly hope they may shortly be supplied universally. The Colonel Commandant considers them a great improvement on the present regulation, and thinks their adoption will be beneficial both to the health and comfort of the soldier. Mode of carrying the canteens objectionable. Brown leather instead of buff belts recommended.
Royal Marine Artillery, Portsmouth.	The new equipment has been tried by Lieutenants Hon. H. Aylmer and Cockcroft and six men. Incomparably superior in every respect to the present regulation pack, and worthy of general adoption in the infantry. Pocket in tunic instead of expense pouch recommended, and black belts instead of buff. Waterproof cover to greatcoat, and water bottle should be added.
Colonel Jeffreys, commanding 5th Depot Battalion, Parkhurst.	Far better than old equipment, and all soldiers speak well of it. Worthy of adoption. Mode of carrying mess tin objectionable. Minor alterations in straps, &c. proposed.
Colonel Tidy, commanding at Colchester.	Universally preferred to that now in use. The men say they would rather carry the bag with a field kit in it than the present knapsack empty. No comparison as to fatigue in a march. Recommends immediate introduction of an equipment from which so many advantages are to be derived, not only in a medical but in a military point of view.
Colonel Farren, commanding 4th Depot Battalion.	More comfortable on the line of march than the old pack, and causes less fatigue. The facilities in handling rifle infinitely greater. Mode of carrying canteen objectionable. Buckles instead of studs recommended, and belts to be of brown instead of buff leather. An improvement in many important respects upon the present regulation system, but great heat is caused at the loins by the position of the bag.
Lieutenant Colonel Ross, commanding 8th Depot Battalion.	Result of trial very satisfactory. Considers the new equipment preferable to the old. The men can march with much greater ease and freedom with the new bag than with the old knapsack, and use their rifles better. The only objection to the introduction of the new system is that the bag causes considerable perspiration about the loins, which after marches might render soldiers very liable to sudden chills.

(24,362—932 & 937.)

REPORTS of the TRIALS of the FIRST YOKE PATTERN in August 1867.

(Clothing, &c.—G. S./1867.)

My Lord,

Aldershot, 31 August 1867.

56th Regiment, with
minute by Major-
General Renny.
72nd Highlanders.
44th Regiment.
68th "
70th "

IN compliance with the instructions contained in your letter, dated Horse Guards, 23rd ultimo, I have the honour to forward, for submission to His Royal Highness the Field Marshal Commanding in Chief, reports from the regiments specified in the margin on the trial made of the 50 pattern sets of equipment on the yoke system of carrying the ammunition and kit of the infantry soldier.

They appear to be generally preferred by the men to the knapsack now in use, but some alterations appear to be necessary before being finally adopted.

The mess tin is very inconveniently carried in the proposed plan; the suggestions of Colonel Greer would remedy this, but when the greatcoat is in use it would be displaced, and some other method must be adopted. It might be fixed to the strap which connects the yoke and the bag.

It is necessary some air should be admitted about the loins, which become heated.

As on the whole the plan seems to have met with approbation, as compared with the old plan, I would suggest that further trial should be made; that each commanding officer should be at liberty to alter and readjust the pack and straps and coat, and that a further report should be made at the October inspections.

The Adjutant General, Horse Guards,
London.

I have, &c.
(signed) J. Yorke Scarlett,
Lieut. Gen. Commanding Division.

(784/67.—A. A. G. 26/8/67.)

IN forwarding the accompanying reports from the officers commanding 56th and 72nd Regiments, I beg to state that I entirely concur in their opinions as to the new plan being a great improvement on the present regulation system, and well worthy of general adoption for infantry regiments, but I would beg to suggest that the belts (as being more serviceable) should be of brown leather; that the front pouch should be reduced to carry 20 rounds, as two pouches of 30 each would be inconveniently large; this on service would enable the soldier to carry in these two 40 rounds; 30 can easily be carried in the ball bag and 40 in the kit bag; total 110.

The proposed way of carrying the mess tin is not good, as the tin slips down the straps, besides not being placed upright. I would suggest whether a more conveniently shaped one could not be contrived.

The men do not approve of the greatcoat *en bandolier*; they say it is so much in the way.

The kit bag resting on the small of the back causes great heat in that part, and consequent chill when it is taken off, so much so that I would consider flannel belts necessary when it is worn.

(signed) H. Renny, Major-General,
Commanding 1st Brigade.

(3128-273—1867.)

Sir,

Orderly Room, Aldershot, 26 August 1867.

IN obedience to your memorandum of the 25 ultimo, I have the honour to report on the yoke system of carrying the ammunition and kit as follows:—

1. There is no constriction on the chest nor disagreeable pressure anywhere.
2. It is comfortable during marching and at the double, and as compared with the regulation equipment it is far superior in these respects.
3. The rifle can be properly handled, and the facilities of firing given as compared with the regulation equipment are that the rifle can be much more easily brought up to the shoulder, and the absence of bulk on the shoulders gives much more room than the knapsack.
4. The bayonet exercise can be gone through with much greater ease than with the regulation knapsack.
5. It would be an improvement to have the front pouch reduced to carry 20 rounds only, as two pouches to carry 30 rounds each would be inconveniently large.
6. When the front pouch is empty, the yoke with the coat, kit, bag, &c., for want of a counterbalancing weight, falls down and draws up the waist-belt in front.

Suggestions.

The mess tin to be of the present shape elongated and placed lengthwise, *i.e.*, the flat side resting on the top of the coat, the curved side towards the neck; the mess tin to be secured by loops to the coat straps to prevent it slipping down.

The belt and appointments all to be of brown leather with brass buckles.

7. The proposed plan is a great improvement on the present regulation system and well worthy of general adoption for infantry regiments.

8. The coat has been tried *en bandolier* and found to prevent the rifle from being properly handled. It is much more conveniently carried folded square on the back.

I have, &c.

(signed) *R. W. Lacy*, Colonel,
Lieutenant-Colonel, Commanding 56th Regiment.

The Brigade Major, 1st Brigade, Aldershot.

(785/67.)

Sir,

Aldershot, 26 August 1867.

IN accordance with your memorandum, dated 25th July 1867, I have the honour to report, for the information of the Major General commanding, that the 10 sets of equipments on the "yoke system," issued to the regiment under my command have been in use by the men to whom they were entrusted for trial since the above-mentioned date, and I am of opinion that the system is a very decided improvement on the present one.

1. There appears to be no constriction on the chest or any great pressure anywhere.
2. Marching at the "double" is undoubtedly facilitated.
3. The rifle can be well handled and the butt more easily brought into the shoulder than at present.
4. The bayonet exercise can be more easily gone through than with the regulation knapsack.
5. I do not think it would be an improvement to reduce the size of the front pouch. I would have each pouch capable of carrying 30 rounds if required.
6. One or two suggestions have been made to me during the trials, and I think that the system is still capable of improvement.

I would beg especially to notice the fact that it does not allow of the greatcoat being put on over a man's belts and ammunition in wet weather (the pack and canteen only being outside) as can be done with the accoutrements now in use.

This I think might be arranged.

The canteen is worn, I think, in the wrong place. I would put it either on the top of the bag, the greatcoat being folded smaller to give it room, or on the outer flap of the bag, for which purpose two black straps with a buckle might be fitted on to the bag and passed through runners on the canteen cover.

7. At first sight there appears to be a complication of straps, but they are all useful, and none of them can, I think, be well dispensed with.

The men who have worn the new accoutrements and pack much prefer them to the old ones, and I am of opinion that the system might be generally adopted in place of the present one with great advantage.

8. The greatcoat has not been tried by me *en bandolier*.

I have, &c.

(signed) *Cecil Rice*, Major,
Commanding 72nd Highlanders.

The Brigade Major, 1st Brigade.

(No. 1516/3.—No. 305—1867.)

Sir,

Aldershot, 24 August 1867.

WITH reference to Horse Guards letter of 23rd July 1867 (Clothing, G. S.—1867), containing instructions regarding the issue and trial of sundry sets of accoutrements on the yoke system, I have the honour to report that 10 sets were issued to the 44th Regiment, and that they have now been in use for the last month; the men at first did not thoroughly understand the mode of fitting them, but since they have been seen and adjusted by one of the Committee, I consider they are a very great improvement over the old pattern knapsack so far as regards the freedom of action, and the weight, being more distributed, appears to be less felt by the soldier. The men complain that after a field day the wallet has a tendency to make them very hot, from adhering so close to the body; the greatcoat also is

hot, unless it is folded of a smaller size than shown in the diagram. Taking them throughout the men appear well pleased with them.

There are a few objections I would point out; the mess tin being placed on its side is not available for carrying rations of meat, as the gravy would escape. The front point interferes with the rifle at the position of load as a front rank, and the leather it is made of does not appear to be sufficiently strong to resist much wear and tear. Owing to the number of buff belts and straps requiring to be pipeclayed, I am of opinion that the pipeclay would tend considerably to injure or impair in a short time the look of the tunic. The enamelled leather of which the wallet is made does not appear to be at all serviceable; during the short time they have been in use the enamel has rubbed off in several places.

I have, &c.

(signed) *J. Geddes*, Major,
Commanding 44th Regiment.

The Brigade Major, &c. &c.,
2nd Brigade.

(No. 473.)

Sir,

North Camp, Aldershot, 30 August 1867.

I HAVE the honour, in compliance with your memorandum, to report, for the information of the Lieutenant General commanding the division, with reference to the experimental method of carrying the soldier's kit, greatcoat, ammunition, &c., that I consider, after having made a careful trial, that the method proposed is most satisfactory, a great improvement on the old system, and in fact the best and easiest method for the soldier that I am aware of.

I consider that some little alterations will be necessary, for instance, the method proposed of carrying the mess tin does not appear to answer; when on the top of the greatcoat it knocks against the man's head on the march (especially at the double), and when pushed back to prevent its doing so it slides down the coat straps and hangs awkwardly at the back having a very irregular and unsteady appearance.

I have had a slight alteration made in some of the coat straps so as to fix it in what I consider the best position at the top and back of the greatcoat straps with the *lid up*. (See next page).

I think some of the smaller straps of the kit bag might be made of somewhat stronger buff, as the proposed straps would probably, when wet or when exposed to a damp climate, stretch and tear; I allude to the lower straps from the bottom of the kit bag to the waist-belt, as those having most strain on them.

I have, &c.

(signed) *H. H. Greer*, Colonel,
Commanding 68th Light Infantry.

The Assistant Adjutant General, Aldershot.

(O. R./70th.)

Sir,

Aldershot, 30 August 1867.

I HAVE the honour to report as follows upon 10 sets of equipments on the yoke system, supplied to the regiment under my command for experimental wear:—

1st. There appears to be a very important relief from constriction of the chest and other disagreeable pressure; the men speak of feeling that the buttons of the shoulder straps under the yoke and the four buttons on the tunic under the bag cause some discomfort; this appears, however, to be a point capable of remedy by the removal of the buttons altogether or having them made flatter.

I have also found that there is a difficulty of keeping the yoke in its proper position; the weight of the kit bag has a tendency to pull the yoke backwards, this draws up the waist-belt and pouch in front, causing a pressure on the stomach; no trouble has been spared in re-adjusting the straps, but I have not been able to overcome this difficulty.

2nd. It is, I think, on the whole more comfortable on the march. The men complained a good deal of excessive heat along the back; on this point I would suggest as an improvement that the coat straps instead of being attached to runners on the yoke should in some manner be fixed; such arrangement, by keeping the coat higher, would leave a space between the coat and bag and obviate in a measure the heat complained of, and the coat in that position (about three or four inches higher) will look much smarter. This suggestion would be incompatible with carrying the canteen on the top of the coat, but this is so objectionable that I take for granted it will be altered; the objections to it are, firstly, that the canteen cannot be properly fixed in that position; at present no attempt is made to do so, and the result after a short distance is that it slips down to the bottom of the coat. With one set I had the canteen fixed on the back of the coat with two studs passing through the canteen strap and the coat strap; I found this answer fairly well. I am of opinion that whatever

COLONEL GREER'S PLAN OF CARRYING THE CANTEEN AND HAVERSACK.



Mess tin strap supported.



Straps to hold the mess tin as above inside the greatcoat straps



is the mode of fixing the canteen that the proper position is the back of the coat, whether as regards convenience or appearance. Another objection I consider to carrying it as directed in the instructions would be that in hot weather the canteen with its black cover will absorb and hold such an amount of heat as to be quite unbearable so close to the back of the head and neck. My regiment has lately formed part of a flying column, and when on the march I permitted the men to open and close the waist-belt as they pleased, and they spoke of the alternate changes as affording a pleasant relief, and in this particular a decided improvement on the existing accoutrements, which are not susceptible of any change short of taking off the pack when halted. The men are somewhat divided as to whether the new possess any important advantage over those now in use in doubling, but I should be inclined myself to say that when the adjustment and fitting of these accoutrements has become more familiarised to the men they will be found to possess advantages in this respect.

3rdly. The men are unanimous as regards the increased facility afforded in handling the rifle and in firing.

4th. The same remarks fully apply to the bayonet exercise.

5th. I am of opinion that the adoption of a 20 round pouch would be an improvement, that for 30 rounds somewhat interferes with the use of the rifle, especially when at the slope, which is the ordinary position of the rifle; it further strikes me that it would in war time be hardly possible to carry two 30-round pouches in front.

6th. I have given such suggestions as have occurred to me, each under the particular heads to which they refer.

7th. Speaking in general terms, I consider the proposed plan an improvement on the present regulation system, and with such modifications and alterations as the experimental wear with different regiments will have suggested, I think it worthy of general adoption for infantry regiments.

8. The coat "*en bandolier*," cannot be in my opinion satisfactorily combined with the new plan. The 70th Regiment in New Zealand when on actual service in the bush, always left their knapsacks behind and carried their coats "*en bandolier*," with a blanket and field kit inside; this arrangement was found to answer well; one great advantage of it is that the men could shift it from one shoulder to another, by which change much relief is experienced on long marches.

I have, &c.
(signed) W. S. Cooper, Lieut.-Colonel,
Commanding 70th Regiment.

The Major of Brigade, 3rd Brigade, Aldershot.

Sir,

Portsmouth, 14 September 1867.

IN compliance with the instructions contained in your letter (Clothing—G.S.—1867) of the 23rd July 1867, I have the honour to acquaint you that the 14 sets of equipments on the yoke system forwarded for trial in this garrison were issued in the proportions indicated to the regiments named in the margin.

The equipments were fitted on the men under the personal superintendence of Dr. Parkes, member of the Knapsack Committee.

After a months trial, the commanding officers of the selected regiments sent in the reports (3) annexed.

Having compared these reports with that submitted on the 10th instant from Colonel Jeffreys, commanding 5th Depot Battalion, and having observed and questioned the men wearing the yokes, I am of opinion,—

1. That in the yoke equipment there is no constriction of the chest or disagreeable pressure anywhere

2. That it is as comfortable as it seems possible to make a weight of such amount on the march and at the double, with the following trifling exceptions:

(1.) The canteen sways about at the double and knocks against the soldier's head.

(2.) The mode of fastening the greatcoat is not secure enough; it is unsteady at the double.

(3.) The ball-bag when full knocks against the hip and would harass the men on the line of march.

There can be no comparison as to its comfort when compared with the present most inconvenient pack.

3. The rifle can be properly handled, and it is much more convenient for firing in than in the old equipment.

34th Regiment,	4 sets.
97th "	5 "
98th "	5 "
Total	- 14 sets.

4. It is also more convenient for the bayonet exercise.

5. The question as to the amount of ammunition to be carried in the front pouches is a difficult one.

There can be no doubt that it would be easier for the men to have two pouches with 20 rounds in each, rather than two with 30; the latter would press heavily on the stomach.

On the other hand it is an obvious advantage to have 60 rounds of ammunition always at hand.

On the whole, however, I am inclined to prefer the pouches for 20 rounds only, as giving greater ease to the men, and because I believe that the rapid fire of the Snider rifle, from its excessive severity, will only last for a short time in any case of real service, and will thus lead to a small rather than a great expenditure of ammunition.

6. I believe the following changes would be improvements:—

(1.) The back-strap and lower yoke-strap to be adjusted by *buckles* and not studs. This is very important. The comfort of the equipment depends entirely on its being well fitted, and it is adjusted mainly by lengthening or shortening these straps. Now, the buff of which they are made constantly stretches with rain and with weight, and this shifting can only be met by a buckle.

(2.) Two straps on the upper and lower flat side of the canteen cover connected with the coat-straps (as lately proposed by the Committee) would obviate the swaying of the canteen.

(3.) There is a tendency when the full equipment is on for the yoke to sink down at, and fall away from, the back of the neck. This requires attention. No care in fitting has succeeded in preventing it. I am inclined to think that it is mainly owing to the way in which the greatcoat is fastened on. It might be worth trying whether this would not be obviated by making the yoke of good stiff, strong leather, which would not give to the weight so much as buff.

7. This system of equipment is a decided improvement on the regulation one. It is both much easier for the men on the march, and gives greater liberty for handling their arms in action. Its general adoption in infantry regiments would be one of the greatest practical benefits ever conferred on the service.

8. The system of carrying the greatcoat *en bandolier* has been tried, and it has been found that when worn over the right shoulder the soldier cannot fire with ease, and when over the left he cannot shoulder his arms properly.

I have, &c.,
(signed) *George Buller*, Lieutenant General,
Commanding S.W. District.

The Adjutant General, Horse Guards,
London, S. W.

(York Equipment, 34th Regiment.—A. 2—No. 72—1867.)

Sir,

Portsmouth, 30 August 1867.

In compliance with the instructions, dated Horse Guards, 23rd July 1867, I have the honour to report as follows on the four sets of new equipment sent for trial to the 34th Regiment, for the information of his Royal Highness the Field Marshal Commanding in Chief.

1. There is no constriction on the chest, nor is there, as far as I have been able to judge, and from what the men who have worn them state, any disagreeable pressure anywhere, and I am of opinion that the same weight could not be carried more easily or comfortably in any other manner.

2. It is most comfortable during marching and at the double, and can hardly be compared with the old, which was in every way the reverse. I have made the men wearing the new equipment also wear the old, and they are unanimous in saying that the new is as comfortable as they can imagine it can possibly be made, and that the difference between them is as six to one.

3. The new equipment gives the soldier perfect freedom to use his rifle properly in every position, which is most certainly not the case with the present knapsack and accoutrements.

4. The bayonet exercise can be gone through by the soldier with as much ease as if he had not the kit-bag and accoutrements on, whereas with the present knapsack his movements are extremely cramped and impeded.

5. I should recommend that the front-pouch be made to carry only 20 rounds of ammunition, and on service a second one to hold 20 rounds be also carried, as both I and the surgeon major of the regiment are of opinion that the two pouches containing 30 rounds each would press too heavily on the soldier's stomach, and that it would be better that any
ammunition

ammunition needed on service beyond this amount and that in the ball-bag be carried in the kit-bag.

6. Except the following slight alterations I cannot make any suggestions for the improvement of the new equipment, as it appears to me the Committee have so thoroughly tried it in every way, that the present is the best in every way that could have been selected; great care must, however, be taken at first in getting it properly fitted to the soldiers.

Back-strap of the Yoke.—It was found that by the stud being fixed on the loose end of the back-strap of the yoke difficulty was experienced in shortening that strap to the required length when the greatcoat was placed on the wearer, as the strap requires to be shorter when the coat is worn than without it. I accordingly caused the stud to be removed and secured on the opposite or fixed end, with the view to facilitate the necessary alteration of lengths required, and the back-strap passed through the D. on the bag the contrary way to that directed in the instructions, and this appears to have quite answered the purpose.

The Canteen.—Requires a "runner" at each of the four corners to keep it properly in its place, and this I am informed is to be done if the equipment is generally adopted for infantry regiments.

7. The proposed plan is in my opinion the greatest improvement that can possibly be made, as it enables the soldier to use all his limbs with perfect ease and freedom, and especially on the march in hot weather, when he can unbuckle his waist-belt and march with his tunic partly unbuttoned without in the least deranging the adjustment of the equipment, and it can be taken off and put on again by the soldier with the least possible trouble.

The greatcoat was worn "*en bandolier*" by the men of 34th Regiment for several years in India when parading for all guards and duties, and it was then found that it was impossible for the soldier to use his rifle properly while so wearing it.

I have, &c.,
(signed) *J. Jordan*, Lieutenant Colonel,
Commanding 34th Regiment.

To the Assistant Adjutant General,
South Western District, Portsmouth.

(Yoke Equipment, 97th Regiment. New Accoutrements on Trial, 97th Regiment,
No.).

Sir,

Portsmouth, 5 September 1867.

WITH reference to your memorandum of the 29th July 1867, forwarding copy of Horse Guards letter, Clothing/G.S./1867, dated 23rd July 1867, I have the honour to forward herewith the report therein called for on the proposed yoke system of carrying the ammunition and kit, the result of my personal observation and inquiry of the men who have tried the new equipment for a month.

To the Assistant Adjutant General,
Portsmouth.

I have, &c.
(signed) *Edward D. Harvest*,
Major Commanding 97th Regiment.

1. (*Question.*) Is there any constriction on the chest, or any disagreeable pressure anywhere?—(*Answer.*) None.

2. *Q.* Is it comfortable during marching and at the double, and what is thought of it in this respect as compared with the regulation equipment?—*A.* Yes; it is more comfortable and more adapted to service, giving more freedom and obviating the restraint of the present equipment.

3. *Q.* Can the rifle be properly handled, and what facilities of firing are given as compared with the regulation knapsack?—*A.* Yes; greater facility of firing afforded. The rifle is easier brought to the "present."

4. *Q.* Can the bayonet exercise be gone through with greater ease than when the regulation knapsack is worn?—*A.* Yes; greater freedom being given to the arms.

5. *Q.* Would it be an improvement to have the front pouch made to carry 20 rounds only; it being understood that in war time there would be either two pouches of 30 rounds each as at present proposed, or of 20 rounds each if the pouch be reduced?—*A.* The pouches as now arranged do not interfere with the working of the rifle; it is therefore thought advisable that the 30-round pouch should be kept in preference to the 20-round pouch, for, with the breech-loading rifle the ammunition is so quickly expended it is desirable to carry as much ammunition as possible.

6. *Q.* During the trials have any suggestions been made which point out imperfections in principle or detail, or indicate possible improvements?—*A.* The men all say that they have found the packs very easy and comfortable. The ball-bag, however, filled with am-

munition, is likely to knock against the hip and harass men on the march, particularly at the "double."

7. Q. Speaking in general terms, is the proposed system an improvement on the present regulation system, and if so is it sufficiently good to be worthy of general adoption for infantry regiments?—A. It is a decided improvement, and worthy of general adoption.

8. Q. Has the coat been tried *en bandolier*, and with what result?—A. Yes; the coat folded in this way seems to keep firmer to the back, but the men say the bottom of the greatcoat is likely to get torn and worn out quickly by this method of folding, yet the old way of rolling the greatcoat was much more calculated to tear.

Edward D. Harvest,
Major Commanding 97th Regiment.

(Yoke Equipment, 98th Regiment.)

Clarence Barracks, Portsmouth,
12 September 1867.

Sir,

I HAVE the honour to report, according to instructions received, the result of one month's trial of five kit-bags on the yoke system supplied to the regiment under my command.

I waited until Professor Parkes showed me the proper mode of adjusting all the component parts, and then handed over the five men selected for report to Lieutenant Raper of the regiment under my command, an officer of great merit, who I felt convinced would give the subject his constant attention.

I directed this officer to test the yoke system by long marches into the country, as well as by causing the men to wear the new accoutrements at drill and on guards and duties.

Also, the five men with the new accoutrements and five men of the same relative height and build, the latter with the old pack and accoutrements, were frequently marched out some miles into the country, and then made to change accoutrements and packs and march home again.

On another day the five men who had before started with the old-fashioned pack and belts started for a march with the new kit-bags, and after a march out changed with the selected five and marched home with the old pattern pack, &c.

The same test was applied to doubling, skirmishing, manual and platoon, and bayonet exercise.

The report of the officer and the men is in favour of the new system.

The men say the change from the old pack and accoutrements to the new after a march of some miles is an immense relief to them, and that at drill they have much greater freedom.

My own opinion is decidedly in favour of the new system. There is one point to which I respectfully suggest the attention of the Committee should be directed, *i.e.*, that the top of the yoke, which at the back should touch the collar of the coat, is apt after exercise to drag down, and will not keep its position in some cases. I wrote to General Eyre on this point, who suggested that my back-straps were too tight, but I found that loosening, or even removing altogether, the back-strap does not, on some men, remedy this.

The report of Lieutenant Raper herewith forwarded fully answers all points enumerated as requiring report in the printed circular.

The Assistant Adjutant General,
Portsmouth.

I have, &c.
(signed) *F. Peyton*, Colonel,
Lieut. Colonel Commanding 98th Regiment.

Sir,

Portsmouth, 11 September 1867.

IN compliance with instructions received from Colonel Peyton, I have given special attention during the last four weeks to the yoke system of carrying the ammunition and kit, and I now request you will do me the honour to submit for his information the subjoined remarks on that system. In these remarks I follow the order of the questions asked in the printed "Instructions for Reports," viz:—

1. There is no constriction on the chest nor disagreeable pressure anywhere if the yoke is properly fitted and the straps are adjusted to the requisite length. Where these conditions are not fulfilled there is (*a*) a weight on the belly from the pouch if the yoke-strap is too tight so as to drag upwards; (*b*) a slight pressure on the hip, which arises from the yoke-strap being too loose, the weight of greatcoat and canteen drag the yoke from its position on the shoulder, and by tightening too much the upper straps of the kit-bag cause pressure on the hips. On these points men would require instruction in the first instance, afterwards would readily learn to adjust the straps to their true and most easy length.

2. It is comfortable during marching and at the double; compared with the regulation equipment, exceedingly so. At the double the kit-bag remains steady and does not cause unusual sweat on the loins, even if worn for a considerable time. A trifling discomfort some-

times

times occurs thus: The transverse strap which steadies the coat is apt to work upwards in doubling; the coat then flaps, and the canteen, in the case of short-necked men, strikes the lower part of the head. This could easily be remedied by securing the coat to the D of the kit bag by means of a transverse or other strap.

3. The rifle can be properly handled (with the exception regarding pouch mentioned in Answer 5), and in comparison with the regulation equipment greater facility of fire is given; 1st, as regards individual firing, the butt can be more closely held to the shoulder; 2nd, as regards fire in line or close order, there is greater freedom in coming to the "present," the coat not interfering with the play of the elbow in the same way that the regulation knapsack does.

4. The bayonet exercise can be gone through with much greater ease than with the regulation knapsack; indeed, there is generally more freedom of action for the arms in the use of the rifle.

5. It would seem to be an improvement to have the front-pouch made to carry only 20 rounds; it is at present too long, and interferes slightly with the rifle when at the "slope," and also in some of the motions in the manual exercise. A pouch carrying 20 rounds, secured by only one runner, would appear preferable. On emergency two pouches might easily be carried, one on either side of the waist-belt plate, each containing 20 rounds, and a third containing 30 rounds could be worn at the back resting on the top of the kit-bag. (This I believe to be the best position for the pouch; with the equipment now under trial it acts as a support to the coat, and is itself supported by the kit-bag.) These three pouches, together with 20 or 30 rounds in the ball-bag, and 20 more in reserve in the kit-bag, would furnish an ample supply of ammunition for war purposes without exceeding the weight of the regulation equipment.

6. Without having observed any imperfection in principle, I would suggest the following possible improvements in the details of the equipment:—

(a.) That the principle of distribution of weight would be more effectually carried out by the introduction of a short projecting support of stiff material, extending to the front from the yoke, with a view to keep the yoke-straps as free from the chest as possible; padding to the front of the collar-bone might effect the same object, but a projector allowing a current of air to pass would be more comfortable in wear. Either of these arrangements would assist to fix the yoke steadily on the shoulders.

(b.) That the strap connecting the yoke and the waist-belt should be of one piece, and not aided by the short link-strap now in use. The main fault of the equipment appears to be that the yoke is slightly dragged from its position on the shoulders. I believe this arises from the yoke-strap not being sufficiently tightly secured to the waist-belt, so that the weight of greatcoat and canteen cause the yoke to drag, there being no support for it in front of the collar bone. The back-strap does not appear to be the cause of this dragging, as when it is entirely loosened the yoke still drags unless the front strap of the yoke is made very tight. The alteration I propose would help to tighten the yoke strap, while the weight of the upper strap of the kit bag would afford sufficient ease to prevent constraint on the belly from too great tightness of the yoke-strap. It is also desirable to reduce the number of loose straps as far as practicable. Should it be deemed advisable to retain the pivot movement gained by the link-strap, it might be effected by means of a swivel without detaching the strap.

(c.) That the yoke-stud in front should have a more decided head and neck, as, from its present shape, the strap of the kit-bag often slips off; also stitching (or some other mode of strengthening) the stud-holes of the respective straps would be useful to prevent the buff widening from constant wear.

(d.) That the straps on the kit-bag should be more strongly fastened to it, as the present stitching does not appear durable. When separated from the yoke men would be apt to carry the kit-bag by one of its loose straps, which might tear from it unless strongly secured. To enlarge the D of the kit-bag, like the handle of a carpet bag, would assist to obviate the above cause of damage, as well as be a great convenience to men without their accoutrements, as on furlough, &c.

(e.) That the coat should be more thoroughly steadied, as mentioned in Answer 2.

(f.) That a pouch having only one runner, as suggested in Answer No. 5, could be more readily fastened in any position between the studs and straps on waist-belt.

7. Speaking in general terms, the proposed equipment appears an improvement on the regulation system, as causing no undue pressure on the vital organs nor constriction anywhere; as affording greater ease and comfort in wear, as well as more thorough freedom for the limbs in marching and in the use of the rifle; the men, too, would find it more handy when fairly accustomed to it. In the abstract, and as compared with the regulation equipment, I think it worthy of general adoption for infantry regiments, but as compared with other inventions I am unable to give an opinion.

8. The coat has been tried "*en bandolier*," but the result is not satisfactory. It hampers the movements of the rifle and weighs disagreeably on the shoulder and chest; occasionally on the march, as a relief, or when without arms or accoutrements, it might be so carried with advantage.

The men fitted with the new accoutrements have had them constantly in wear during the month of trial, and the foregoing observations are based mainly on their experience and testimony.

To the Adjutant, 98th Regiment,
Portsmouth.

I have, &c.
(signed) *A. G. Raper,*
Lieutenant, 98th Regiment.

(Clothing, &c. /G. S./1867. No. 1086.)

Sir,
The Curragh Camp, 17th September 1867.
WITH reference to your letter of the 25th July, number and dates as per margin, I have the honour to state, for the information of his Royal Highness the Field Marshal Commanding in Chief, that the six sets of equipment on the yoke system were duly received and the same taken into wear by men of different stature for more than a month. I have now to report that each man's statement was taken by me, and all stated that they did not like the valise on account of its being awkward to put on, and when on that it was not so comfortable as their own knapsack, which they all preferred. One man stated that he would sooner carry a full kit in his knapsack than a field one in a valise. The men likewise complained of the complication of straps and of the heat caused by the valise being so close to the body.

The Adjutant General, &c. &c.
Horse Guards.

I have, &c.
(signed) *C. M. Hamilton,* Lieut. Col.
Commanding 92nd Highlanders.

(No. 512.)

Royal Marine Barracks, Woolwich, S.E.,
6 September 1867.

Sir,
1. WITH reference to R. M. O. letter of the 5th instant, I have the honour to report that the yoke system of carrying the ammunition and kit has been tried at this division for several weeks, and that it has been used in marches of 12 miles, at rifle practice, and during ordinary field days.

2. The men who have worn the new appointments all speak in high terms of their comfort when compared with the old cross-belts and knapsack, stating that in all exercises they experienced freedom of action and no numbness.

3. As far as I have been able to judge I consider the yoke system an improvement, but I am not prepared to state that I think it a good one.

4. The yoke itself is, in my opinion, objectionable, producing a pressure which, if not injurious, is very undesirable, at the top of the spine, and confining a man just where all pedestrians like to be loose and cool.

5. The front pouch, or that mode of carrying the ammunition, I think a great improvement, and I know from experience that it has been so worn on long marches (in Spain in 1839) with ease and comfort to the soldier.

6. The coat "*en bandolier*" is approved of here, and was so used by a company at the time referred to above, when I had an opportunity of observing the comfort that that method gave to the men, for when on the line of march, if they were hot and tired, they changed the coat from shoulder to shoulder.

7. The kit-bag, if the coat be carried "*en bandolier*," ought, I think, to be worn higher.

Colonel S. N. Lowder, C.B., A.D.C.,
Deputy Adjutant General, Royal Marines.

I have, &c.
(signed) *W. Suther,*
Colonel Commanding R. M. W. D.

Royal Marine Barracks, Woolwich,
28 August 1867.

Sir,
I HAVE worn the new pattern knapsack from the 9th August till the 24th instant, of which time I have gone through a course of musketry instruction, which I consider I can stand at preliminary drill double the time to what I could with the old one. When marching it rides very easy to what the old one does. The weight being equally divided on all parts, you have the free use of the arms at all times. I like it much better than the other.

Colonel Suther, C.B.

I am, &c.
(signed) *F. Timbury,* Serjeant, R. M.

Royal Marine Barracks, Woolwich,
29 August 1867.

Sir,

I HAVE worn the new pattern kit and accoutrements, marching out 10 or 12 miles every morning for the last fortnight with it, and like it a great deal better than the old-fashioned knapsack and belts, because it does not tire me one-half as much. I don't sweat so much, and feel no pain across the chest or arms, nor any numbness in the hands or arms, as I have often done after a much shorter march with the old pack. I like the coat worn "folded" best.

To Colonel Suther, c.B.

I am, &c.
112 Co., *James Power*, × his mark.
Witness, *Joseph Tatum*, Serjeant Major, R. M.

Royal Marine Barracks, Woolwich,
30 August 1867.

Sir,

I WORE the new pattern set of accoutrements and kit-bag during my annual ball-practice, and like it very much, as it gives so much more freedom to the chest and arms, and I can march and shoot much better than with the old, which used to pain me across the chest and arms, and tire me very much more than the new does. I would rather wear the new pattern two hours than the old pattern one hour.

Colonel Suther, c.B.

I am, &c.
(signed) 24 Co., *C. Collier*, Private, R. M.

Royal Marine Barracks, Woolwich,
30 August 1867.

Sir,

I MARCHED out into the country about five miles, carrying the new pattern kit-bag and accoutrements, and found them easier and more comfortable in every way than the old knapsack and belts, which I changed for the new pattern to march home again with, when the difference between the two systems struck me very much, as at the end of the march with the new kit I felt no pain in the chest or arms, as I always do whenever I march a much less distance with the old.

To Colonel Suther, c.B.

I am, &c.
(signed) 16 Co., *Frederick Dancer*, Private.

Royal Marine Barracks, Woolwich,
29 August 1867.

Sir,

I HAVE worn the new pattern set of accoutrements 14 days, and find it far more comfortable for marching than the old knapsack and belts, because it gives much more freedom to the chest and arms, and the weight is more easily and evenly-disposed over the body. I prefer the coat rolled and secured in a circle behind the shoulders, because it is cooler than when padded.

To Colonel Suther, c.B.

(signed) *William Greasley*, Private, 24th Company,
Royal Marines Light Infantry.

4th Division.

Royal Marine Barracks, Woolwich,
30 August 1867.

Sir,

I HAVE carried the new war-kit from 10 to 12 miles before breakfast for 11 days, and found no inconvenience whatever, and when it is properly fitted, a man can march 10 or 12 miles quite easy; but the greatcoat is best rolled, and put on the back in a circle as short as possible.

I am, &c.
(signed) *James Callam*, Serjeant,
Royal Marines Light Infantry.

Royal Marine Barracks, Woolwich,
28 August 1867.

WITH reference to the new pattern knapsack, I beg to observe that it is far superior to the present one, as it allows perfect freedom of the arms, without any feeling of tightness at the chest, and allows the wearer to feel more at ease and less fatigued after marching any distance.

(signed) *T. Smith*, Serjeant.

Sir,

I HAVE carried the new war-kit, with 50 rounds of ammunition, from 10 to 12 miles every morning before breakfast for a fortnight, and found no inconvenience whatever. I have tried the coat folded three different ways, and found it best rolled, as it allows more air to the back.

I am, &c.
(signed) *Joseph Smart*, Serjeant,
Royal Marines Light Infantry.

Royal Marine Barracks, Woolwich,
27 August 1867.

I, 28th company, John Higgins, corporal, marched out several times with the new pattern knapsack, and found it much less irksome than the old one, and am confident that I could carry the new pattern knapsack with ease a much longer distance than the old one, and consider it a great improvement.

(signed) *John Higgins*,
Corporal, Royal Marines, Woolwich, Kent.

Royal Marine Barracks, Woolwich,
28 August 1867.

Sir,

I have been carrying the new pattern knapsack from the 12th to the 23rd of August, and I found the immense advantage derived by it over the old system in every way, the chest being more open and free from pressure, and the arms quite loose and easy, so as to be able to handle the rifle with the greatest ease.

(signed) *Thomas Marples*,
60th Company Corporal,
Royal Marines, Light Infantry.

REPORT ON THE NEW KIT-BAGS AND EQUIPMENT FROM THE WOOLWICH DIVISION OF
ROYAL MARINES LIGHT INFANTRY, 11th October 1867.

The kit-bags and equipments sent to these head quarters have been very carefully tried, and under all circumstances are reported on very favourably by the non-commissioned officers and men.

Detachments have been marched out long distances in all weathers. The kit-bags stowed in accordance with instructions and the full amount of ammunition carried.

Six sets of the equipment complete were given to non-commissioned officers and men and worn by them during the course of rifle instruction. The range is three miles from the barracks; and the whole equipment was worn from the time they left the barracks until their return.

During the trials the weather was at times very hot when marching out at brigade drills, and during the rifle instruction.

The men reported that when ammunition was carried the weights were better balanced than without it.

When the greatcoats were worn I put the kit-bag and canteen under the cape, which protected them from wet weather effectually. The greatcoats, however, worn by the Royal Marines are of a different pattern to the line regiments.

The greatcoats were tried rolled, and worn *en bandolier*, but the men preferred generally the coat folded on the back.

I tried the canteen worn under the greatcoat and over the bag, and some of the men thought it an improvement.

I also tried the greatcoat rolled in the form of a horseshoe and worn on the back, with the canteen either on the top or in the centre, and it was favourably reported on by the men.

With respect to the materials. The leather bags look best and would probably last the longest. The straps connected with the kit-bag I should prefer either black or brown leather. The waist-belt and coat-straps of buff and pipeclayed, as they would be frequently worn without the kit-bag.

Annexed are answers to questions proposed in the instructions from the non-commissioned officers and men who have worn the new equipment.

Having examined the men individually after every march and field-day, and having frequently made inquiry from the men, as well as having seen them myself at rifle instruction,

tion, I arrive at the conclusion that the new system is far superior to the old, and well worthy of general adoption in the service for infantry. I regret that circumstances compelled me to obtain leave of absence, which accounts for this report having been so long delayed.

R. G. Connolly, Colonel Commandant.

QUESTIONS.

1. Is there any constriction on the chest or any disagreeable pressure anywhere?
2. Is it comfortable during marching and at the double, and what is thought of it in this respect as compared with the regulation equipment?
3. Can the rifle be properly handled, and what facilities of firing are given as compared with the regulation equipment?
4. Can the bayonet exercise be gone through with greater ease than when the regulation knapsack is worn?
5. Would it be an improvement to have the front pouch made to carry 20 rounds only, it being understood that in war time two pouches would be carried, either of 30 rounds each as at present proposed, or of 20 rounds each, if the pouch be reduced?
6. During the trials have any suggestions been made which point out imperfections in principle or detail or indicate possible improvements?
7. Speaking in general terms, is the proposed plan an improvement on the present regulation system, and if so, is it sufficiently good to be worthy of general adoption for infantry regiments?
8. Has the coat been tried *en bandolier*, and with what result?

ANSWERS to the QUESTIONS by Non-Commissioned Officers and Men.

Serjeant Callum.

1. When properly fitted the pressure was equal everywhere, and not disagreeable.
2. It is superior in every respect to the old equipment.
3. The rifle can be handled much better, and all the exercises can be done with ease.
4. Yes.
5. The present pouch, containing 30 rounds, and the expense bag containing 20, balance the other weights very nicely.
6. The only improvement I know would be with the greatcoat, which I tried rolled like a horsehoe and worn on the back.
7. I would much prefer the new system.
8. I don't like the coat *en bandolier*. It was very hot across the chest in warm weather.

Serjeant Smart.

1. I found no constraint whatever.
2. It is far superior in every way to the old equipment, being easier everywhere.
3. The rifle can be handled better, having free use of the arms, and better aim can be taken in consequence.
4. Yes.
5. I carried 30 rounds in the pouch and 20 rounds in the expense-bag, and 20 rounds in the kit-bag in several marches and field-days, and it all balanced very well.
6. I don't think I could improve it.
7. Yes.
8. I like the greatcoat rolled and worn on the back best, it was cooler than any other way.

Corporal Murphy.

1. No.
2. I could double a long distance without being tired, and like it much better than the old pack and belts.
3. I can use the rifle far better than I could with the old knapsack as my arms are free and I can shoot better.
4. Yes.
5. I don't think it would be better to have the pouch reduced; I would rather wear one pouch than two, even if smaller.
6. No.
7. Yes, it is a great improvement.
8. I like the greatcoat either folded or rolled, and worn on the back. I didn't like it across my shoulder.

This man was a private during the trials.

Corporal *Wm. Greasley.*

1. No.
 2. It is far easier at the double, and at all other times.
 3. The rifle can be handled much better than with the whole equipment, and I can take aim steadier.
 4. Yes.
 5. I would sooner have it as it is than have more pouches.
 6. No, I don't think I could improve it.
 7. It is an improvement every way.
 8. I tried the greatcoat every way, but I would sooner wear it rolled and on the back.
- Wore the new equipments during a course of rifle instruction, about three weeks.

Serjeant *Parsons.*

1. No.
 2. Quite comfortable, and all the weights rode easily; I would sooner double with the new than the old equipment a great deal.
 3. Yes, the rifle can be far better handled, as the arms are free, and the shooting in consequence is steadier and better.
 4. I think it can, but I never went through the exercise with it.
 5. I think two pouches, each carrying 20 rounds, would be handiest.
 6. The only thing that I can think of is, that serjeants are often required to have writing paper, pens, &c., and a pocket to keep them in would be handy.
 7. If I was going on service I would rather have the new equipment than the old, a great deal.
 8. I like the way the coat was rolled and worn on the back better than the others.
- Wore the new equipment during a course of rifle instruction, about three weeks.

Private *Thos. Bradley.*

1. No, no pressure at all anywhere.
2. When well-fitted it is very comfortable at all times.
3. The chest was freer, and there was better use of the arms, and the shooting was better than with the old pack and belts.
4. Yes.
5. I would rather wear the present two pouches, carrying 50 rounds, than have another to carry the same number.
6. I don't think there could be any improvement, except that each belt wants nicely fitting to every man who is to wear it. There is a great difference when it is well, and when it is badly fitted on. I like the canteen between the coat and bag; it rode very easy, and on the top of the coat when filled it bears it down.
7. I would much sooner have the new for all kinds of service.
8. I don't like the greatcoat across my chest. It was hot and uncomfortable with the other things on. I like either of the other ways better.

These answers are precisely as the men gave them, in presence of the serjeant major of the division, to myself.

(signed) *R. G. Connolly*, Col. Commandant,
Royal Marine Light Infantry, Woolwich.

No. 442.

Royal Marine Barracks, Chatham,
10 September 1867.

Sir,

In compliance with your memorandum of the 7th instant, I send you an amended report respecting the new equipment for infantry.

I have, &c.

(signed) *Geo. Lambrick*, Colonel, A.D.C.,
Commandant Royal Marines.

To Colonel Lowder, C.B., A.D.C.,
Deputy Adjutant General,
London.

REPORT respecting the new EQUIPMENT for INFANTRY.

Question 1. Is there any constriction on the chest, or any disagreeable pressure anywhere?—*Answer.* The chest appears free, and there is no disagreeable pressure (*see reports*).

Q. 2. Is it comfortable during marching and at the double, and what is thought of it in this respect as compared with the regulation equipment?—*A.* It is preferred by the men in every respect as compared with the regulation equipment (*see reports*).

Q. 3. Can the rifle be properly handled, and what facilities for firing are given as compared with the regulation equipment?—*A.* It is reported upon to me most favourably under this head (*see reports*).

Q. 4. Can the bayonet exercise be gone through with greater ease than when the regulation knapsack is worn?—*A.* Certainly (*see reports*).

Q. 5. Would it be an improvement to have the front pouch made to carry 20 rounds only, it being understood that in war time two pouches would be carried, either of 30 rounds each as at present proposed, or of 20 rounds each if the pouch be reduced?—*A.* I think not; those who have worn it describe the yoke as setting better when 30 rounds of ammunition are in the pouch (*see reports*).

Q. 6. During the trials, have any suggestions been made which point out imperfections in principle or detail, or indicate possible improvements?—*A.* The men fear that the new equipment may wear out their clothes faster than the old. They suggest brown or black belts, to avoid pipeclay. It is thought the ammunition bag might be done away, as every soldier armed with a breach-loader, would fill his trousers pockets with loose ammunition when going into action; in this I fully concur (*see reports*).

Q. 7. Speaking in general terms, is the proposed plan an improvement on the present regulation system, and, if so, is it sufficiently good to be worthy of general adoption for infantry regiments?—*A.* I think so; but after a month's trial under most favourable circumstances, I do not think it safe to give such a decided opinion as is required by the latter portion of this head of inquiry.

Q. 8. Has the coat been tried *en bandolier*, and with what result?—*A.* It has, but generally the men have not reported favourably on it, but on the other hand (*see Report of Instructor of Musketry*).

(signed) *Geo. Lambrick, Colonel, A.D.C.,*
Commanding Royal Marines.

Chatham, 10 September 1867.

REPORT on the proposed New EQUIPMENT for INFANTRY.

Question 1. Is there any constriction on the chest, or any disagreeable pressure anywhere?—*Answer.* No; the chief pressure is on the shoulders.

Q. 2. Is it comfortable during marching and at the double, and what is thought of it in this respect as compared with the regulation equipment?—*A.* It is easy on the march, but the position of the canteen requires alteration; by throwing the loops on the cover more in the centre an increased stability would be obtained. It is much preferable to the old pack.

Q. 3. Can the rifle be properly handled, and what facilities of firing are given as compared with the regulation equipment?—

Q. 4. Can the bayonet exercise be gone through with greater ease than when the regulation knapsack is worn?—*A.* The rifle can be handled with perfect freedom and a more rapid fire delivered than with the old pattern pack, and the bayonet exercise can be performed with an ease quite unknown before when knapsacks were worn.

Q. 5. Would it be an improvement to have the front pouch made to carry 20 rounds only, it being understood that in war time two pouches would be carried, either of 30 rounds each as at present proposed, or of 20 rounds each if the pouch be reduced?—*A.* No, the pouch of 30 rounds is preferable; only requires deepening for the better preservation of the ammunition. It is more than probable that a pouch to carry 40 rounds instead of 30 would be an improvement.

Q. 6. During the trial have any suggestions been made which point out imperfections in principle or detail, or indicate possible improvements?—*A.* If the greatcoat could be disengaged, without the necessity of moving the whole equipment, it would be very desirable.

Q. 7. Speaking in general terms, is the proposed plan an improvement on the present regulation system, and, if so, is it sufficiently good to be worthy of general adoption for infantry regiments?—*A.* It is a great improvement; the arms are left so free, and the pressure, formerly so great, on the chest is removed. Comparing the present regulation system with it, its adoption would be certainly a move in the right direction.

Q. 8. Has the coat been tried *en bandolier*, and with what result?—*A.* Yes. The difficulty of keeping it on the shoulder while at the double, and the sense of heat about the neck, are the chief objections to this plan, but the facility with which it can be made

available, and the ease secured by being able to move it from shoulder to shoulder, point out how applicable the method would be for route marching, or otherwise, not in the presence of an enemy. The time taken to remove the coat when carried padded is considerable, while on the other hand the larger exposed surface of the bandolier would entail its being more readily saturated during rain. A waterproof sheet rolled over the greatcoat would always secure to the soldier a dry one when his march was ended, and much reduce the weight he would have to carry, the spongy nature of the coat making it painfully heavy when wet.

(signed) *J. B. Prynn,*
Brigade Major, Royal Marines.

N. B.—The pouch, although capable of carrying 40 rounds (if so altered), need not of necessity be always full.—*J. B. P.*

Colonel Lambrick, A.D.C.,
Commanding Chatham Division, Royal Marines.

Royal Marine Barracks, Chatham,
29 August 1867.

Sir,

WITH reference to my opinion on the new pattern knapsack, I have the honour to report that I consider it a very great improvement on the one at present in use. Although the yokes and straps were all of one size and very large, nevertheless the men preferred this new plan, with all the disadvantages of unfitted belts, to the old one.

I can fully endorse their generally-expressed opinion as to the desirability of substituting brown or black belts for those sent for trial, viz., buff.

I have, &c.
(signed) *Nowell F. U. Way,*
Lieutenant and Adjutant.

Colonel Lambrick, A.D.C., Commandant,
Royal Mar. Lt. Infantry, Chatham.

Royal Marine Barracks, Chatham,
20 August 1867.

Sir,

IN compliance with your orders requesting me to report, for your information, the result of a march under "the proposed new system of marching order equipments for the soldiers," I have the honour to make the following report, as collected both from my own observation, as well as from statements made to me by the men themselves:—

At 4.15 a.m., on the 17th instant, with the party named in the margin, I left these headquarters, and marched along the Chatham and Maidstone road, a distance out and home equal to 14 English Miles, the detail of which I beg to show in the annexed Table:—

Distance.	Halts.	Time.	REMARKS.
7 miles out - -	5 minutes - -	2 hours 4 minutes -	Inclusive of the 5 minutes' halt.
7 miles return -	$\frac{1}{2}$ hour 5 minutes -	2 hours 29 minutes -	1 pint of beer and a biscuit to each man. Inclusive of 35 minutes' halt.

returning hence at 8.48 a.m., and by which it will be seen that the distance was accomplished in four hours 33 minutes.

I have the honour to state that I was unable to detect the slightest inconvenience to the soldier in the proposed new method of carrying the equipments. And I frequently on the march questioned the men individually as to whether they felt inconvenience or fatigue; the unanimous reply was, "that they could march quite as easily and as freely with as without their equipments."

The corporal on the following day complained of stiffness in the back, which, however, soon passed off, and which he attributed entirely to the walk.

I have, &c.
(signed) *Hy. Gritton,* First Lieutenant,
Royal Marine Lt. Infantry.

Colonel G. Lambrick, A.D.C., Commandant,
Royal Marines, Chatham.

One corporal, and
10 privates.

Royal Marine Barracks, Chatham,
27 August 1867.

MY opinion of the new pattern knapsack is that it is in every way a decided improvement on the old one, and after having worn it for a period of 14 days, during which time I marched a distance of 15 miles, I do not experience the slightest inconvenience arising therefrom.

I also found it free and easy to wear, without any compression on the chest.

(signed) *John Bell*, Private,
First Co. Royal Marine Light Infantry.

Royal Marines, 25 August 1867.

I, PRIVATE W. Burk, of the 29th Company Royal Marines, approve of the new pattern knapsack issued to me for trial. I have had it nearly one month, and have worn it three to four hours every day; I have done several marches, and one of them about 15 miles, with 30 rounds of ball cartridge, in about four hours and three-quarters, and I did not feel the least fatigued. I have been 11 years in the service, and I have had some long marches in different parts of the world, but I have had nothing served out to me to equal the new pattern knapsack; the chest is free, and I consider that the main point, the soldier can breathe freely, and there is no fear of him being suffocated.

(signed) Private *W. Burk*,
Royal Marines.

REPORT of the NEW PATTERN KNAPSACK.

Royal Marine Barracks, Chatham,
27 August 1867.

I CERTIFY that I have worn the new knapsack for a considerable time, and I find it a great improvement to the old knapsack; I carried it 15 miles on the 17th August and I did not feel anything of it, but if I carried the old one half the distance I should have felt it more, I find by shifting the studs it makes the yoke fit much better. I do not approve of the buff belts, as they give a good deal in wet weather, and there is another thing, that they will destroy a good deal of clothes; I should prefer either brown or black belts. This is my opinion about it.

(signed) *G. F. Burgess*, Private,
97th Co. Royal Marine Light Infantry.

Royal Marine Barracks, Chatham, Kent.

13TH Company, Martie Osborne, private. Paraded and marched 14 miles with the new pattern knapsack, and found it in every respect far superior to the old pattern. I did not feel the slightest pain across the chest, or tightness under the arms, or numbness in the hands as with the old knapsack; after marching 14 miles I did not feel the slightest pain as with the old knapsack, but rather warm, which was on account of the weather being rather warm. I consider a man can stand a great deal longer time with the new pattern knapsack than he can with the old pattern knapsack without feeling it the least, as the pouch and waist-belt will be far more convenient for a marine aboard a ship, as it is generally the case in a man-of-war, marines are required to man and arm boats, gun-drill, or trimming sail, for the old pouches are always in the way. I have been over 16 years in the service, and I never was so comfortable with any kind of knapsack before; the only fault is in the belts, and I consider brown ones would be far more serviceable.

Royal Marine Barracks, Chatham,
26 August 1867.

THIS is to certify that I have worn the new pattern knapsacks, have given them a fair trial, both in marching and double marching, and have found them very comfortable, can carry them with ease, have felt no pain through carrying them, found them in every way preferable to the old knapsack. The only fault I can find is that the buff gives very much through the weight of the ammunition and pack, and likewise injurious to clothing.

Would suggest either brown or black belts.

(signed) *Wm. Maynard*, Private,
105th Company.

Royal Marine Barracks, Chatham,
26 August 1867.

I CONSIDER the new equipment superior to the one in use in every respect. Would suggest brown leather in preference to buff, the latter being deleterious to the clothes.

(signed) *Thomas Williams*, Private,
85th Co. R. M. L. I., Chatham.

Royal Marine Barracks, Chatham,
26 July 1867.

THIS is to certify that I, Aaron Jobson, of the 49th Company of Royal Marine Light Infantry, have on several occasions marched out with the new pattern knapsack on, and find that it is decidedly a great improvement to the soldier in every respect. Certainly there can be several improvements made; in the first place the belts being made of buff are liable to stretch, which would cause the knapsack to drop lower down, thereby causing great uneasiness, and likewise cause it to look very slovenly and loose about the man; secondly, I should propose that there should be an alteration in the yoke, for in the first place there is a vast difference in each man's size, so therefore they should be made according to the size of each man; thirdly, I should most certainly propose brown belts, as that would also improve the look and appearance of the soldier.

Signed and approved of by

Aaron Jobson, Private,
49th Co. Royal Marine L. I.

Royal Marine Barracks, Chatham,
26 August 1867.

I HAVE lately been wearing the new pattern knapsack. I have marched long distances with it, and like it much better than the one now in use.

It is easier to carry, does not hurt my chest, nor cause numbness in my arms, which the old pattern knapsack always does.

The only objection I have to it is, that if the belts are pipeclayed like those we now have in use, they will wear out a tunic or jacket in a very short time.

Black or brown belts would prevent this.

(signed) *Walter Sidney*,
61st Co. Royal Marine Light Infantry.

Royal Marine Barracks, Chatham,
27 August 1867.

I HAVE worn the new pattern knapsack every day for the last month, and am of opinion that it is a great improvement to the one in present use. I also marched to Maidstone and back, and I was not the least fatigued when I arrived at my journey's end. They do not cramp the arms and chest, nor cause a difficulty in breathing like those in present use. In fact, I consider it an impossibility to produce a knapsack to ride with greater ease. There is one drawback, the belts. I consider that brown belts would be much more preferable to buff, as the pipeclay will spoil and disfigure the clothing.

(signed) *69, Abel Heal*, R. M.

REPORT ON THE NEW PATTERN KNAPSACK.

Royal Marine Barracks, Chatham,
26 August 1867.

I, HAVING worn the "new pattern knapsack" for experiment, must decidedly say that I would rather wear it than the old one for ease and comfort in marching or going through any military exercise. I did not feel the fatigue of it in marching 15 miles as I have done after marching eight miles with the old knapsack. I could stand at the "shoulder" (without being cramped in the arms) for a considerable time, which cannot be done with ease in the old one. I find that by having the studs shifted nearer to the clasp of the waist-belt is a very great improvement.

In "doubling," I find that the canteen knocks against the head when it is fitted according to the pattern, but by lowering the coat the canteen is clear of the head, which of course is more agreeable.

I do not approve of the buff belts, as they stretch in damp weather, which would cause the knapsack, &c., to get out of its proper place, and thereby make it uncomfortable; and also another reason, the pipeclay wears out the clothes by continually having to brush them.

I think

I think that brown or black belts would answer much better, especially brown ones. I find that by having the 30 rounds of ammunition in the pouch in front keeps the yoke up a great deal better. The opinions I have stated are my own candid ones, without having been biassed by anyone, and the sooner I get the new one (with alterations) the better, for I have a great aversion to the old knapsack now that I have got accustomed to the new one.

(signed) *E. Garthwaite*, Corporal,
1st Co. R. M. L. I.

FORWARDING REPORTS ON THE PROPOSED NEW EQUIPMENT.

(No. 443.)

Royal Marine Barracks, Forton,
27 August 1867.

Sir,

WITH reference to the Assistant Adjutant General's letters of the 24th instant and 29th ultimo, respecting the suggested pattern equipment, I have the honour to acquaint you that after trial I am of opinion that the proposed plan is an improvement on the present regulation system, and I consider that its adoption in the service would be beneficial both to health and comfort of the soldier.

From the statements (enclosed) made by the non-commissioned officers and men by whom they have been tried I am enabled to reply to the questions as follows, viz. :—

No. 1. No.

2. Very comfortable, and much easier.

3. The rifle is handled more freely.

4. Most decidedly.

5. The present pouch seems to answer every purpose.

No. 6. Yes; especially as regards the canteen, in its present state and position it would leak when filled.

7. As above reported.

8. Not suitable for general purposes.

I have, &c.

(signed) *W. S. Aslett*,
Colonel Commandant.

Colonel S. N. Lowder, C. B., A. D. C.,
Deputy Adjutant General, Royal Marines.

First Day, Morning, 2nd August.

Under Arms 2½ Hours.

Serjeant Peters states.—I feel more comfortable than with the old pack; no pressure.

Serjeant Ferguson states.—I feel more comfortable than with the old pack. I much prefer this.

Corporal Price states.—I would rather wear this than the old.

Corporal Smith states.—It is much easier than the old; arms are so free.

60th Company, John Bagley states.—I think this a great improvement.

78th Company, Thomas Collins states.—It is a great deal easier.

114th Company, Charles Paris states.—I think new best; it is a great deal easier.

108th Company, Thomas Coombe states.—It is much easier and comfortable.

101st Company, George Wall states.—I think it would be much easier than the old if made to fit well; this does not fit me.*

74th Company, Thomas Bunce states.—It is easier. I feel no pressure.

66th Company, Henry Wrenn states.—I think it a great improvement. I feel no distress about my chest.

30th Company, George Johnstone states, I think it a great deal better than the old; there is no tightness about the chest; arms are more free.

3rd August 1867, 11.15 a.m.

58th Company, Henry Peters, serjeant.—I have marched fully equipped for half-an-hour, and have worn the same since 9.30 a.m., also performed bayonet exercise, and I don't feel the slightest fatigue whatever.

34th Company, George Ferguson, serjeant.—I put on the accoutrements at half-past nine this morning, and after doing a good deal of work, including bayonet exercise, I think it is the finest thing I ever saw since I have been in the service, and I don't feel any fatigue.

54th Company, Jacob Price, corporal.—Everything seems most easy, and is much better than the old pack; I feel I could walk to Fareham and back, though I have been in uniform since 9.30.

78th

* See what he says next day.

78th Company, Thomas Smith, corporal.—My opinion is, it is better in every respect. I have been running up to the highest pavilion, and working in the accoutrements since half-past nine, and I don't feel at all tired.

6th Company, John Bagley, private.—I have been 20 years and seven months in the service, 17 of which I served in the Line, and the remaining portion of my service has been in the Royal Marines. I have marched some hundreds of miles in the old pack, but this is the most comfortable and easy thing I ever saw; I have been running, walking, performing bayonet exercise, and doing several other portions of the drill, since 9.30 a.m., and I feel no fatigue whatever.

74th Company, Thomas Bunce, private.—I think they are a great deal easier than the knapsacks; feeling no pressure anywhere, I could march any distance in them, and I very much hope they will be served out to us.

30th Company, George Johnson, private.—I have much more use of my arms, I feel no tightness across the chest; in the old knapsack a sort of crampness used to come over me, numbing the hands and fingers and sending all the blood out of them; I feel no weakness at all, and I think it is the best improvement I have ever seen.

78th Company, Thomas Collins, private.—I feel more easy and comfortable, no fatigue at all, and no giddiness in these accoutrements. I have no pain across the heart and can breathe free and easily.

114th Company, Charles Paris, private.—I think it ever so much better than the other; my blood does not run up into my head, more circulation I feel, without the tightness. I used to feel sick after drilling in the other often, and felt very faint and tired.

108th Company, Thomas Coombe, private.—I think they will do very well, ever so much better than the others; I should not mind marching now to Winchester, though I have had them on since half-past nine.

101st Company, George Wall, private.—I feel it very comfortable across the chest, and could run more than double the distance I could before; I also feel if we work it in cold weather the bag would give me much warmth across the small of the back, and it doesn't cut the shoulders like the old pack, or numb my fingers; sometimes I had great difficulty in using my rifle with the old pack. I hope the Commander in Chief will let them be served out.

66th Company, Henry Wren, private.—I think it a very great improvement indeed; I have no strain on my chest, and my arms are perfectly free; I ran hard round the big field, faster than the pace of the running drill, and I found it very much easier. When I wore the old knapsack my left arm used to become dead, the blood would not circulate on account of the tightness of knapsack slings, and I often suffered from a bad pain in the region of the heart, and felt a choking sensation round the throat; I feel now as if I could carry them for three or four hours longer and not feel any fatigue.

15th August 1867.

INDIVIDUAL REPORT after having Doubled 500 Yards in Marching Order, the Second Time of having Performed the same on Consecutive Days, the First Day with the New Accoutrements, and this Day with the Old.

58th Company, Henry Peters, serjeant, states.—That he has no two opinions about the difference, he would sooner run 1,000 yards with the new accoutrements than he would run 200 with the old, and yet not feel half the fatigue; he is firmly impressed after repeated trials that the new appointments are by far the best, and he sincerely trusts, speaking on the behalf of himself, and his brother non-commissioned officers, that they will be adopted in the service.

34th Company, George Ferguson, serjeant, states.—That he has tried the new accoutrement in nearly every way, and more closely the last two days, in which he has tried them in comparison with the old by doubling the same distance in marching order; he is still convinced how wonderfully superior they are, and looks forward with great pleasure to their entire adoption into the service.

54th Company, Jacob Price, corporal, states.—I like the new accoutrements more and more every day I try them; to-day after doubling 500 yards in the old, I feel more cramped and fatigued; with the others I could run for an hour, and feel no discomfort at all; I only hope we may be allowed to wear them altogether.

78th Company, Thomas Smith, corporal, states.—That I have doubled 500 yards with the new and the old, and I find the new much more comfortable and easy and better in every respect; the difference altogether is so great that until one tries them you could hardly imagine what the comfort is.

6th Company, John Bagley, private, states.—I have tried both, and am still of the same opinion; in a previous report I mentioned that I had marched some hundreds of miles in the old, and now, after more closely testing the doubling of an equal distance, I find the comfort of the new even more and more.

78th Company, Thomas Collins, private, states.—He has now drilled, marched, and doubled with both, and nothing can surpass the new; it is more easy in every way.

114th Company, Charles Paris, private, states.—I have just come in from doubling with the old; yesterday morning I doubled an equal distance with the new, and the new, to my idea, is more comfortable in every way; I very much hope that the Lords of the Admiralty will allow us to wear them.

30th Company, George Johnston, private, states.—I think the new-fashioned gear is a great deal more comfortable than the old. I feel no inconvenience at all with the new, whereas, with the old, I always felt tired, cramped, and fatigued; I very much hope we shall be allowed to wear them.

108th Company, Thomas Coombe, private, states.—I much prefer the new to the old, they are so easy, and running is nothing at all with the new; I feel in race at the sports in marching order I could do more than double the distance, and never get palpitation or deadness of feeling in my arms.

66th Company, Henry Wrenn, private, states.—I am not nearly so distressed in the new accoutrements as I am in the old, and feel as if I could run a mile in the new when I know I could not possibly run a mile in the old; my breathing is much freer, and I have no pressure about the chest; this morning, after doubling 500 yards in the old accoutrements, my arms were quite black, and ever since I entered the service my left arm was never free from bad feeling; sometimes I have nearly dropped the rifle; I only hope the new kind will be served out.

101st Company, George Wall, private, states.—The new is a deal better than the old; I was very uncomfortable this morning with the old gear, my hands were so numbed, when I have never felt any bad feeling with the new; the new are so much easier to run or to march with; I very much hope the Commander in Chief will let us have them.

74th Company, Thomas Bunce, private, states.—That the old are very much heavier than the new; I could double or run some hundreds of yards more in the new than in the old, the feeling is so different across my chest; I shouldn't mind marching to Southampton any day in the new, when in the old I know it would be pain and very hard work.

(signed) *W. S. Aslett,*
Colonel Commandant.

26 August 1867.

TABLE showing the STATE of RESPIRATION and PULSE after exertion with Packs of Old and New Pattern.

Co.	NAME.	Quality.	Average Beats of Pulse after three Observations and Respiration after two.		Respiration and Beat of Pulse after running 500 yards. No Packs.		Respiration and Beat of Pulse after running 500 yards. New Packs.		After Running 500 yards. Old Packs.		After Marching two hours. New Packs.		After Marching two hours. Old Packs.			
			Pulse.	Respiration.	Pulse.	Respiration.	Pulse.	Respiration.	Pulse.	Respiration.	Pulse.	Respiration.	Pulse.	Respiration.	Pulse.	Respiration.
50	H. Peters	Serjeant	84	23½	144	25	124	Not taken	144	28	100	Hot oppressive day. Respiration tranquil. Men quite fresh. Thunderstorm in the evening.	124	Day cool, with breeze. Respiration hurried, nearly all the men had their hands swollen, and felt much oppressed.		
34	G. Ferguson	"	92	21	132	24	132	"	152	30	104		128			
54	J. Price	Corporal	75	22	132	24	144	"	152	28	88		120			
38	T. Smith	"	71	27	112	28	156	"	132	30	88		104			
30	G. Johnson	Private	85	26½	104	28	156	"	148	32	104		92			
66	H. Wren	"	68	19½	124	26	144	"	140	28	88		84			
74	T. Bunce	"	83	23	120	26	168	"	164	30	124		132			
101	G. Wall	"	76	26	132	28	192	"	152	29	112		140			
114	C. Paris	"	94	24	116	26	204	"	156	29	124		120			
108	T. Coombe	"	96	23	136	27	180	"	148	28	104		128			
78	T. Collins	"	84	23	112	26	120	"	148	28	96		116			
6	J. Bagley	"	84	25	128	27	180	"	140	30	92		112			

Forton Barracks, Gosport,
28 August 1867.

W. S. Aslett,
Colonel Commandant.

Royal Marine Artillery Barracks, Portsmouth,
30 August 1867.

Sir,

I HAVE the honour to forward the report of Lieutenant the Honourable H. Aylmer and Lieutenant Cockcraft under my command on the yoke system of carrying ammunition and kit as compared with the present regulation knapsack, pouch, &c.

Both these officers volunteered to try the new and old systems with the non-commissioned officers and men. I was very glad to avail myself of their offer, as besides being active and intelligent, the former has been constantly shooting and camping out in Canada; the latter has just returned from active service in New Zealand.

They have carried the new and old equipment for some days with the men in very hot and trying weather, and have drilled in the ranks with them; their report appears to be drawn up with great care.

I quite concur with them in their opinion as to the faulty position of the side-pouch for ammunition; a pocket in the tunic, lined with some strong material, would be an improvement, if the material of the tunic could be trusted to bear the weight, which I fear is very doubtful; this pocket need only be used on service.

72.

H 4

I would

I would also recommend using as few studs as possible, as the slits in the leather are sure to enlarge and become useless with wet, wear, and tear; the front straps should be fitted with buckles, such as those on ordinary trouser braces.

Black belts, which would be stronger and more durable than buff, would suit our blue coats perfectly well, and not stain them.

The most comfortable position for carrying the water-vessel would undoubtedly be behind the yoke, as suggested, paragraph E.

The material for the water vessel is a very vexed question.

The Germans proposed long ago thick glass covered with leather, which has everything to recommend it but one, that it would probably increase the number of wounded under fire.

Tin discolours and alters the taste of wines and spirits. India-rubber would probably answer, and neither taste nor smell disagreeably when in constant use.

I would wish to add a few remarks as to the waterproof sheet, which I believe, from my own experience, is invaluable to a soldier on active service, and should invariably form part of his equipment in the field, whether carried for him or by him.

Those we had in China in 1857-61 lasted four years, in a very hot climate, with constant work, and were serviceable to the last; nearly all the men brought them home with them. When we went on short expeditions of a few days' duration, the few things necessary, shirt, stockings, &c., with greatcoat or blanket, were rolled in the sheet and carried "*en bandolier*," occasionally by coolies; two coolies would carry 20 men's kits packed in this way in the waterproof sheet on a bamboo.

The sheets were of a brown colour, and wore admirably; black waterproof coats were also issued to the men, and wore very badly.

In New Zealand I believe the sheets were white, and wore very well.

I hope these details as to this very important question will not be considered unnecessary.

I have ordered six sets of the yoke accoutrement to be taken into regular wear by the men.

A duplicate of this and enclosed report has been sent to Major General Eyre.

Colonel S. N. Lowder, C.B., A.D.C.,
Deputy Adjutant Gen., Royal
Marines, London.

I have, &c.
(signed) *G. A. Schomberg*,
Col. Commandant Royal Marine Artillery.

Royal Marine Artillery Barracks, Portsmouth,
15 August 1867.

Sir,

IN accordance with your instructions we have the honour to make the following report upon the "yoke system of carrying the ammunition and kit," as compared with the present regulation knapsack, pouch, &c.

We have arrived at the conclusions hereinafter-stated after a most careful trial of both systems, which we ourselves made personally in conjunction with a squad of six men placed under our orders for that purpose.

Relative to the points to which especial attention is directed by Major General Eyre's circular of 14th June 1867, we beg to state as regards the yoke system that,—

1. There is not any constriction on the chest, nor is there any disagreeable pressure anywhere.
2. It is very comfortable both in marching and at the double, and we consider it incomparably superior in this respect to the regulation equipment.
3. As compared with the regulation equipment it affords generally greater facilities for handling the rifle both at drill and in firing. But we would remark that the pouch on the right side is an obstruction in trailing and shouldering the short rifle; with the long rifle, however, it would only interfere with trailing, "the shoulder" being different.
4. We are decidedly of opinion that the bayonet exercise can be gone through with greater ease than when the regulation knapsack is worn, as the yoke system admits of the limbs being used with perfect freedom.
5. We do not think that any advantage would be gained by reducing the number of rounds in the front pouch from 30 to 20, as at present the 30 rounds offer no inconvenience, and reducing the weight by 10 rounds would destroy the perfect balance which at present exists.
6. We do not consider there is any imperfection in the principle upon which the yoke system is based. The defects in detail we think are as follow:—

Defects.

- A. The pouches are a trifle too small to admit of the flap being buttoned when 30 rounds of packed ammunition are stowed in each.
- B. As before stated, the side-pouch is inconveniently placed.

C. The

- C. The yoke slips down from the neck on to the shoulder, and consequently puckers at the top centre; but although this is the case no discomfort is caused thereby, and it is only a matter affecting the appearance of the accoutrements.
- D. The stud-holes of the "back-strap" and lower strap become enlarged from usage, and in a short time would cease to be a firm and efficient fastening; but this remark is inapplicable to the fastening of the upper strap, as there is not the same amount of strain upon that part.
- E. The absence of a most necessary article of a soldier's equipment, viz., a water-bottle.

Suggestions.

With reference to possible improvements we beg to suggest:—

- A. That either the pouches be made slightly deeper, or that the fastening strap be made longer.
- B. That the side-pouch be altogether abolished, and that a proper pocket in the tunic in which to carry loose ammunition be substituted. The advisability of adopting such an arrangement is fully borne out by the experiences of all sportsmen.
- C. The puckering caused by the yoke slipping down from the neck might be easily remedied by taking it in slightly at the top centre. We would recommend this trifling alteration for the sake of appearance, as the slipping down of the yoke is unavoidable, though of no consequence as regards comfort.
- D. That the fastening of the back-strap be a buckle instead of a stud and stud-hole; and in our opinion no injury to the tunic would accrue from the adoption of a buckle owing to its situation, as the hollow of the back prevents undue pressure. As regards the studs in the waist-belt, we would recommend that the necks be reduced to a length equal only to the thickness of the yoke-straps, and that the knobs be made with an eye in order to admit of the lower straps being fastened by "snatch-hooks." The waist-belt would prevent these hooks coming in contact with the tunic, and such an alteration would not diminish celerity in fastening and unfastening, and would, we think, obviate the defects already alluded to.
- E. The question as to the manner in which water is to be carried is a most difficult problem to solve successfully. We venture to offer an opinion that either it must be carried in a vessel of a suitable shape fitting the vacant space above the hip between the bayonet and the bag or in a cylindrical vessel strapped to the yoke, but resting on the coat, the canteen being pushed back to admit it. We are inclined to advocate the latter plan, as we think the additional weight would be less felt.

7. Speaking in general terms, we consider the proposed plan infinitely preferable to the present regulation system as regards the comfort, celerity of movement, and the health of the private soldier, and we are decidedly of opinion that the proposed plan is worthy of general adoption for infantry regiments.

8. We have tried the coat "*en bandolier*," and find that when so worn it produces great heat about the shoulders, is not so comfortable as when slung on the back, and also presents a very awkward appearance.

Having now stated our opinions on the points to which special attention is called, we, in conclusion, desire to offer some general remarks upon this most important subject.

We find that the equipment can be easily and comfortably carried when the front pouch is shifted to the right and the waist-belt unfastened and the tunic unbuttoned, thus allowing a free current of air to circulate round the body. The advantage of being able to do this during a long march, or in a hot climate, needs no comment. The entire equipment can be taken off and put on with great rapidity. We incline to the opinion that it would be an improvement were the straps and waist-belts black instead of white, that colour being easier to keep clean and less liable to come off upon the tunic. A second pair of trousers or a waterproof sheet could be carried with ease, either rolled up in the greatcoat or in the bag; in the former case when the greatcoat was worn, either of those articles being retained in the slings.

During a careful trial of the present regulation system, we found that the slings cut into the muscles and confined the arms, and after a time our arms became to a certain extent paralysed; the pressure on the chest produced a great difficulty of respiration, followed by severe pain, and we experienced much trouble in retaining the pack in its proper position.

Having gone minutely and carefully into the principles and details of both systems, we desire to record a decided opinion in favour of the yoke. Trusting that the report will meet with your approval,

We have, &c.
(signed) *Hy. Aylmer,*
Wm. La Trobe Cockraft. } 1st Lieuts., R.M.A.

Colonel G. A. Schomberg, c.b.,
Commandant Roy. Mar. Artillery, Portsmouth.

(Clothing, &c. 1—G. S.—1867. No. 471—1867.

Portsmouth, 10 September 1867.

SUBMITTED.

George Buller,
Lieut. Gen. Commanding S.W. District.

The Adjutant General, Horse Guards.

Sir,

Parkhurst Barracks, 6 August 1867.

IN reference to a letter, dated Horse Guards, 23rd July 1867, notifying that 16 pattern sets of equipment according to the yoke system of carrying the ammunition and kit of the infantry soldier would be forwarded to me, and directing that trial should be made thereof and a report of the result made, I have now the honour to report as follows:—

- 1st. There is no constriction on the chest, or disagreeable pressure anywhere.
- 2nd. It is comfortable during the march and at the double, except that the kettle swayed to and fro and knocked against the soldier's head; this has, however, been corrected by a kettle cover, which the committee sent me, with two straps on upper and lower flat side of cover, through which the coat straps pass.
It is far better than the old equipment, and all the soldiers speak well of it.
- 3rd. The rifle can be properly handled, and it is more convenient for firing than the old equipment.
- 4th. It is more convenient for the bayonet exercise.
- 5th. I am decidedly of opinion that the pouch should be reduced so as to hold 20 rounds; this would enable the fastening on waist-belt to be placed half-an-inch on each side nearer the centre, as at present there is a tendency of upper-strap of kit-bag to draw back the front yoke-straps.
- 6th. The stud where the three straps unite in front is too round; the outer strap is liable to come off; the stud should be flat headed.

I think the back-strap and lower yoke-strap in front should be adjusted with buckles, as the buff stretches and the punched holes and slits prevent proper adjustment.

7th. The improvement on the old equipment is very great, and worthy of adoption. I find, however, that when the greatcoat is carried with or without kit-bag, there is a tendency to draw down the yoke, which is apparent in Fig. 7 on 3rd page of the instructions.

8th. The greatcoat has been tried *en bandolier*; when passed over the right shoulder the man could not fire, and when over left it interfered with his shouldering arms.

I would suggest that the part of the buff of upper strap of kit-bag should be rounded by being sewn together where it passes through the keeper, and that the strap which connects the greatcoat with the back-strap should be of stronger buff, and be attached to foot of greatcoat strap, instead of being connected by runners; they are liable to work up, and then the greatcoat is unsteady, especially at the double.

The Assistant Adjutant General,
&c. &c., Portsmouth.

I have, &c.
(signed) *Edw. Jeffreys*, Colonel,
Commanding 5th Depôt Batt.

Sir,

Colchester, 26 October 1867.

I HAVE the honour to forward reports from Colonel Farren, c.b., and Lieutenant Colonel Robertson Ross, commanding the 4th and 8th Depôt Battalions, relative to the kit-bag which has been worn in these battalions for about two months. It will be seen by the statements of the soldiers who have carried this new pack how universally it is preferred to that now in use. I have examined all the men, and questioned them minutely, and, with one exception, all prefer the new system. On one, and perhaps the most important, point the testimony is very strong, and that is as to the relief to the chest, "We don't feel it at all upon the chest;" and one old soldier, Corporal Baldwin of the 84th Regiment, goes so far as to say he would rather carry the bag with a field-kit in it than the present knapsack empty. Another man says he would rather march 20 miles with the bag than 15 with the present knapsack. Another strong point in the favour of the bag is that all agree they can, when carrying it, use their rifles with much greater ease, and this they tell me they do more when doing the bayonet exercise than at any other time, and certainly that is a considerable test.

An experiment was made by sending eight men of the 4th Battalion a march of 10 miles carrying the bag; after one day intervening these men made the same march with the knapsack, of course in each case carrying the same kit. They one and all assured me that there was no comparison as to fatigue on the two days' march; that they felt it much less when carrying the bag. Out of the 16 men, three complained that it heated them across the loins; and one, Serjeant Collings of the 83rd Regiment, a very stout man, said it made his back sweat very much, and he was afraid of a chill. This is really the only thing I have heard against the pack, and I daresay the same men would have sweated under the present knapsack. It will be seen that Colonel Farren has gone very minutely into the

questions,

questions, and has suggested that the system should be tried on a larger scale before its general adoption; but I cannot but think, from what I have myself seen during the last two months, during which time I have repeatedly questioned the soldiers, it would be a safe plan to provide soldiers as soon as possible with a pack from which so many advantages are to be derived, not only in a medical, but in a military point of view.

I have, &c.

(signed) *T. Holmes Tidy*, Colonel,
Com. East District.

The Adjutant General, Horse Guards.

4th Depôt Battalion, Camp, Colchester,
23 October 1867.

Sir,

WITH reference to the yoke and kit-bags which have been under trial for some weeks in the battalion under my command, I have the honour to report, for the information of the Colonel commanding the district, as follows:—

1. None of the men who have worn this equipment complain of any constriction on the chest, nor disagreeable pressure, with the exception of a strain at the back of the neck where the yoke drags. They state that great heat is caused at the loins by the position of the bag.

2. The equipment is more comfortable on the line of march than the old pack, and causes much less fatigue; the bag jolts when at the double, but not more so than the old pack and pouch together.

3. The rifle can be handled more easily than with the old pack, and the facilities of firing are infinitely greater. In the manual exercise the hand must be brought out a little more when shouldering, to avoid the pouch.

4. The bayonet exercise can be gone through with greater ease than when the regulation knapsack is worn. The men say they "can send it with more force," by "it" they mean "the point."

5. The men unanimously prefer to carry 30 rounds in the front pouch rather than 20, because they say the weight balances that of the bag and coat.

6. It is stated by the men that the coat with the canteen at the top, when supported only by the coat-straps, drags on the yoke, and they go so far as to say "nearly as much as if it was a knapsack." They have tried the plan of carrying the canteen between the coat and the bag, and found it easier, because by the canteen resting on the bag, it supports the coat to a certain extent, and prevents the latter from dragging so much on the yoke; but this has proved objectionable, inasmuch as the friction of the canteen on the bag, which soon became perceptible, is calculated to produce holes in the bag; and the canteen cover is also rubbed by the coat, thus causing unnecessary wear and expense.

To obviate this, the plan has been adopted of narrowing the depth of the fold of the coat, and placing it low enough to rest on the bag, and the canteen is then worn above the coat. This arrangement eases the drag referred to, and is the one preferred by the men.

In order to keep the coat steady and in its place, a fast runner of buff must be fixed to each of the coat-straps at a distance from the buckle-end equal to the depth of the fold of the coat. When fixing the coat, the portions of the straps between the fast runners and the buckles are behind the coat, the other ends of the straps are passed through the D's of the yoke, then through the fast runner, then carried in front of the coat and buckled below; the canteen rests on the top of the coat, and is fastened by its strap to those of the coat.

The men have suggested that there should be buckles instead of studs at the end of the front yoke-straps, in order that the straps of the bag may be lengthened or shortened at pleasure.

They also state that when at bayonet drill the outer and upper bag-strap, which fastens to the stud of the front-yoke, is liable to come undone; if the stud was larger and flatter it perhaps might answer; it holds too loosely.

The men further object to so many straps which require pipeclay; they would like that all the straps connected with the equipment of the bag and coat should be of brown leather, still retaining the white buff waist-belt, because in the case of that belt there is a great deal of wear, and it can be kept more nicely with the use of pipeclay.

7. Speaking in general terms, I consider the proposed plan an improvement in many important respects upon the present regulation system, but before recommending that it should be generally adopted, would suggest that it should be tried by a large body of men, say, a regiment, for a considerable period, at least 12 months, in order that its capabilities and advantages may be more amply tested, and that whatever defects it may possess (more especially the results on the health of the men with regard to the heat at the loins, which may be found to be prejudicial, as creating a liability to sudden chills and consequent disease upon the equipment being thrown off after a march) may be fully brought out.

I have, &c.

(signed) *R. T. Farren*, Colonel,
and Lieut. Col. Commanding 4th Depôt Batt.

The Brigade Major, Camp, Colchester.

Sir,

Camp, Colchester, 27 October 1867.

IN obedience to your memo. of the 25th ult, relative to the experimental equipments recently issued to the battalion under my command, I have the honour to report that the result of the trial has been very satisfactory. I enclose written statements from the individuals who have worn them.

There appears no doubt but that men can march with much greater ease and freedom with the new bag than with the old knapsack; also that they could in action load and fire and use their bayonets with much more effect, ease, and freedom; and for these important considerations I am of opinion that the new equipment is preferable to the old.

The only objection I know of to the introduction of the new system is, that the bag causes considerable perspiration about the loins, which after marches might render soldiers very liable to sudden chills in that part of the body, predisposing men to bowel complaints so common and often so dangerous with troops in the field.

I have, &c.

(signed) *P. Robertson-Ross,*

Lieut. Colonel Commanding 8th Depôt Batt.

The Brigade Major, Colchester.

STATEMENT AS TO THE MERIT OF THE NEW PATTERN WALLET.

Camp, Colchester, 26 September 1867.

No. 3,061, Corporal T. Baldwin, states.—I have worn the new pattern wallet on all parades and duties, and find it easy and much more comfortable than the old knapsack.

At the manual, platoon, and bayonet exercise, I have more freedom in the use of my limbs, and do not feel any tightness about the chest. I would much rather wear the new pattern wallet with a field-kit, than the old knapsack empty.

(signed) *Corporal T. Baldwin,*
M. Company, 84th Depôt.

(No. 3,553.)

STATEMENT OF OPINION OF Lance Corporal Laurence Boyle, 90th Regiment, now wearing the Experimental Knapsack.

Sir,

Camp, Colchester, 26 August 1867.

FIRST, I am of opinion that the superiority of the wallet over the present knapsack is unquestionable; that as regards the shoulder-straps it gives full play to the arms and chest, while on the other hand the present knapsack-straps cut the arms and strains greatly the chest. Its tendency to do away with the cross-belt is another reason that it is more recommendable than the present one. The best qualifications of the wallet and yoke are, the distribution of the weight all over the body; the construction of the wallet and yoke are highly commendable in this respect. There are some objections to the wallet; as it is worn across the loins it is supposed that it gathers there so much unusual heat, but as the wallet is only made to carry a field-kit (trousers excepted) this objection is needless, as the weight that would then be carried by the soldier in the wallet would scarce be sufficient to contract any unusual force of heat about those parts. During the time I have worn mine, I found it more comfortable and in every other way preferable to the present knapsack now in use. Should, however, the wallet be adopted, it would be necessary to replace the studs by buckles, and that there should also be a tongue put in the suspension buckle of the wallet. The canteen, also, would be much easier carried between the greatcoat and wallet.

(signed) *L. Boyle, Lance Corporal,*
96th Regiment.

Camp, Colchester, 28 October 1867.

IN reference to the wallet which I have now in use, I beg to state I like it better than the knapsack in every respect but one, and that is the perspiration it causes around the loins when doubling.

It is much easier to go through the manual, platoon, and bayonet exercise, and does not cause any pain on the chest or shoulders.

(signed) *J. Wilson, Lance Corporal,*
32nd Lt. Infantry.

STATEMENT regarding the NEW PATTERN KNAPSACK worn by No. 587, Private Samuel Davis, Depôt, 94th Regiment.

Camp, Colchester, 26 September 1867.

HE has worn the new pattern knapsack about 10 weeks, and finds an improvement in it towards the old one, with the exception of the mode in which the ammunition is carried, as the whole weight of it is sustained around the hips, and any exertion causes a pain.

With regard to the greatcoat and canteen, he considers that if the canteen could be made to keep its place on the top of the greatcoat it would be much better, for when running it works to the bottom edge of the coat.

The studs which fasten the wallet are small, and the holes of the straps connected with it should have a brass ring around them to prevent them from widening out.

(signed) *George Fox*, Serjeant,
L. Comp. 94th Reg.

("L." Company, 96th Depôt.)

OPINION of Privates Hunt and Tobine concerning the NEW PATTERN ACCOUTREMENTS.

Camp, Colchester, 25 September 1867.

IT is much easier for a man to wear than the ordinary knapsack now in use, and would not fatigue a soldier so much when on a long march. Its convenience for carrying a kit is far better than a knapsack; the only objection is the place selected for carrying the canteen, it being very awkward at the back of the man's neck, and I would suggest that it should be carried in the centre of the folded coat, similar to the fashion of rolling the old greatcoat. In other respects I am inclined to think it is a great improvement upon the knapsack now in use, and will be much appreciated by the soldier.

(signed) *James Switzer*, Colour Serjeant,
"L." Comp. 96th Depôt.

Camp, Colchester, 28th October 1867.

I BEG to state that I find the following advantages and disadvantages connected with the wallet recently introduced to replace the knapsack, having worn the wallet at all parades since issued.

1. In the manual, platoon, and bayonet exercises the wallet is to be preferred, as there is more freedom, and the arms are not cramped, as is the case with the old knapsack.

2. It is easier in marching, the chest is allowed to expand, and the absence of the cross-belt is also a benefit.

But the disadvantages are,—

1. When at the double the wallet bearing on the hips does not allow of the free use of the joints.

2. It causes a great deal of perspiration across the loins, which has a weakening effect, and causes a chillness when taken off.

I have, &c.
(signed) *Thos. Collin*, Colour Serjeant,
32nd Light Infantry.

(L. Company, 2/18 Regiment.)

REPORT made by No. 1867, Corporal John Powley, of the above Company, relative to the NEW PATTERN WALLET, &c.

Camp, Colchester, 26 September 1867.

THE new pattern wallet is better than the old pattern knapsack, but the ammunition is carried with greater ease in the old pattern pouch, in consequence of the weight of the new pattern pouch on the stomach.

4TH DEPÔT BATTALION, COLCHESTER.—27 September 1867. - - - -

Private John Murray, 216th.	Private William Breunen, 35th.	Private J. A. Brooks, 35th.	Private D. Price, 41st.
No constriction on chest, and no pressure anywhere.	No constriction on chest. A pressure on the hips, and it makes a man very hot across the loins. Yoke slips down at back. Does not fit.	No constriction on chest. No pressure. Causes him to sweat much at the back and loins.	Feels it free but warm at the loins. The yoke slips back and causes a strain at the back of the neck.
2. More comfortable on the line of march than the old pack.	As Murray.	As Murray.	As Murray.
Jolts at the double, but not more than old one; but new one makes you sweat more than old one.	Jolts at the double. There is a heavy jolt. Not more than old pack.	Jolts; but thinks the old pack and pouch the worst of the two. Does not sweat more with one than the other.	P refers the new one in doubling, because the old pouch is worse. Sweating about the same.
Prefers it to regulation equipment.	Prefers it to the regulation.	Prefers it to the regulation.	
3. Rifle handled more easily.	Rifle can be handled more easily. Can walk more quickly. Would rather wear it at position drill than the old one. The old one pinches me.	Much freer than the old pack. Can come to the present or position drill without distressing the shoulder at all. The strap of the old pack cuts the shoulders when at the present.	As Brooks.
4. —	4. Much freer at Bayonet exercise, and can send it with more force than the old one.	The same all through.	—
5. Pouch preferred to carry 30 rounds, because the weight balances the weight of the bag and coat.	The same all through.	—	—
6. The same as Brooks.	The same as Brooks.	Prefer canteen to be carried between bag and coat, because it would be standing and prevent the coat from dragging so much on the yoke. At present there is a pressure from the coat pulling the yoke back, and there is another weight on the hips from the bag.	The same all through. They say that they feel the coating on the yoke nearly as much
Objection taken to so many straps which require pipeclay; would like to have the waist-belt white, because there is a great deal of wear on that belt, and it can be kept more nicely by being pipeclayed; but all the rest to be brown leather like Commissariat Staff Corps belts.		What is wanted is that there should be one weight, or, so to speak, that all should be together. The tin has been worn under the coat in order to support it, but the friction wears the flat of the bag and the cover of the canteen so that both will soon have holes at that part; this has since been obviated by folding the coat narrow and resting it on the bag, and the canteen is then worn above the coat.	—
7. Is considered by all to be an improvement upon the present plan, but not sufficiently so to be worthy of general adoption. Yoke hangs by the men. It does not fit close to the neck.		A piece of buff as a fast runner has been fixed to each of the coat- straps so as to sit at the top of the coat, and the other end of the strap being passed through after it has gone through the D at the yoke, it is brought in front of the coat and buckled below, thus keeping the coat in its place.	

4TH DEPÔT BATTALION, COLCHESTER.—27 September 1867.

Private R. Roberts, 41st.	Private J. Philligan, 83rd.	Private W. Smith, 83rd.	M. Maloney, 49th.
<p>No constriction on chest. Rather warm in the back when the bag presses.</p> <p>Likes it better than the other.</p> <p>Prefers it at the double to the old one, because the old pouch jerked and this bag is close. It does jolt, but not much. Sweating about the same with one as the other.</p>	<p>No constriction on chest. A strain at the back of the neck and a little hot across the loins.</p> <p>March more free than with the old one.</p> <p>Thinks it twice as easy as the old pack for a marching order drill. Thinks that the coat jumps more at the double than anything else.</p>	<p>Free about the chest. A little sweat at the back where the bag goes.</p> <p>The easiest pack he ever wore.</p> <p>A great deal easier than the other pack.</p> <p>A fine easy pack for doubling. Prefer it to the old one.</p>	<p>Free. Likes the pack. The easiest he ever had. The only fault he has is the yoke is not properly fitted.</p> <p>In case of a forced march could go five miles further with the new than with the old pack.</p> <p>Prefer the new pack at the double. The coat jolts, but the bag does not jolt so much as the old pack, and it gives in when doing so, which the old pack did not.</p>
<p>As Brooks.</p> <p>—</p> <p>—</p> <p>—</p> <p>with the canteen on the top drag as if it was a knapsack.</p> <p>—</p> <p>—</p> <p>—</p> <p>A buckle where the D's are at the back of the yoke for coat's straps, to prevent the coat from running, and keep it one position.</p>	<p>As Brooks.</p> <p>In the new pack at bayonet drill, the outer strap, which is fastened to the stud of the front yoke-strap, is liable to come undone. If the stud was larger and flatter it perhaps might answer; it holds too loosely.</p> <p>All agree in this.</p> <p>—</p> <p>—</p> <p>—</p>	<p>As Brooks.</p> <p>—</p> <p>—</p> <p>—</p> <p>—</p> <p>Suggested that there should be a buckle instead of studs at the end of the front yoke-straps, in order that the straps of the bag might be lengthened or shortened at pleasure.</p>	<p>Rifle can be handled more freely. The only thing is that in manual exercise you have to bring the hand out a little wider in case of shouldering to avoid the point.</p> <p>You have the full use of your rifle with this. Free arm, shoulder, and back, which you have not with the old one.</p> <p>—</p> <p>—</p> <p>—</p>
<p>back in every case and causes a strain. Thought there would be a difficulty in fitting the yoke. It drags; that is one of the principal objections</p>			

APPENDIX IV.

INSTRUCTIONS FOR FITTING and REPORTING on the altered YOKE EQUIPMENT.

ALTHOUGH the yoke equipment tried in August 1867 met with very general approval, various suggestions were made by the officers conducting the trials which appear likely to add to its efficiency.

These suggestions have been carried out as far as practicable in the pattern herewith sent; it is desirable that each commanding officer who conducted the previous trials should examine and test the modified equipment, and report upon its merits or defects.

It has been made much simpler, and the number of straps has been lessened, while the yoke principle has been preserved. Although the experience gained from the former trials will render its fitting easy, yet to prevent mistakes each set is sent put together, and the straps only require to be pulled more or less tight to fit every man.

In accordance with the general opinion, two pouches of 20 rounds each have been substituted for one of 30 rounds. In time of peace and during ordinary drill and duty it is proposed that only one be carried. The second pouch (which is the right-hand one) will be found in the bag. When two pouches are worn the centre buckles are to be used for fastening the ring-straps, and the small connecting strap is to be fixed to the inner buckle of the left pouch.

The greatcoat-straps have been slightly altered, in order to keep the coat steadier and to bring the weight of the bag and coat more together. When the coat is worn, or not carried, the coat-strap should be used to suspend the bag slightly from the yoke.

Two sets of coat-straps are sent for the purpose of testing two modes of carrying the canteen. If a canteen be placed in the empty cover in the set sent buckled, before the straps are undone, one mode of carrying it will be seen. By this method the canteen may be carried in its proper position, with the lid uppermost on the top of the greatcoat, or by bringing the straps round a little behind the greatcoat at the top. If in the former place, it will be found advisable to fold the greatcoat small and thick, so as to make a good bed for the canteen to rest upon.

When the greatcoat is worn the canteen is placed on the top of the bag, and the strap is passed round the coat-straps.

The coat-straps, which will be found in the bag, are intended to carry the canteen, according to a plan proposed by Colonel Greer. A drawing is sent herewith to show how this is to be done. (See page 46.)

One of the straps attached to the yoke-ring can be taken off; this is for the purpose of cleaning the ring, and also because this strap is best out of the way when the greatcoat is carried without the bag.

The strap which runs from the ring to the top of the bag should not be drawn too tight; *i. e.*, it should not pull the bag uncomfortably into the back.

Besides this altered yoke-equipment another plan, based on the principle of a common pair of braces, is sent for comparative trial; it is put together to show how it is intended to be carried, and probably its mode of fitting will be understood without description.

It will be seen that the bag can be put higher or lower on the back brace-strap, according to the size of the man and the height at which he finds the bag most comfortable.

The points on which it is desirable to have answers as speedily as possible are these:—

1. Is the altered yoke plan satisfactory, and an improvement on the original pattern?
2. Do any other changes seem desirable? If so, the necessary alterations should be made and tried on the spot, in order to be assured of its answering.
3. Which is the best of the two modes of carrying the canteen?
4. What is thought of the brace-plan in comparison with the yoke?
5. Is buff or brown leather preferred for the straps?

The ball-bag is a pattern proposed by the School of Musketry, and it has not been altered; but it will be eventually modified in accordance with the suggestions made. The mode of carrying the canteen and water-bottle is reserved for further consideration; and as several methods have been suggested, there will probably be little difficulty in arranging an easy plan.

War Office, 31st December 1867.

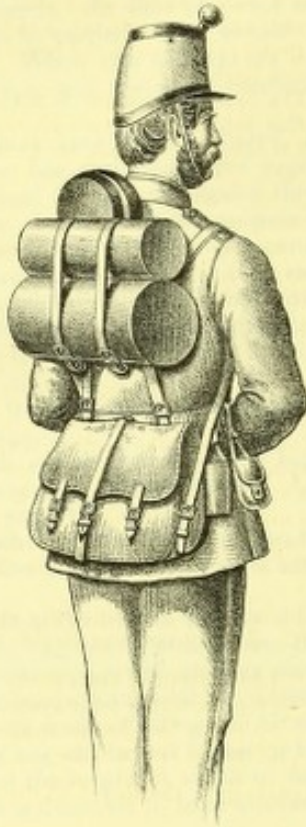
(signed) *H. Eyre*, Lieutenant General,
Chairman of Committee.

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TO ILLUSTRATE COLONEL TIDY'S REPORT.



APPENDIX V.

REPORTS ON THE TRIALS OF THE ALTERED YOKE AND BRACE-YOKE EQUIPMENT.

PRÉCIS OF REPORTS ON FURTHER TRIALS MADE BY THE UNDER-MENTIONED REGIMENTS ON THE ALTERED YOKE VALISE KIT-BAG, PROPOSED BY THE COMMITTEE, OF WHICH LICUT. GENERAL EYE IS PRESIDENT.

Horse Guards, 21 January 1868.

REGIMENT.	PRÉCIS OF REPORT.
Lieutenant General Hon. Sir James Yorke Scarlett, commanding at Aldershot. Colonel Hort, commanding 44th Foot.	The brace system as nearly as possible meets all requirements. Brown leather straps are the best.
Colonel Greer, commanding 68th Regiment. Major General Renny, commanding 1st Brigade, Aldershot. Colonel Lacey, commanding 56th Regiment.	Prefers the brace system, brown leather straps and pouches; pockets in breast of tunic instead of ball-bag, which bangs about, suggested. Haversacks to be discontinued, and wallets added to each side of kit-bag. Prefers the yoke to the brace system. Buff preferable to brown leather. The brace equipment is superior to the yoke. Brown leather belts more serviceable than buff.
Lieutenant General Sir George Buller, commanding at Portsmouth. Brevet Lieutenant Colonel Jordan, commanding 34th Regiment.	The altered yoke plan <i>not</i> an improvement on the original pattern. The brace equipment is very superior to the yoke in every way. Haversack not necessary. Buff leather recommended for straps. Considers the new pattern yoke, as altered, desirable in every point of view.
Colonel Gloster, commanding 97th Regiment. Colonel Jeffreys, commanding 5th Depôt Battalion. Colonel Tidy, commanding at Colchester.	The altered yoke system is a great improvement on the original pattern, and is satisfactory in every respect. The brace plan does not carry the equipment so well or comfortably. Buff leather preferable to brown for straps. The altered yoke plan satisfactory and preferable to the brace system. Brown leather belts.
Colonel Farren, commanding 4th Depôt Battalion. Lieutenant Colonel Ross, commanding 8th Depôt Battalion.	The altered yoke system satisfactory. The brace plan complained of. Buff leather preferred to brown. A most decided preference given to the brace plan; it is in every way superior to the yoke. Earnestly trusts the kit bag may be substituted for the present knapsack. The brace plan preferred to the yoke. Brown leather belts.
Summary	The brace system decidedly superior to the yoke equipment. Buff for straps preferable to brown leather.
	{ 7 in favour of brace plan, { 5 in favour of yoke system; { 5 prefer buff-leather straps, and { 5 prefer brown ditto.

Note.—The précis does not include the reports from the Royal Marines, which were not received at the Horse Guards.

Sir,

Colchester, 19 January 1868.

WITH reference to your letters of the 4th and 11th instant, relative to the yoke equipment, I have the honour to enclose the reports of the officers in command of the 4th and 8th Depôt Battalions.

The time has been short, and the weather bad, since the last kit-bags were received, but every attention has been given to the subject, and short as the time has been, it has elicited one fact, that a most decided preference is given to the brace system. I have no hesitation in saying I think it in every way superior to the yoke. It is more easily put on and taken off; it adapts itself easier to men of all sizes and shapes, and it does not drag, which is somewhat the case even with the amended yoke.

It will be observed that two plans of carrying the blanket are given. I prefer the double roll, an imperfect sketch of which I have attempted and append.—(See Sketch opposite.)

The canteen on the top is quite free from the man's neck, and rides easily. The water-bottle, which I think should be flexible, such as one made by Mr. Allen, in the Strand, hangs best just behind the ball-bag, and I think the strap of the ball-bag might be shortened by a couple of inches; it would ride easier. The haversack put on first may be carried as at present, being put on the first thing. The advantage of the double roll for greatcoat and blanket is that a space is left where a man might pass a bill-hook, if necessary, between the straps. I do not think it an inconvenience to wear both pouches at once. In conclusion I may say, after an experience of 43 years in the army, that I do sincerely trust the kit-bag system may receive an extensive trial. I feel satisfied the result would be its

adoption throughout the British army, thereby greatly conducing to the ease and comfort of the soldier while serving, and an immunity from diseases, which, in consequence of the terrible influence of the present knapsack upon his chest, he too frequently carries to his home when his long and arduous service is at an end.

The Adjutant General,
Horse Guards, London.

I have, &c.
(signed) *T. H. Tidy,*
Col. Commanding E. District.

4th Depôt Battalion, Camp, Colchester,
18 January 1868.

Sir,

WITH reference to the altered yoke equipment which has been under trial for the last few days in the battalion under my command, and to the "points" specified in the instructions attached to the letter, dated Horse Guards, 4th January 1866, addressed to the Colonel Commanding Eastern District, I have the honour to report,—

1. That the alterations in the yoke plan as regards rings and straps are an improvement, but the yoke itself does not fit well, it still hangs back and drags at the neck.

2. No changes with regard to the yoke plan are suggested, the brace system being deemed the preferable one.

3. The best plan of carrying the canteen is with the lid uppermost, on the top of the greatcoat.

4. The brace plan of equipment is preferred in comparison with the yoke, because the drag at the neck, peculiar to the yoke, is obviated; the weight is more on the shoulder; the equipment is brought closer to the back; and it will fit any soldier.

5. Brown leather is preferred for the straps.

The best plan for carrying a blanket, in addition to the valise and greatcoat, seems to be rolled below the greatcoat, between the greatcoat and valise; the greatcoat to be rolled also, and the canteen above on the top of the coat. Or the blanket and greatcoat could be both folded flat, both the same size, and placed together; the blanket next the back, and the greatcoat outside, occupying the same space together, or nearly so, as they would do if placed as in the above-mentioned arrangement.

The water-bottle to be slung on the right side of the man.

And the haversack could be carried at the left side, but as it would interfere somewhat with the bayonet and with the arm, it would probably be better to have another description of haversack (which should be waterproof) to fix over the kit-bag behind, after Colonel Greer's plan.

I have, &c.
(signed) *R. T. Farren,*
Col. and Lieut.-Col. Commanding
4th Depôt Battalion.

P.S.—I enclose a copy of the observations of the men who have worn the altered equipment.

OPINIONS OF MEN OF 4TH DEPÔT BATTALION ON THE ALTERED YOKE EQUIPMENT.

4TH DEPÔT.

No. 1,245, Private Richard Roberts wore the original pattern kit-bag.

1. Yoke does not fit well, hangs back at back of neck, but the alteration as regards rings and straps is considered an improvement.

2. Cannot suggest any change.

3. Best mode of carrying canteen is on the top of the coat.

4. Prefers the brace plan because it brings the equipment close to the back, and can fit any soldier.

5. Brown leather preferred for the straps.

The above are the opinions of the men who have worn the altered kit bag equipment.

Camp, Colchester, 18 January 1868.

No. 1,214, Private David Price wore the original pattern kit-bag.

Yoke does not fit well, but the alteration as regards rings and straps is considered an improvement.

Suggests a smaller yoke.

Best mode of carrying canteen is on the top of the coat.

Prefers the brace plan to the yoke, the weight is more on the shoulder.

Brown leather preferred for the straps.

I have, &c.
(signed) *R. T. Farren,*
Col. and Lieut.-Col. Commanding
4th Depôt Battalion.

Sir,

Camp, Colchester, 17 January 1868.

REFERRING to Horse Guards' letters, dated the 4th and 11th instant, relative to the new proposed system of yoke equipment for the infantry soldier, I have the honour to report that there appears no doubt but that this proposed system is a great improvement on the present regulation equipment for the following reasons, viz. :—

1st. For the greater ease and freedom the soldier would have in firing, loading, and making use of his arms when in action.

2nd. For the much greater comfort and ease with which this equipment is carried on the line of march, the weight of the whole apparatus (yoke kit-bag, greatcoat, and field blanket) being distributed as near the centre of gravity of the body as possible, making the weight felt a "minimum," and almost as if merely an additional garment was being worn.

3rd. The yoke equipment is two lbs. lighter than the present regulation, and what is called the *brace* system of yoke equipment is 2 lbs. 3½ ozs. lighter with field-kit.

4th. For the readiness and ease with which a soldier can accoutre himself, and put on or take off the whole equipment without assistance, which is nearly an impossibility with the present regulation knapsack when in marching order.

5th. For the increased facility afforded for carrying, when on service in the field, a large quantity of ammunition distributed between the pouches and kit-bag, a matter of great importance with all description of arms, but especially now that breech-loaders are in use.

In order to make a proper trial, I directed two soldiers of medium size and strength to carry these yoke equipments yesterday during a route march of the battalion under my command of between 9 and 10 miles, and the ease and comfort with which they did so, in comparison with the other men, was very evident.

For several days these equipments have been worn by the two men above alluded to, and changed from one to another, and they both declare, what indeed is very evident, that what is called the *brace* system is *decidedly superior* to the other yoke equipment, there being little or no pressure on the muscles under the arm, and no drag at the back, and consequently greater freedom and ease, and it is 3½ ounces lighter.

Being desirous of obtaining medical opinion on these equipments I called upon Staff Assistant Surgeon D. A. Leslie, who unhesitatingly and strongly recommends the great advantage of the system in preference to the present regulation knapsack. He states that the yoke-pack in no way impedes the movements of the chest, as far as fixing the clavicle scapula and upper ribs is concerned, nor has it the disadvantage of impeding inspiration as the cross-belt issued with the old pack must infallibly have done, thus in a very marked degree lessening the chance of the lungs or heart becoming affected with disease; he further states that the weight is well distributed and supported principally by the strongest part of the body. Under these circumstances, and being supported by the opinion of several officers, non-commissioned officers, and soldiers of considerable practical experience, I consider that the yoke equipment, especially the *brace* system, is a great improvement; also, that both blanket and greatcoat should be rolled in a circular form and carried one on the top of the other (greatcoat on top), and not folded flat as in the illustration; that the haversack should be carried much as at present, and not at the back of the kit-bag; and that the water bottle should rest on the right hip and be put on last, after the equipment. Buff for straps is, I consider, preferable to brown leather.

I have, &c.

(signed) P. Robertson-Ross,
Lieut. Col. Commanding 8th Depot Bat.

(Clothing, &c.—G.S. 1867.—C. 59.)

My Lord,

Aldershot, 17 January 1868.

In reference to your letters, dated Horse Guards, 4th and 11th instant, I have the honour to forward, for submission to his Royal Highness the Field Marshal Commanding in Chief, reports from the officer commanding the regiments specified in the margin on the altered yoke equipment. I am of opinion that the alterations in the brace system brings that plan as nearly as possible to meet all requirements. The white buff-straps look the smartest on home service, but there are numerous defects. On service they make the soldier visible at a much greater distance than the brown leather. They are much heavier, and the pipeclay wears out and dirties the tunic; and without an ample supply of pipeclay they cannot be kept clean. The brown leather is not perhaps so durable as the present buff-belts, but it is much lighter, and can be easily cleaned.

44th Regiment.
56th Regiment.
68th Regiment.

I have, &c.

(signed) J. Yorke Scarlett,
Lieut. Gen. Commanding Division.

The Adjutant General,
Horse Guards, London.

(D.—449.)

No. 11.—44th Regiment.

Sir,

Aldershot, 13 January 1868.

1. I HAVE the honour to submit to the Brigadier General commanding the 2nd Brigade, in obedience to instructions received, the following report on the improved yoke equipments, the brace equipments, and the tunic with ball-bag pockets sent to me for the purpose.

2. I caused both sets of equipments to be tried by men who had worn the original yoke accoutrements during the drill season. They had an equivalent of three days' meat-rations in their canteens, and 20 rounds of ammunition in each pouch, and on the 11th instant they marched about 10 miles over slippery roads.

3. The following are my answers to the questions proposed in Lieutenant General Eyre's memorandum of the 31st ultimo:—

1st. Is the altered yoke plan satisfactory, and an improvement on the original pattern?

It is so far an improvement that there are fewer straps, and that they are kept together by the rings, and the two pouches as a substitute for a single pouch; but there is the same objection, viz., the tendency of the yoke to hang off the back.

2nd. Do any other changes seem desirable?

Yes; the adoption of the brace system, modified as shown in the set of altered accoutrements transmitted herewith.

3rd. Which is the best of the two modes of carrying the canteen?

A modification of that proposed by Colonel Greer.

4th. What is thought of the brace plan in comparison with the yoke?

It is far better, and, as I believe, if modified something in the way hereafter proposed, will be found the best mode yet introduced for the soldier to carry his field-kit and ammunition.

5th. Is the brown or buff leather preferred for the straps?

Brown most decidedly, as also for the pouches. The black pouches are very liable to dirty the tunic in wet weather, and take a great deal of work to keep them at all clean.

4. I will now proceed to explain as shortly as I can the alterations that I have had made in the brace accoutrements.

A. The buckles at the top of the kit-bag have been turned round, so as to have their tongues outwards instead of pressing against the tunic.

B. The buckles of the side-straps have been removed as close as possible to the large brass rings, and the straps leading from the top of the bag to the said buckles have been lengthened, in order to enable the soldiers to cast it loose without assistance when on the march.

C. The tongues of the buckles of the pouches have been removed, as they chafed the tunic; and the front straps leading from the brass rings to the pouches are now passed through the buckles thus altered, and buttoned on the inside to a substantial stud introduced for the purpose, which looks better than the buckle, and saves the man's tunic.

D. All the tongues are taken out of the buckles of the pouches, and the connecting strap of the right pouch is fastened with a stud, as described in paragraph C.

E. The canteen is fitted nearly as proposed by Colonel Greer. I have added an *additional* loop to the greatcoat straps, so as to make the top of the canteen ride level with the upper edge of the greatcoat, which is folded narrower and thicker than usual, in order to allow ventilation at the soldier's back. With the original yoke the want of air at the back was much complained of.

By the proposed arrangement the canteen can always be carried in the same place, the strap being made to pass through one of the higher loops, so as to bring the top of the kettle in a line with the shoulders when the greatcoat is worn on the man's body.

Any plan of fitting the canteen on top of the greatcoat is very objectionable, in my humble opinion, as it knocks against the soldier's head, particularly when doubling, and stops ventilation.

F. Two small leather pockets have been added to the kit-bag, one on each side at the top to carry 10 rounds. The pockets already in the kit-bag for this purpose throw the weight too much behind, and those proposed being at the side, the ammunition is much more easily got at when wanted. The compartment for the oil-bottle has been removed a little lower down, so as to make room for one of the new pockets.

5. I don't like any of the ball-bags sent up for report, nor the tunic with the ball-bag pockets and straps in front, which seem to me to be inconvenient, and not sufficiently strong, besides which, in a short time the weight of the ammunition would wear out the tunic. Moreover, the *banging* of the ammunition against the soldier's thighs in running or quick walking would be very disagreeable, which objection likewise holds good against the proposed ball-bag. I would suggest that if it be decided that 60 rounds of ammunition be not enough for the soldier to carry (*i. e.* two pouches in front with 20 rounds each, and 20 rounds

rounds in his kit-bag), two strong pockets lined with leather, and with waterproof flaps, be added to the breast of the tunic at the broadest part of the chest where there is most room for them.

6. In conclusion, I beg leave to add a suggestion of Serjeant Major McCarthy, 44th Regiment, viz., that haversacks be discontinued on the adoption of the yoke accoutrements, and that a pocket or wallet of the same material as the kit bag, and forming a part of it, be attached to each end of it, as a substitute for the haversack. This would be an excellent plan, as it would get rid of a troublesome article of equipment, and the wallets being waterproof, the biscuit, tea, and sugar, &c., which the men carry for themselves on a campaign, would not be liable to destruction by wet, as is the case with the haversack.

The Brigade Major,
2nd Brigade, Aldershot.

(No. 25.)

I have, &c.
(signed) *John J. Hort.*
Col. Commanding 44th Regiment.

Sir,

Aldershot, 13 January 1868.

I HAVE the honour to report, for the information of the Lieutenant General commanding the division, that having tried the altered yoke system, I am of opinion that all the alterations in the yoke are improvements. I prefer the yoke system to the brace system, as it divides the weight more evenly over the whole body. I think with the altered yoke the loops on the coat straps is the best mode of carrying the canteen, but I would suggest that the rings on the yoke through which the coat-straps pass should be made sufficiently large to allow the loops to pass freely through them.

I prefer the buff to brown leather for the straps.

I consider pockets in an appropriate coat would be an improvement, but they do not seem to suit the tunic. I think the straps attached to the pocket in the tunic sent for examination superfluous, and the arrangement for the pocket to turn out unnecessary, and likely to frustrate its object, viz., facility of fire.

Nothing can be handier for quick firing than a common wide-mouthed pocket, and as I think a pocket should only be used for rapid firing, and not for the purpose of merely carrying extra ammunition, a stout canvas pocket well stitched into the coat would be strong and serviceable enough.

I consider the best mode of carrying the blanket is in the coat straps when the great-coat is folded and the kit carried, when the mess-tin would be on the top of the blanket; at other times the blanket would be carried conveniently horse-collar fashion (*en banderole*). If carried in the latter way a strap should be provided for fastening the end of the roll.

I would recommend the haversack to be carried over the kit-bag by straps fastening to the yoke-ring in front, and the water-bottle should, I think, be carried at the left side by a strap passing through the yoke-ring, and under the waist-belt, in a manner similar to the expense ammunition pouch (which hangs on the right side) sent with the tunic which has pockets in it.

I have, &c.
(signed) *H. H. Greer*, Colonel,
Commanding 68th Light Infantry.

The Assistant Adjutant General,
Aldershot.

(A. A. G. 26—1—68.)

Aldershot.

FORWARDED. I quite agree as to the brace equipment being superior to the yoke, indeed, with the whole of this report, except paragraph 5, as I consider the brown leather belts more serviceable than the buff ones; the only objection to the brown being the greater difficulty in cleaning and the want of uniform colour.

(signed) *R. Renny*, Maj. Gen.
Commanding 1st Brigade.

(Orderly Room.—No. 39 of 1868.)

Sir,

Aldershot, 15 January 1868.

I HAVE the honour to report on the altered yoke and brace equipment, as follows:—

1. The altered yoke plan is not satisfactory; nor is it an improvement on the original pattern. It is less comfortable in every way; the weight drags uncomfortably on the waist-belt, and after a short march, however previously well fitted the straps may be, they are inclined to slip off the shoulders, and the bag and coat hang loosely. This is especially found to be the case when doubling.

2. No changes seem to me desirable in the yoke system.

3. The best mode of carrying the canteen is that shown in diagram attached. (*See next page*).

4. The brace equipment, as compared with the yoke, is very superior in every way. It has been tried by most of the soldiers who wore the yoke, and they all consider it more comfortable.

The weight of the kit-bag is borne easily, without constriction on the chest, or disagreeable pressure anywhere.

The coat, when rolled lightly or folded square, fits into the straps, and the canteen is best carried as shown in diagram. (*See next page*.) Thus placed it is firm, comfortable, and preserves its horizontal position, however violent the movement of the body.

The blanket is most conveniently carried rolled like the coat, and placed above it, the two encircled by the coat-straps, the mess-tin on top, as shown in diagram. (*See next page*.)

The two small pouches are a great improvement on the one large one.

The ball-bag on right side should have a strap to pass under waist-belt through the yoking-ring, from which it would in a great measure depend.

The water-bottle would be comfortably carried on the left side, hanging from a strap passed under the waist-belt and through the yoking-ring, corresponding with ball-bag, and counterbalancing its weight.

I do not consider the haversack necessary; the soldier would carry his rations more conveniently, the meat in his canteen, the bread in his kit-bag, but if retained I can suggest no better method than the present, viz., across the right shoulder.

5. I now recommend buff leather for the straps, as, from experiment, it is found to be difficult to preserve brown leather in good order and of uniform colour.

I have, &c.

(signed) *R. W. Lacy*, Colonel,
Lieut. Col. Commanding 56th Regiment.

The Brigade Major, 1st Brigade,
Aldershot.

(Clothing—G. S. 1867—C. 59.)

Sir,

44th Regiment, Aldershot, 15 January 1868.

WITH reference to Adjutant General's letter of the 11th instant, yesterday received, I have the honour to make the following suggestions with regard to the mode of carrying the soldiers' blankets, water-bottles, and haversacks, with the proposed brace equipments:—

1. The blanket should be folded inside the greatcoat. I have tried this plan, and it answers perfectly; but more loops will require to be sewn under the braces, to enable the canteen to ride upright, with the top of it in a line with the upper edge of the greatcoat.

2. The wallets proposed by Serjeant Major McCarthy, 44th Regiment, as stated in paragraph 6 of my letter of the 13th instant, would do away with the necessity of a haversack; but if it be objected that occasions may arise when the soldier would require to have the means of carrying his biscuit, tea, &c., without taking his kit-bag with him, I would suggest that he should have a haversack on the present principle, but smaller, and made of dark-coloured waterproof material, and divided into two compartments, one for tea, sugar, &c., and the other for biscuit, to be worn, as at present, on the left side, the top edge to be as high as the waist-belt.

3. The water bottle should be worn in the same way as the haversack, but on the right side, both of them being thrown rather to the rear. Nothing can be more objectionable than the present blue water-bottle, by reason of its weight, its inconvenient shape, and its unnecessary size, and its liability to leak, unless always full, whenever it is exposed to much sun, which is of course a natural consequence where canteens (water-bottles) are made of wood. The soda-water bottle covered with leather, as used in India, is far preferable, but it contains too little. The "bidon" of the French army, made of tin, and covered with cloth of the colour of the man's tunic, and slightly curved to take the shape of the man's hip, is excellent, except that tin is not a cleanly material for a water-bottle, as it is so liable to rust. India-rubber, and I believe gutta-percha, also impart a disagreeable flavour to water; and therefore I would suggest that either a bottle like the Indian sodawater bottle, or a strong glass bottle in shape like the French bidon, and covered with leather, should be adopted as the water-bottle of the British service.

4. I may add that I went yesterday to the museum of the United Service Institution, on purpose to look for a good pattern of water bottles amongst the numerous equipments of foreign armies that are to be seen there, and could not find one that I thought better than the "bidon."

I have, &c.

(signed) *John J. Hort*,
Col. Commanding 44th Regiment.

The Brigade Major, 2nd Brigade,
Aldershot.

DIAGRAMS TO ILLUSTRATE COLONEL LACY'S REPORT.

(See opposite page)



Nº 1. — Rear.



Nº 2. — Front.



Nº 3. — Left.



Nº 4. — Right Side

DIAGRAMS TO ILLUSTRATE COLONEL LAY'S REPORT



(Orderly Room.—No. 41, of 1868.)

Aldershot, 15 January 1868.

Sir,
In obedience to memorandum from the Assistant Adjutant General, I have the honour to report upon the experimental tunic with pockets for ammunition as follows:—

I am of opinion that the carrying of ammunition in pockets in the tunic would be attended with great wear and tear of the tunic, and that in doubling it would sway about and bruise the body.

I have, &c.
(signed) *R. W. Lacy*, Colonel,
Lieut. Col. Commanding 56th Regiment.

The Brigade Major, 1st Brigade,
Aldershot.

CLOTHING.

Portsmouth, 18 January 1868.

THIS letter and report of Colonel Gloster, commanding 97th Regiment, on the "altered yoke system," is transmitted to the Adjutant General of the Forces. With reference to my letter of yesterday's date, forwarding the two reports from the officers commanding the 5th Depot Battalion and the 34th Regiment, Colonel Gloster generally concurs with the opinion of these officers, but recommends the *brown leather* instead of the *buff*, but in which I do not at all agree.

To the Adjutant General of the Forces.

GEORGE BULLER,
Lieutenant General, S.W.D.

Clothing.—No. 30.—68.

Portsmouth, 18 January 1868.

Sir,
WITH reference to Horse Guards' letter, dated 4th instant, and printed instructions for fitting and reporting upon the altered yoke system, and Horse Guards letter (Clothing, &c.—G.S. 1867.—C. 59), dated 11th January 1868, I have the honour to forward to you my report, as therein required.

I have, &c.
(signed) *J. T. Gloster*, Col.,
Commanding 97th Regiment.

To the Adjutant General of the Forces.

Questions.

1. Is the altered yoke plan satisfactory, and an improvement on the original pattern?
2. Do any other changes seem desirable?
3. Which is the best of the two modes of carrying the canteen?
4. What is thought of the brace plan in comparison with the yoke?
5. Is buff or brown leather preferred for the straps?

What is the best manner to carry a blanket, haversack, and water-bottle, in addition to the valise?

Answers.

- Yes.
- No.
- As in the drawing.
- I prefer the yoke.
- Brown leather.

Blanket folded flat, same size as great-coat; a soda-water bottle, covered with leather, can be easily carried; haversack on some such plan as specified in the drawing.

(signed) *J. T. Gloster*, Colonel,
Lieutenant Colonel 97th Regiment.

FIFTH DEPÔT BATTALION.

REPORT on the altered Yoke Equipment.

1. Yes; but I think the inner edge of the ring should be less sharp, as it is liable by wear to cut the buff.
2. No.
3. Colonel Greer's is the best plan.
4. The brace plan is complained of as causing great pressure on the shoulders, and I think the yoke plan the best.
5. Buff leather is preferred, the brown leather being liable to stain by perspiration.

Additional Report.

The haversack should be put on first over the right shoulder, as the wallet-straps will keep it steady.

The water-bottle should be put on last, over the left shoulder, as it might want refilling.

The blanket should be folded same size as greatcoats. It can be carried with the present straps, with or without the greatcoat.

When both are on, the canteen can be carried on the top.

(signed) *Edw. Jeffreys,*
Colonel, 5th Depôt Battalion.

Parkhurst, 16th January 1868.

CLOTHING AND EQUIPMENT.

(No. 39.—B 2.)

Sir,

Portsmouth, 16 January 1868.

WITH reference to your memorandum, dated 5th instant, and in compliance with Horse Guards' letter, as per margin, I have the honour to report, for the information of his Royal Highness the Field Marshal Commanding in Chief, on the following points in connection with the yoke system of equipment, as requested in the instructions issued from the War Office, dated 31st December 1867.

1. Is the altered yoke plan satisfactory, and an improvement on the original pattern?

It is quite satisfactory, and a great improvement on the original pattern; the bag, greatcoat and mess-tin all fit well on the soldier's back, and remain perfectly steady when he doubles.

2. Do any other changes seem desirable?

I have not been able to perceive that any change can be made likely to add to its efficiency.

3. Which is the best of the two modes of carrying the canteen?

I, and also the non-commissioned officers and men who have tried the equipment, all agree that the best mode of carrying the canteen is on the top of the coat, as with the present straps it can be carried there perfectly steady, does not in the least interfere with the soldier's head, and, when filled with the ration, rides much easier than if placed behind the coat.

4. What is thought of the brace plan in comparison with the yoke?

The brace plan does not carry the equipment as well or so comfortably as the yoke.

5. Is buff or brown leather preferred for the straps?

The buff is certainly the best; it can be more easily cleaned by the soldier; looks well the whole time it is in use, and on service the pipeclay can be washed off, and they can be worn without; while the brown leather is difficult to clean, and when once stained (which it generally becomes after it has been a short time in wear), can never be made to look well again.

6. What is the best method of carrying the blanket, water-bottle and haversack?

The blanket should be folded the same size as the coat, and placed on the outside of it, the haversack on the left side under the yoke-straps, but over the bayonet, the water-bottle on the right side behind the ball-bag, the strap underneath the yoke-straps.

I have, &c.
(signed) *J. Jordan,*
Brevet Lieut. Col. Commanding
34th Regiment.

To the Assistant Adjutant General,
S. W. District, Portsmouth.

Dated 4th Jan. 1868.
Clothing, &c.
G.S. 1867.
C. 59.

CLOTHING.

Sir,

Portsmouth, 17 January 1868.

WITH reference to your letter of the 4th January 1868 (Clothing—G. S., 1867—C. 59) transmitting copies of instructions for fitting and reporting on the altered yoke system, and to your letters of 11th January 1868 (Clothing—G. S., 1867—C. 59), I have now the honour to forward the reports of the officers commanding regiments, named in the margin, on the several points numbered in the printed instructions, by which it will be observed that the plan of the altered yoke is considered generally satisfactory, and that no essential deviations from it are recommended. Colonel Jeffreys suggests, with regard to No. 1, "that the inner edge of the ring should be less sharp, as it is liable to cut the buff."

5th Depot Batta-
lion.
34th Regiment.

Colonel Jeffreys, with regard to No. 3, approves of "Colonel Greer's plan," from which Lieutenant Colonel Jordan, 34th Regiment, differs, and considers that the best mode of carrying the canteen is on the top of the coat, and to which proposal I do not see there is any objection.

With reference to No. 4, there is a concurrence of opinion that the yoke plan is the best.

No. 5. The buff leather is considered the best for its purpose.

It appears desirable that the blanket should be folded in the same manner as, and placed at the back of the greatcoat.

There is a difference of opinion as to the mode of carrying the water-bottle, but I agree with Colonel Jeffreys, that it would be expedient that it should be put on last, and the strap *over* theyoke-straps, and that the haversack should be placed first over the right shoulder for the reason given, that the wallet-straps will keep it steady.

I have only to add that I consider the new system to be in every point of view desirable.

I have, &c.

(signed) *George Buller*,
Lieutenant General Commanding
S. W. Division.

The Adjutant General of the Forces,
&c. &c. &c.

(Clothing—G. S., 1867—C. 59.)

My Lord,

Aldershot, 24 January 1868.

WITH reference to Horse Guards' letter, dated 11th instant, and my letter of the 17th, I have the honour to forward, for submission to his Royal Highness the Field Marshal Commanding in Chief, a report from the officer commanding 98th regiment upon the altered yoke equipment.

I have, &c.

(signed) *J. Yorke Scarlett*,
Lieut. General Com. Division.

The Adjutant General,
Horse Guards, London.

REPORT No. 2, on YOKE EQUIPMENT.

(No. 10.)

Sir,

North Camp, Aldershot, 22 January 1868.

HAVING been ordered to report upon the two patterns of suggested alterations in the yoke equipment for infantry, five sets of which have been for some time on trial in the regiment under my command, I have the honour to enclose a report from the officer whom I entrusted with the duty of superintending the original yoke equipment first sent, and reported upon some time ago by me.

This officer has given great attention to and has taken great interest in the matter, and he and I having tried the two patterns last sent, have come to the decision on all the points mooted, embodied in the accompanying report.

I consider the brace system an improvement on the yoke system, with the exception of the brown leather straps, for which I would substitute buff.

I have seen numbers of frontier regiments in India supplied with belts of brown leather, which after long wear and exposure do not look clean or soldierlike.

I regret that I was unable to furnish this report on the 18th instant, as directed, but the move of the 98th Regiment from Portsmouth to this place, at short notice, in very unfavourable weather, has prevented my giving, previously to this date, sufficient attention to all the points on which I had to report.

I have, &c.

(signed) *Francis Peyton*,
Colonel, and Lieut. Col., Commanding
98th Reg. and 3rd Brigade.

The Acting Adjutant General.

The altered YOKE EQUIPMENT, &c.

Sir,

Aldershot, 21 January 1868.

HAVING examined and tried the altered yoke equipment, I have the honour to report thereon as follows with reference to the questions proposed in the printed instructions:—

No. 1.

The altered yoke plan is satisfactory in so far as it is a partial improvement on the original pattern in matters of detail; viz.,

- (a.) The substitution of the yoke-ring and buckles for studs and link-straps;
- (b.) The substitution of two 20-round pouches for one 30-round pouch;
- (c.) The greater steadiness given to the coat;
- (d.) The more even distribution of weight on the yoke by dispensing with the central back strap, and helping to support the kit-bag by the coat-straps.

But these improvements involve minor disadvantages; viz.,—

- (1.) Greater difficulty in detaching the kit-bag when necessary; this can only be done by taking off the coat-straps;
- (2.) The weight of the coat and bag are brought too *much* together, the former being slightly drawn from the shoulder, the latter too much raised; hence it is more difficult to adjust the bag in the easiest position according to the height of the man. The objections under this head would be increased should a blanket be included in the coat-straps as now proposed;
- (3.) There is no room to support a reserve-pouch or other article on top of kit-bag, when required.

No. 2.

The changes which above objections seem to call for, are found ready made in the brace system as shown in No. 4 answer.

I would suggest that on the march, for comfort, one of the 20-round pouches (or on emergency a reserve-pouch containing 20 or 30 rounds) should be carried supported on the kit-bag. With the brace system I tried fastening the runners-straps of the pouch to the large buckles on the kit-bag, and passing the strap which closes the bag over the pouch to steady it. In this position it was found to be very comfortable, even when the 20 reserved rounds were added to the kit-bag.

Regarding the ball-bag, while at present most necessary for rapidity of fire, it is the most awkward part of the accoutrement owing to its looseness; the hands of the men frequently catch in it while working their rifles. I am told a tunic with pockets has been suggested in lieu; either that, or a stout wide leather pocket in the trousers, would be a most desirable substitute for the ball-bag, provided such pocket were only used to aid celerity in actual firing, and never to carry packed ammunition.

No. 3.

The mode sent with the altered yoke appears best. There should be *two* sets of loops for the canteen-straps; one sufficiently low on the coat-straps to allow of the canteen lid being in line with the top of the greatcoat, the other higher up to admit of the canteen being carried in its usual place on the top of the greatcoat. The former position I consider preferable, except when the blanket is carried in the coat-straps, when the latter would be best. I question if the top of the kit-bag would ever be a good place to carry the canteen, even when the coat is worn.

No. 4.

(a.) It is more compact; the principle of distribution of weight is preserved, while any excess of weight bears on the proper part of the shoulders, without that unseemly dragging which still takes place with the yoke, and would always do so unless each yoke were fitted to the size and build of the man.

(b.) It is more easily adjusted in a comfortable position according to the size of the wearer.

(c.) The kit-bag receives sufficient support without causing any drag on the shoulders, and at the same time can be readily detached without undoing the coat-straps.

(d.) The coat is secured in a steady position, yet is free from the kit-bag, and permits a pouch, water-bottle, or canteen to rest on the kit-bag.

I would merely suggest widening the brace-straps for comfort, and lengthening the coat-straps to admit a blanket.

No. 5.

Buff I consider incomparably superior to brown leather for a soldier's use.

The *blanket* would, I think, lie best strapped up with the coat unless occasionally for convenience

convenience slung from the shoulder (*en banderole*) with articles in it as a kind of substitute for the haversack, whose present position it would then occupy. I believe the regiments lately in the field in New Zealand found this a serviceable plan.

I desire to suggest a blanket, waterproof on one side and of warm material on the other, so made (with buttons, hooks, or strings) as to be used collectively or individually, *e. g.*, four men having blankets; two blankets supported would form a small tent; the other two would serve to lie upon or to cover the men. Occasions might arise when a plan of this kind would be found very practicable and useful.

The *haversack*, I think, could not be better placed than at present.

The *water-bottle* would be best suspended at the right side by a *buckle-strap* from the left shoulder, so that men could use it on the march without removing other parts of their accoutrements. The neck of the bottle passed under the lower strap of the kit-bag would steady it, and leave the right arm perfectly free so soon as the ball-bag is dispensed with. The difficulty in getting at it would be an objection to the water-bottle resting on the top of the kit-bag.

Trusting experience will evidence the justice of the foregoing observations, I have only to regret that the removal of the regiment from Portsmouth, and constant employment of the men wearing the new equipment, have prevented my testing more experimentally the results of the changes proposed.

T. Peyton, Colonel,
Lieut. Colonel Commanding
98th Regiment.

I have, &c.
(signed) A. J. Raper,
Lieut., 98th Regiment.

Forwarding REPORT on the YOKE EQUIPMENT.

(No. 65.)

Royal Marine Artillery Barracks, Portsmouth,
24 January 1868.

Sir,

I HAVE the honour to enclose a report from Lieutenant Cockcraft on the altered yoke and brace equipment for carrying the pack and ammunition.

This officer has shown great zeal in devoting much time and personal exertion to giving the new equipment a complete trial.

Some of the alterations have been made at his suggestion.

Colonel S. N. Lowder, C.B., A.D.C.,
Deputy Adjutant General,
Royal Marines, London.

I have, &c.
(signed) G. A. Schomberg,
Colonel Commandant.

Royal Marine Office, S. W.,
25 January 1868.

FORWARDED for the consideration of Lieutenant General Eyre, unless the suggestions contained herein have reached him already.

(signed) S. Netterville Lowder,
D. A. General.

R. M. A. Barracks, Portsmouth,
23 January 1868.

Sir,

I HAVE the honour to report, that in obedience to your orders, I have tried the new equipment last forwarded by Dr. Parkes.

In answer to the questions given in the instructions for fitting the altered yoke equipment, I have to state,—

(1.) The altered yoke plan is in every way satisfactory, and an improvement on the original. The rings act admirably, and cause the straps in front, which are attached to them, to fit well and comfortably into the side, thereby causing no inconvenience of any kind in the handling of the rifle.

(2.) I have no further alterations to suggest.

(3.) With regard to the plans for carrying the canteen, both are satisfactory, and either might be adopted. I prefer the present plan of carrying the haversack to the one suggested.

(4.) On this trial I have given more attention to the "brace" plan, with regard to which I must alter the opinion expressed in my last report. I find that it does not, as I feared it would, cause any uncomfortable feeling on the shoulders after being worn for a long time; and it has this great advantage, *viz.*, that it obviates the great drawback to the yoke system, the tendency the yoke always has to slip off the shoulders.

(5.) As to the materials for the straps, I still adhere to my former opinion. I prefer brown leather to buff, as being stronger, more durable, and easily cleaned; the only disadvantage is that it will be found difficult to keep the belts of a uniform colour.

Trusting this will meet with your approval,

Colonel Schomberg, C.B.,
Colonel Commandant, &c. &c. Portsmouth.

I have, &c.
(signed) *William La Trobe*,
Lieutenant R. M. Artillery.

Relative to the NEW EQUIPMENT.

(No. 72.)

Royal Marine Barracks, Forton,
30 January 1868.
Sir,
LIEUT. GENERAL EYRE having sent two sets of equipment for trial in this division, I have the honour to report for his information that the alterations made in fixing and placing the straps on the yoke-set are considered improvements.

That the brace plan is preferred by the men, but the part of the strap bearing on the shoulder should be broader.

That the canteen carried according to Colonel Greer's plan is good.

That brown leather is preferred for the straps.

Colonel S. N. Lowder, C.B., A.D.C.,
Deputy Adjutant General,
Roy. Mar. London.

I have, &c.
(signed) *W. S. Aslett*,
Colonel Commandant.

PORTSMOUTH DIVISION.

ROYAL MARINES LIGHT INFANTRY.

STATEMENTS of Non-commissioned Officers relative to the New Equipment.

22nd Company, James Baker, Serjeant.

1. Is the altered yoke-plan satisfactory, and an improvement on the original pattern?—It is.
2. Do any other changes seem desirable?—No.
3. Which is the best of the two modes of carrying the canteen?—The latest one.
4. What is thought of the brace-plan in comparison with the yoke?—The brace-plan I find easier, as the yoke presses between the two shoulders.
5. Is buff or brown leather preferred for the straps?—Brown leather.

34th Company, George Ferguson, Serjeant.

1. Is the altered yoke-plan satisfactory, and an improvement on the original pattern?—I like the first pattern best.
2. Do any other changes seem desirable?—I cannot say.
3. Which is the best of the two modes of carrying the canteen?—The first plan of all.
4. What is thought of the brace-plan in comparison with the yoke?—I much prefer the yoke.
5. Is buff or brown leather preferred for the straps?—Brown leather.

54th Company, Frederick Brown, Corporal.

1. Is the altered plan satisfactory, and an improvement on the original pattern?—Yes.
2. Do any other changes seem desirable?—No.
3. Which is the best of the two modes of carrying the canteen?—The way it is worn with the brace.
4. What is thought of the brace-plan in comparison with the yoke?—I prefer the brace-plan to the yoke.
5. Is buff or brown leather preferred for the straps?—I much prefer the brown.

Respecting NEW EQUIPMENT.

(No. 85.)

Royal Marine Barracks, Chatham,
30 January 1868.
Sir,
I HAVE the honour to transmit herewith, for the information of Lieut. General Eyre, chairman of the Committee upon the New Infantry Equipment, the opinions of the non-commissioned officer and men belonging to the division under my command, who have been wearing the three sets sent to these head-quarters for trial.

Colonel S. N. Lowder, C.B., A.D.C.,
Deputy Adjutant General,
Royal Marines.

I have, &c.
(signed) *G. W. Lanbrick*,
Colonel. A.D.C., Commandant.

ANSWERS to QUESTIONS respecting NEW EQUIPMENT from CHATHAM.

Questions.	Answers by Corporal Cassidy, R.M., L.I.	Answers by Private Sidney, R.M., L.I.	Answers by Private Burke, R.M., L.I.
1. Is the altered yoke-plan satisfactory, and an improvement on the original pattern?	The altered yoke-plan is satisfactory when compared with the knapsack now in use, but it is not an improvement on the original plan, for various reasons, amongst them the absence of the lower straps, which throw more weight on the shoulders, and likewise impede the action of the chest.	No, it is not so easy. The straps work underneath, and impede the free use of the arms, and there is considerably more weight thrown upon the shoulders, owing to the lower bag-strap being taken away.	I do not consider the modified pattern-yoke an improvement, the original one is much the best for the soldier.
2. Do any other changes seem desirable?	I think it would be beneficial to have the straps of the original equipment to work on a ring in lieu of studs, so as to avoid complication.	It would be a great improvement if a ring similar to the one on the modified plan was substituted for the stud on the original yoke-plan, but still retaining the two bag-straps. When performing manual, platoon, and bayonet exercises, I find the two small pouches are greatly in the way, the long pliable one first issued being most convenient.	If a ring was put in place of the stud it would be better. The soldier would not be so liable to lose his straps. The bag will injure the trousers; there ought to be some remedy for it.
3. Which is the best of the two modes of carrying the canteen?	To me the best method seems the one adopted by Colonel Greer, in which the canteen is carried on the top of the greatcoat, as it has a less tendency to draw the upper part of the body backward, and to lighten the yoke on the fore part of the shoulders.	The one in which it is carried on the top of the coat upright, like it is carried on the knapsack now in use; it is closer to the body, and does not ride so heavy as when carried behind the coat.	The canteen to be carried on the top of the greatcoat, the lid uppermost.
4. What is thought of the brace-plan, in comparison with the yoke?	It will not afford a comparison with the original yoke pattern as regards wear, comfort in marching, and freedom of action; it slightly oppresses the chest, pains the shoulders, and deprives the arms of that perfect freedom which is enjoyed with the original yoke equipment.	It is not so easy as those on the yoke principle, all the weight being thrown on the shoulders and upper part of the breast, in exactly the same place where the pressure from the knapsack now in use is most felt.	All the weight is on the shoulders; the knapsack slings come too much under the arms, and help to tighten the chest. The two pouches are in the way in going through the bayonet exercise.
5. Is buff or brown leather preferred for the straps?	For my own choice, and from remarks that I have gathered, all unanimously give the preference to brown leather.	My opinion, and the opinion of all whom I have conversed with, is, that dark brown leather for the whole of the belts (so as to totally abolish pipeclay), would be the best and most serviceable that could be adopted.	The brown leather is preferred to the buff, the colour not to be so bright.

George Lambrick,
Colonel Commanding.

Royal Marine Barracks, Chatham,
7 February 1868.

Sir,
With reference to the new pattern knapsack, I beg to make the following report:—
I walked yesterday with it on, with provisions, water, and ammunition, to Maidstone and back (a distance of 16 miles) in 3½ hours, during which time I halted twice, and after returning, I kept it on to complete 6½ hours wearing it, to ascertain if it caused any pain after marching. I felt no inconvenience whatever, nor do I to-day feel any ill effect from it, and I think I could go the same distance easier to-day than I did yesterday.
I consider it a perfect success as regards ease and comfort, and superior in every way to the knapsack now in use.
I beg to observe that I have not worn a knapsack for the last 10 years, and therefore should have felt the ill effects of it (were there any) more than a man who has been accustomed to carry one.

Colonel G. Lambrick, A.D.C.,
Commandant, Roy. Mar.

I have, &c.
(signed) R. D. Briggs.

Sir,
I HAVE the honour to report that, in obedience to your directions, I have superintended the trials of two sets of equipments on the yoke and brace systems, which have now been under daily trial for a period of six weeks. The men wearing the equipments have marched eight and ten miles a day with complete kits, and full amount of ammunition.
The conclusion arrived at by myself and the non-commissioned officers employed is, that the yoke system is far less easy and comfortable than the brace system.

Yoke pattern: buff leather, complete kit, and 80 rounds ammunition; weight 24½ lbs.

Brace pattern: brown leather straps, complete kit, and 80 rounds ball cartridge; weight 25 lbs.

The objections to the yoke pattern are as follow: the yoke, after wearing it a short time, drags, the upper edge falls off from the neck, and the lower edge then cuts across the shoulders; every man who has worn it during the present trial complains of this defect, although at starting from barracks the equipment might seem to fit accurately and easily. It appears to me that the yoke requires to be fitted to each man individually, and that even then the buff of the yoke is insufficient to support the strain on it, and, by stretching, throws the fitting out, and soon makes its pressure felt across the back.

Again, the sack, suspended from the coat-slings, *does not sit easily*; it either increases the drag on the yoke, or, if this is connected by the side-straps, it is then brought too close into the back, causing great heat and inconvenience.

With regard to the brace pattern, the only complaint made about it specially is, that it cuts on the shoulders; but this, I think, may be attributed to the width of the straps, and might be obviated by *widening* them when they pass over the shoulders. Notwithstanding this objection, those who have worn it alternately with the yoke prefer it to the latter, for ease and comfort in marching.

There are minor points in both equipments which I think might with advantage be altered, viz.:

1st. The buckles to the pouches: the present mode of passing the straps is faulty. I would pass the ring straps from *in out*, the same as a brace.

2ndly. The stud of the ball-bag should be reversed, the head of the stud as at present bears on the hip; the flap should fasten outwards; would be better made of brown leather, and without the hollowing in the centre; this form allows too much play to the bag, and the weight of the ammunition draws down the centre of the bag.

3rdly. The brace pattern appears weak in the connection of the coat-straps and brace; I think it should be by dumb buckles, not by stitching.

With regard to the canteen, I should pronounce in favour of carrying it on top of the greatcoat, and in choice of material for the straps, &c., I should recommend the brown leather as more durable on service than the buff.

In conclusion, I beg respectfully to offer my humble opinion that in all essential points the brace pattern is superior to the yoke; it supports the weight well, at the same time it accommodates itself to the movements of the shoulders; working as the braces do on the centre stud, the air passes freely between the coat and the back, thereby avoiding the heat produced by the yoke, and requires less minute attention to the arrangements of the various straps. It is slightly heavier than the yoke, but this again is in its favour, as in our experiments it has been carried, the greater weight, with the least toil.

I have, &c.

(signed) *Chas. McArthur,*
Lieut. Col., R.M. Lt. Infantry.

To Colonel Suther, C.B.,
Commandant, Royal Marines, Woolwich.

APPENDIX VI.

INSTRUCTIONS for Fitting the proposed NEW EQUIPMENT for INFANTRY REGIMENTS.

THE equipment consists of a waist-belt and frog; two pouches of 20 rounds each; a ball-bag to be used in firing; a valise made large enough to hold the field-kit; brace-yoke; and coat-straps.

While the object is to provide means of carrying a good supply of ammunition, and the articles of field-kit, which a soldier requires during peace, or which must be borne during a campaign, it is not intended that the full equipment shall be always carried, or that the whole of the field-kit shall necessarily be in the valise. On the contrary it is proposed to carry only one pouch on ordinary occasions in peace, to use the ball-bag only during rifle practice, and to place in the valise merely such articles of the field-kit as may be wanted at the time, the other articles being carried for the men.

The object is in fact to leave the soldier as unencumbered as possible, except when there is a necessity for weighting him.

1. During drill, and on sentry, it is proposed he should carry one 20-round pouch, which may be in front, or slipped round to the back, and which is sufficiently supported by the waist-belt. (Fig. I.)

2. If it is required to carry 40 or more rounds, two pouches should be in front, and the ball-bag may be added, into which, if necessary, 10 or 20 rounds may also be put. As this weight is too great for the waist-belt alone, it is necessary to support it by the brace-yoke which should be now put on. (Fig. II.)

On looking at the brace-ring, it will be seen that one strap is made to take off; this should be removed and fastened to the valise, so that it may not be lost. The cross-strap at the back being then fastened to the buckle fixed to the back ring-straps, the yoke

DRAWINGS FROM PHOTOGRAPHS SHOWING THE MODE OF FITTING THE EQUIPMENT.

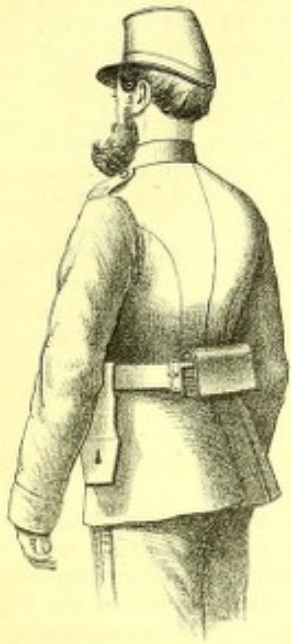


Fig. I.

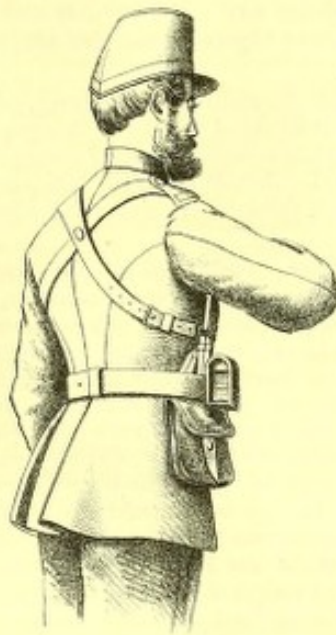


Fig. II.



Fig. III.



Fig. IV.



Fig. V.



Fig. VI.



Fig. VII.

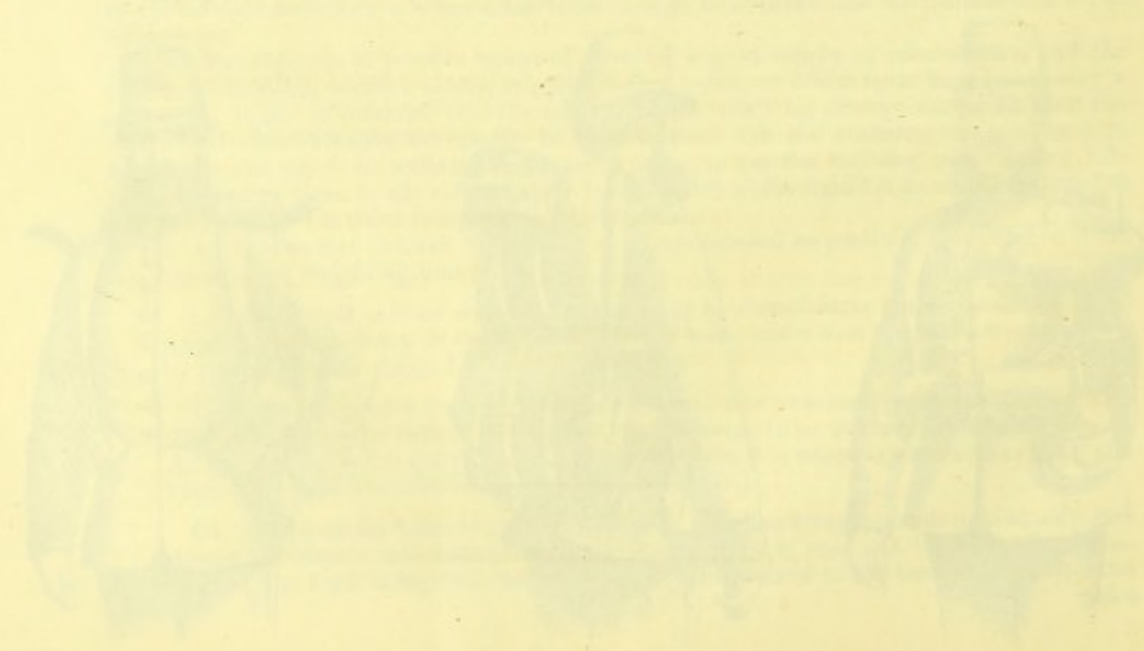
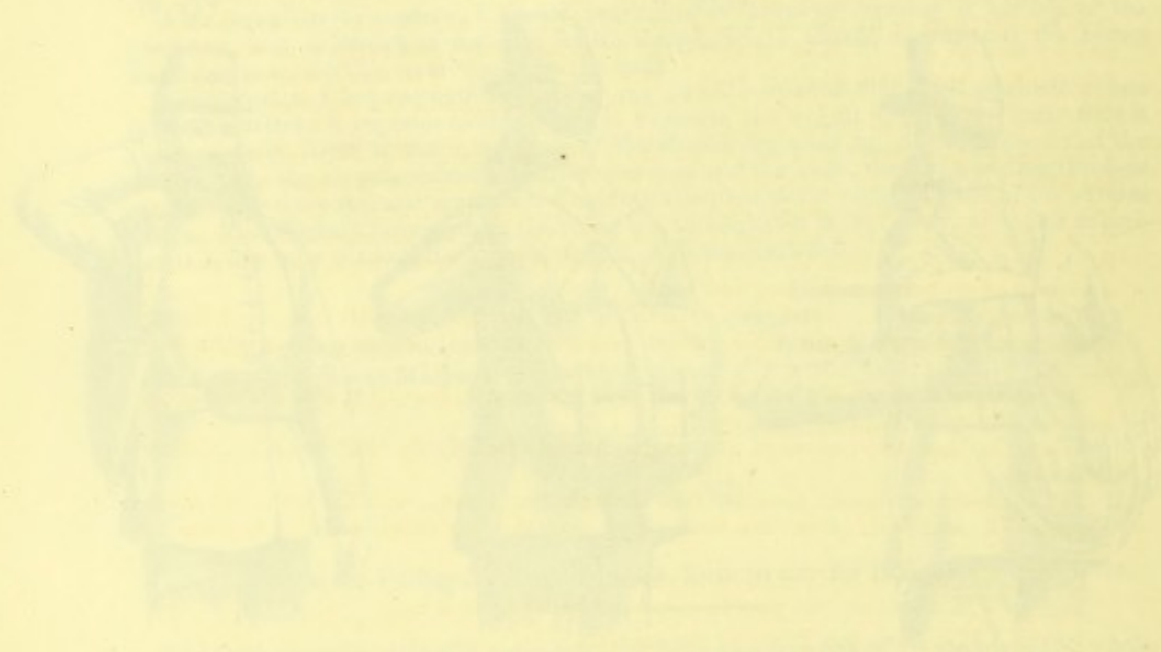
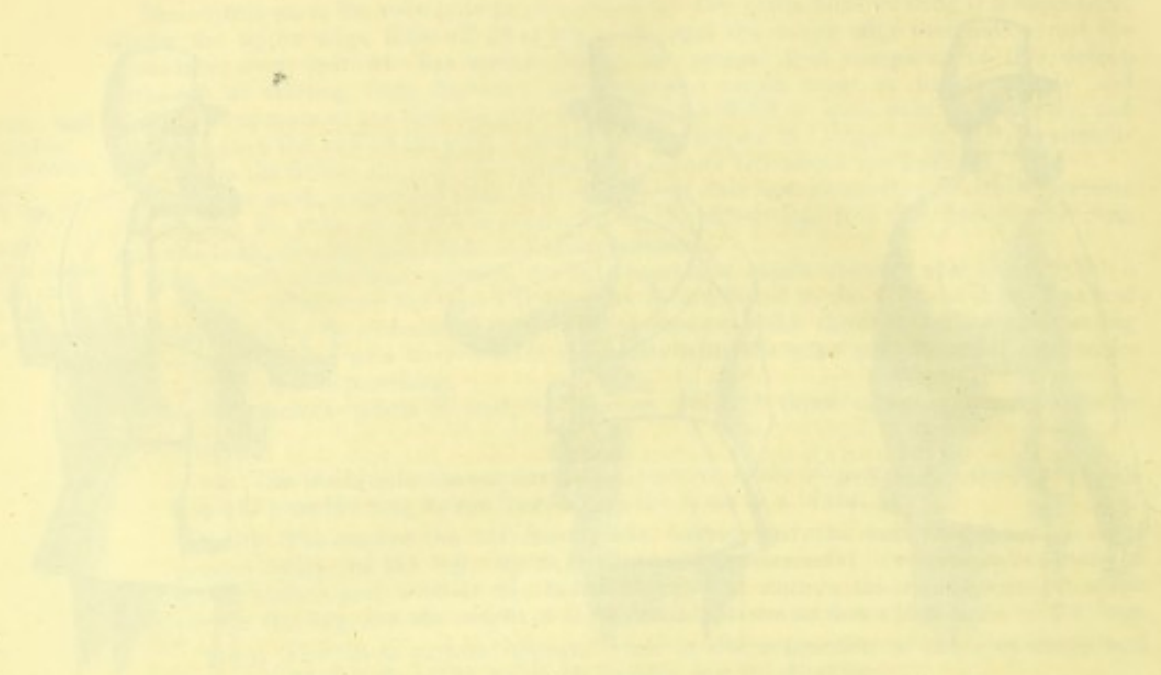


Fig. VIII.



Fig. IX.

DRAWINGS FROM PHOTOGRAPHIC SURVEY FOR THE PURPOSE OF FITTING FOR EQUIPMENT



yoke is put on like a coat, and the front ring-strap is passed round the waist-belt (a loop will be seen inside which holds it in position) and back to the buckle just below the ring. Fig. VI. will show how this is done. The ball-bag, if required, is carried from the ring on the right side, the bag being brought up inside the waist-belt as far as it will go to keep it steady.

3. If it is wished to carry the greatcoat with the ammunition but without the valise, it can now be put on. Two upper and two lower loops (the latter concealed for appearance) will be seen on the cross-straps behind; the coat-straps should be passed through these loops from below, upwards, and the coat secured. The coat is very steady in this way, and very comfortable when there are 20 or more rounds in the front-pouch or pouches. (Fig. III.)

4. Figs. IV. and V. show the fixing of the valise. As this is an important point, it is recommended that the coat and coat-straps shall be removed, and the straps which had been taken off the ring put on again. The valise should be packed carefully; two divisions will be seen in it; the larger one, which is nearest the man's body, is intended to be generally used, the other being kept for small articles and provisions. The trousers should go in first, and should not be rolled, but folded flat, and be placed on the side nearest the man's body; the shirt should be folded flat, and then be put in; then the boots should be placed upright against the sides, with the heels outwards, there will be then plenty of room for the towel, socks, and other articles. The object should be to have the soft articles nearest the person, and to have no bulging, which may be disagreeable. If necessary, 20 rounds of ammunition can be carried in the two small pockets in the valise, making 80 in all that can be carried.

The brace-straps should now be fixed to the valise; the side-buckles should be undone, and the cross-straps passed through the buckles at the top of the bag. It will be seen that the cross-strap is pierced with holes immediately below the lower coat strap-loop. For the smallest men (5 ft. 5 in.) the first hole below the loop is the most comfortable point to fix the bag to, for men of 5 ft. 7 in. to 5 ft. 9 in. the second hole, and for men of 5 ft. 10 in. or upwards, the 3d or 4th hole; but every man should try two or three holes until he finds what is most comfortable. The strap, after taking the bag buckle, should be rebuckled to the ring-strap buckle, and then the other ring-strap secured to the bottom of the valise.

The equipment should then be put on like a coat, as seen in Fig. IV., and secured to the waist-belt; when on, it should sit like Fig. V., which is about the most comfortable height. The side-strap should not be too tight, else the ring will be pulled too far back; the ring should be well out from the arm; the bag buckle should be allowed to fall back about $\frac{1}{4}$ inch from the back; this prevents rubbing of the tunic, and also permits a current of air between the bag and back.

The bag should be fitted very carefully, and several holes tried in the different straps until it is quite comfortable; when properly carried, scarcely any weight will be felt.

By taking a little trouble at first, a man will find exactly how tight the straps should be, and where the bag rests most easily.

When he has once adjusted the bag to his satisfaction, he will have no further difficulty.

The coat-straps should then be run through the loops, and the coat adjusted. Figures VI. and VII. show two front views with the bag fitted, and the pouches in front.

In Fig. VI. there is one pouch as in peace.

In Fig. VII. there are two pouches, and the ball-bag as in war.

5. Fig. VIII. shows the fitting of the canteen.

The coat-straps are brought round until the loops on them are a little below the top of the coat. The canteen strap is run through them and the canteen secured, the two D's being below; as when secured by one strap it is still a little unsteady, the coat-straps should be passed through the two D's on the lower border of the canteen cover. This keeps the canteen quite steady.

When the greatcoat is worn, the canteen is put on the top of the bag, and the strap is passed round the brace-straps.

The D's are not then used.

6. Fig. IX. shows the waist-belt undone preparatory to casting the whole equipment off at once.

It can be put on and off like a coat, without aid. The man can also march at ease with his waist-belt unclasped.

Many of the straps will be found too long for some men; they can be cut to the desired length when the man is once properly fitted.

WATER-BOTTLE:—Four water-bottles of the pattern lately introduced into the Prussian service are also transmitted for trial in connexion with this equipment, to which the attention of officers is drawn, and report requested.

(For Figs. referred to above, see previous page.)

FOURTH REPORT

OF THE

COMMITTEE appointed to inquire into the effect on HEALTH of the present system of carrying the ACCOUTREMENTS, AMMUNITION, and KIT of INFANTRY SOLDIERS, and DRILL, &c., of RECRUITS.

To the Right Honourable the Secretary of State for War.

Sir,

IN reference to the reports of the trials of the proposed new equipment for infantry soldiers, the Committee beg to recall to the recollection of the Right Honourable the Secretary of State for War, that after the preliminary investigation, the results of which were communicated in their Third Report, a complete trial on a large scale was ordered, and 1,000 sets were distributed among the following regiments, and were taken into wear for three and four months:—

1st battalion Grenadier Guards.	94th Regiment.
2nd battalion 22nd Regiment.	98th Regiment.
35th Regiment.	Royal Engineers at Chatham.
4th battalion Rifle Brigade.	Four divisions of Royal Marines at
68th Regiment.	Woolwich, Chatham, Portsmouth,
	and Plymouth.

Of these corps the Guards, the 22nd, 35th, 94th Regiments, the Rifle Brigade, the Royal Engineers, and the Plymouth division of the Royal Marines had not previously tried the equipment.

Including the regiments which had previously tried the first yoke pattern, which is in principle the same as the plan now reported upon, 23 corps have worn the equipment for a period varying from two to four months. The large majority have reported very strongly in its favour; and indeed it may be said that only one regiment, the 92nd Highlanders, which had the first yoke pattern, have expressed an opinion against it.*

The Committee will not occupy time by analysing these reports, printed in the Appendix, since they speak for themselves, and show most conclusively that the proposed equipment is greatly preferred by the soldier; and while removing a source of great danger to his health, adds materially to his efficiency in a military point of view.

After several years' experience, and the trial of a great number of plans, the Committee believe that they have found the best and perhaps the only way in which the military weights can be carried with perfect freedom to the chest, and without injurious pressure on important parts. They have already fully explained in their former reports the reasons which render it necessary to place the weights low down, and to use the strong hip-bones to bear the weight, which is otherwise partly thrown on the chest, and the trials now reported give the most decisive evidence of the correctness of their views.

Lieut. Raper, 98th Regiment, suggests that a combination of Colonel Young's system with the valise might be better than either separately. The Committee are quite familiar with Colonel Young's plan for carrying a knapsack, which is indeed very similar to one tried by the late Colonel Sir Thomas Troubridge, and they are aware of its merits. They think it, however, inferior to the valise in some very important points, and they do not consider that any advantage would be gained by adopting any of its arrangements.

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* This opinion has no reference to the improved brace system, some sets of which are about to be supplied to the depôt of the 92nd Regiment for trial and report.

The Secretary of State for War is aware that comparative trials have been ordered in the 42nd Highlanders and the 15th Depot Battalion between the valise equipment and that proposed by Lieutenant Colonel Carter, as it has been implied (erroneously, however, in the opinion of the Committee), that the valise plan is not fitted for kilted regiments.

The letter from the Deputy Adjutant General, 7th October 1868 (Appendix, page 93), conveys the urgent request of his Royal Highness the Field Marshal Commanding in Chief that the Committee should at once carry out such alterations in the valise equipment as they may think advisable, after reading the suggestions in the annexed reports.

The Committee will therefore briefly point out the nature of the alterations suggested, and herewith submit a pattern embodying those which they consider desirable.

1. *The Valise.*

The size and shape of the valise appear to be approved; but it has been suggested by General Simmons, R.E., Colonel Somerset, R.E., and Colonel Elrington, R.B., that it should be attached to the brace by hooks instead of buckles, so that it may be more easily detached. Colonel Elrington also forwarded drawings and a valise altered in this way, very cleverly sketched by Captain Moorsom, Rifle Brigade, (page 104).

The Committee have tried several plans with hooks attached, either to the valise or to the brace. They find the arrangement can be carried out, at the cost however of a little sacrifice of simplicity and perhaps of security. As the whole equipment can be thrown off in a moment by the man himself, or, if necessary, the valise alone can be very readily detached by the aid of a comrade, without the rest of the accoutrements being taken off, the Committee think it better to adhere to the pattern already prepared with Colonel Greer's buckle. The alteration to a hook is after all a very simple matter, and can be adopted hereafter if any completely satisfactory plan can be proposed.

The material of the valise is considered not strong enough by Colonel Forbes, R.M., and Colonel Walter, 35th Regiment. On this point the Committee consider the clothing department will best decide. Mr. Almond, the accoutrement maker, informs them that the strong canvas of which the valise is made will last for many years, and can hardly tear under any circumstances, while the varnish can be painted over when necessary.

If any objection to the material is actually found to exist, it might be worthy of consideration whether the valise might not be in part made of raw hide, similar to that in use in many continental armies, and formerly employed in our own. The part next the man's back might be made of painted canvas or leather, and the rest of hide.

2. *The Pouches.*

The pouches are approved of in size and shape; but since the trials a new mode of packing the Snider ammunition has been recommended by the Ordnance Select Committee, and has been approved of by the Field Marshal Commanding in Chief. The shape and size of the packets of 10 rounds have been thus altered; and in order to meet this change, a corresponding alteration has been necessary in the shape of the pouch, which has been made a little deeper and a little shorter. One of the original pattern, and one to carry the cartridges packed all one way, are forwarded herewith.* In one or two of the reports it is apprehended that the black colour will soil the red tunic. If the pouch be made of proper leather, and be properly cleaned, the Committee doubt whether it will soil the tunic any more than the present regulation pouch, especially as it is separated from the tunic by buff runners and by the buff waist-belt. This will be for the decision of the Store Department should the question seriously arise.

When a single pouch with 20 rounds is worn on the waist-belt behind, as on sentry, it is stated in one or two of the reports that it was found to press on the loins. This is owing to the runners being too long and sewn too low down on the

* As far as the equipment alone is concerned it is quite immaterial which of the two pouches is adopted.

the pouch, so that the top part falls outwards, and the leverage presses the lower border against the back. This cannot occur if the runners are properly attached to the pouch. The pouch can also be moved to one side or the other, or carried in front, if the least uncomfortable pressure is felt after some hours' wear.

3. *The Ball-bag.*

General Simmons proposes to abolish or modify the ball-bag recommended from Hythe. The Committee agree with General Simmons that it admits of improvement, and they have made an alteration which makes its appearance better and its carriage easier.

The Committee understand that the ball-bag as proposed by the Hythe School of Musketry is only intended to carry loose cartridges when about to be used by the men, and when it is not to be supposed that there will be time for any injury to be caused by the shaking of the cartridges against each other. The Ordnance Select Committee have recommended an expense-bag with separate compartments for each cartridge; should this be adopted, the advantage of the Hythe ball-bag would be lost, seeing that a packet of 10 rounds can be taken from the pouch, the cartridges put loose into the bag, and thus become at once available; while time, which could not be always given in action, would be necessary if each cartridge had to be placed in a separate compartment.

4. *The Waist-belt.*

The waist-belt, as proposed, had the defect of allowing a loop-end behind to slip up, which gave it an unseemly appearance. The arrangement was adopted to gain a little advantage to the man when he desired to alter the tightness of his waist-belt on the march, as he could reach the buckle easily, but this advantage does not compensate for the slovenly look of the back-strap. Two plans to remedy the defect have been proposed, one by Serjeant Major Baker, Grenadier Guards, and one by Captain Mildmay, 4th Battalion Rifle Brigade. Both answer excellently, but on the whole, the Committee think Serjeant Major Baker's plan is the best, and have accordingly adopted it.

The plan of passing the front ring-strap through a concealed brass link on the belt, appears to have met with general approval, and the Committee therefore advise that plan, instead of carrying the strap round the waist-belt.

The hook and rings recommended, instead of the link, by Major Blomfield, 35th Regiment, and Captain Moorsom, Rifle Brigade, answer extremely well as far as the carriage of the weight goes; but, as the hooks require to be very flat, in order not to catch the hands, or to be touched by the cover when the pouch is opened, the Committee are informed that it would be difficult to make them strong enough. The plan of the strap through the link has the advantage of allowing the strap to be passed round, or through the waist-belt, if the link were broken, so that on the whole it would be safer to adopt the link plan.

A snake fastening has been suggested instead of the plate at present used. As far as the valise is concerned, the decision is of little moment. The snake fastening is undone more readily, is much lighter, and is always easily procurable. Some officers, however, think that the plate looks better, and gives more support to the pouches. On the whole, the Committee recommend the snake.

5. *The Brace-straps.*

Colonel Lambrick, R.M., proposes to do away with the ring and attached straps, and to reduce the brace to the most simple form by carrying the shoulder-straps direct to the waist-belt in front, so that in reality the chest has only two straps upon it. The waist-belt keeps the valise to the back, as it is passed through extensions of the brace-straps, which run to buckles at the bottom of the valise. As far as considerations of health go, this plan is very good since the straps are reduced to a minimum, and Colonel Lambrick's experience is greatly in its favour; but the Committee have not been able to satisfy themselves that the valise will always keep its proper position, and will not drag up the waist-belt. Another very important disadvantage of Colonel Lambrick's plan must also be noticed; the waist-belt cannot be unclasped and the valise carried with
the

the open belt, as in the Committee's arrangement. Under these circumstances, the Committee consider it best to adhere to their own pattern.

The upper loops for the coat-straps on the brace were found to be too weak, and Colonel Greer, 68th Regiment, proposed a plan which seems to remedy the defect, and has been adopted.

It has been recommended that the brace-straps should be of two sizes, for tall and for short men. This might easily be done, one size being for men of 5 feet 7 inches and under, and the other for all men above that height. At the same time the size now used has been found to sit well on men of 5 feet 6 inches as well as on the tallest men; any exceptional cases can be fitted after issue to the regiments, as is the practice with the existing accoutrements.

It will be seen in several of the reports, that brown leather is recommended instead of buff. The Committee stated in their former report, that the opinion of very experienced officers, was greatly at variance on this point.

Possibly it might be advantageous to use the brown leather in the Royal Marines, who appear to prefer it, and whose service on board ship may make it more desirable to avoid pipeclay. If approved of by them, and found to really answer, its use might then be extended.

6. *The Tunic.*

Several of the reports notice that the buttons on the back of the tunic will wear the valise. As these buttons serve no purpose whatever, the Committee advise their removal from the tunic.

7. *The Greatcoat.*

The greatcoat should be folded rather narrower than the present regulation pattern, but not too narrow (say, 10 inches by 15 or 16 inches), as it is easiest when it does not project too far from the body. There is no necessity for leaving any space between it and the valise, though in very tall men such a space may have to be left.

It will be observed, that one or two of the reports refer to the large size of the greatcoat. The Committee have found, in fact, the present greatcoat one of the most awkward parts of the equipment to carry. The greatcoat is in many respects excellent, for it affords much warmth and protection; but it is certainly very heavy, and, when thoroughly wetted, becomes extremely so; it also then takes a long time to get completely dried. The Committee believe that a lighter greatcoat would be a decided improvement, provided a good waterproof cape were added, which might be worn separately, or over the greatcoat. This cape could be rolled round the greatcoat, and would keep it dry on the march, and, if made in the shape of a poncho, it might also form an useful bed when placed on the ground. If such a plan be adopted, no alteration will be required in the valise, as the straps which carry the coat will take the cape also.

8. *The Blanket.*

A great advantage of the valise plan is the ease with which the blanket is carried. It can be placed flat on the greatcoat, under the same straps, or in a roll on the valise, or horseshoe-shaped round the coat or valise, or round the neck, resting on the coat, with the ends brought on each side of the neck; on service, when appearance is disregarded, one or other of these plans may be adopted, so as to give ease to the soldier.

9. *The Water-bottle.*

The Committee issued 50 Prussian water-bottles, and requested that they might be reported on. It will be seen that they were much preferred to the regulation pattern, but that some valid objections were taken. The Committee recommend a very strong flat-glass bottle capable of holding an imperial pint. They name this quantity, as in India the much smaller soda-water bottle is used, and appears to be thought large enough; it is very important not to add to the weight. The glass bottle should be covered with very strong canvas or felt, with a long leather strap and buckle to fasten it to the brace-ring, to the waist-belt, round the neck, or to loops on the valise, as may be most convenient.

10. *The Havresack.*

The Committee issued a havresack suggested by Colonel Lambrick, R.M., which appears to give satisfaction. It can be worn round the neck as at present, or placed in or on the valise. The valise has a partition, which is intended to give a separate compartment for the havresack apart from the clothes. Enough biscuit could be carried in this compartment for one or two days' consumption, and be in this way preserved from wet. On an emergency the valise, if partly emptied of clothes, would enable four or five days' provisions to be carried without difficulty.

Colonel Greer has recommended that the havresack shall be made of black waterproof material, with a linen lining which can be taken out and washed. The object, viz., to preserve the food dry and clean is very important, and the Committee would recommend that if a suitable material can be found the system should receive a trial, in the 68th Regiment at all events.

11. *The Canteen.*

The canteen, if it contains meat, must be placed on the back of the greatcoat, or on the valise, as suggested by Colonel Elrington, and as shown in the drawings (page 104). The objection to this last proposal is that it might wear the valise. Colonel de Horsey, Grenadier Guards, suggests that the canteen need not be carried when not wanted, and in this the Committee entirely concur, as they believe that the less a man is loaded the better for his health.

The Committee, having thus referred to most of the suggestions made during the trials, beg to tender their thanks to the officers who have given them so much assistance.

It will be observed from the report by Colonel Walter, 35th Regiment, that an objection has been raised to the valise on account of heat on the loins, and perspiration and apprehended consequent injury.

The Committee unanimously agree in opinion that this objection is not a valid one, and that when the valise is properly understood and fitted, this apprehension will vanish.

If the side straps are not too tight, and they should never be so, the valise falls a little away, the loins are then clear, and air passes between them and the valise. On the march, too, when the heat is most felt, the waist-belt should be opened, and there is then less perspiration than with any other plan.

The valise is intended only to carry such *very few* articles as are actually necessary for a man's health and comfort when he is separated from his baggage. His surplus kit is now carried for him in squad-bags. But it would be much more convenient, and would not add to the amount of baggage or of transport, to give each man a separate bag, similar to the sea-kit canvas bag provided for regiments and drafts proceeding to India. Paragraph 1178, Queen's Regulations, which would supersede the necessity for squad-bags.

In time of peace it will be unnecessary to issue more than one pouch and the ball-bag. With these and the pockets in the valise 60 rounds can be carried if necessary. On service the second pouch can be served out without any trouble or delay. It will be found also that entrenching tools can be carried with the valise arrangement if it be necessary.

Two small buckles have been attached to the valise, one on either side; they are intended to carry small articles, or the ball-bag, or water-bottle, on the march. It is believed that they will be found very useful for this purpose.

The Committee believe that the valise equipment provides for all the emergencies of war, and does so better than any plan they know.

The Committee have been unremitting in their exertions during the last four years in endeavouring to solve the difficult problem which had been brought under their consideration by Earl de Grey and Ripon when Secretary of State for War. And being deeply impressed with the necessity for removing all grounds of apprehension of injury to the health of the infantry soldier resulting from the present mode of carrying his knapsack, &c., and also being anxious to submit a "pattern of equipment best adapted to obviate the evils complained of," the Committee have persistently persevered with constant experiments and trials until they could obtain one which was perfectly satisfactory, in this essential particular, and which would also meet the necessary military requirements.

They

They have now to report that the result of these lengthened trials fully justifies the opinion which they have previously expressed, viz., that the principle of the brace system provides the best means for carrying the infantry-service kit with the greatest ease to the soldier.

The Committee do not venture to assert that finality has been attained as regards the minor details of this system, since trifling improvements will doubtless be suggested should the equipment be taken into general wear, but they are fully convinced that the evils hitherto complained of will be entirely removed by the adoption of the brace system.

Did the Committee believe that further trials would lead to the discovery of any better plan, they would gladly request permission to continue their labours, but having no such expectation, they would conclude this report by expressing the hope that it will be considered the time has now arrived for coming to a final decision on this important question, more especially as it appears that several regiments require to be supplied with the least possible delay with fresh equipment.

(Signed) *Henry Eyre*, Lieut. General, President.
R. Rumley, Major General.
A. H. Horsford, Major General.
T. G. Logan, Director General,
 Army Medical Department.
E. A. Parkes, M.D., F.R.S., Professor of
 Hygiene, Army Medical Department.

J. J. Frederick, Secretary,
 War Office, 11 November 1868.

The Committee think it necessary to state that the sealed pattern which they now submit for approval is not intended to be any guide in regard either to the quality of the workmanship or the material.

(signed) *Henry Eyre*.

APPENDIX TO FOURTH REPORT.

APPENDIX I.

(24,362—1064.)

Sir, War Office, 12 October 1868.
 I AM directed by the Secretary of State for War to forward herewith, for any observations the Knapsack Committee may have to offer thereon, the enclosed Horse Guards' letter, dated 7th instant (Clothing, &c.—G. S. 1868—C. 59), and accompanying reports received from the regiments and corps named in the margin, having reference to the recent trials which have taken place of the new valise equipment.

12th Company Royal Engineers,
 1st Battalion Grenadier Guards,
 2nd " 22nd Foot,
 35th Regiment,
 68th "
 94th "
 98th "
 4th Battalion Rifle Brigade.

Lieutenant General Eyre,
 &c. &c. &c.

I have, &c.
 (signed) *H. K. Storke*.

(Clothing, &c.—G. S. 1868, C. 59. 24,362—1064.)

Sir, Horse Guards, 7 October 1868.
 WITH reference to former correspondence on the subject, I am now directed by the Field Marshal Commanding in Chief to forward to you the enclosed reports from the regiments named in the margin on the recent trials which have taken place in them, of the new valise equipment, proposed by the Committee appointed to consider the drill of infantry recruits, &c., and I am to request that the same may be at once submitted to Lieutenant General Eyre, the president, with urgent instructions to carry out such alterations in the standard pattern, as, after reading the reports, the Committee may think advisable.

12th Company Royal Engineers,
 1st Battalion Grenadier Guards,
 2nd " 22nd Foot,
 35th Regiment,
 68th "
 94th "
 98th "
 4th Battalion Rifle Brigade.

I am further to request, with reference to your letter, dated the 16th ultimo (No. 52—98th Regiment—174) that the 106 sets of equipment each, returned into store by the 1st Battalion Grenadier Guards, the 2nd Battalion 22nd Regiment, 35th and 94th Regiments, may, after being altered as above suggested, be re-issued, to complete the 98th Regiment entirely with the valises, and that in addition to the 68th, the 1st Battalion, 4th and 33rd Regiments, urgently in need of knapsacks, be supplied with the least possible delay with the proposed equipment.

Two valises to accompany.

The two valises altered by the officers commanding the 2nd Battalion, 22nd, and the 68th Regiments, as described in the reports, are forwarded herewith, and the belt from the 4th Battalion Rifle Brigade, alluded to in Sir John Garvoek's letter of yesterday's date, will be sent to the War Office the moment it arrives.

The Under Secretary of State,
War Office, Pall Mall.

I have, &c.
(signed) C. R. Egerton, Deputy Adjutant
General.

(Royal Engineers.—Clothing.—No. 5592—9.)

Memorandum for the Adjutant General.

IN compliance with request contained in memorandum of 21st ultimo (Clothing, 4504—G. S. 1868—C. 59) I have the honour to enclose herewith the report received from Major General Simmons, R.E., on the valise equipment now in use by the 12th Company of the corps.

The delay in tendering this report has occurred at Chatham.

I have, &c.
(signed) H. Fane Keane, Colonel,
Deputy Adjutant General,
Royal Engineers.

17th September 1868.

(No. 10,142—41.)

Royal Engineer Establishment, Chatham,
16 September 1868.

Sir,

WITH reference to the memorandum of the Assistant Adjutant General of the 21st August (Clothing, 4504—G. S. 1868—C. 59), I have to forward a report by Lieutenant Colonel Somerset, R.E., on the new pattern valises issued for trial to the 12th company of Royal Engineers, and to observe as follows:—

1st. That the new pattern valise is in my opinion a very great improvement on the old pattern knapsack, inasmuch as it can be carried without pressing on the chest, and also leaves the soldiers free for the manipulation of the firelock.

I lately had the battalion put through a few movements, and the manual, platoon, and bayonet exercises, and observed that the men who carried the old knapsacks were, as usual, constantly throwing them up, whereas those who had the new valises had not the least occasion to do so. This was very marked when the word was given to "stand easy," when the discomfort of the old knapsack was particularly evident, almost every man exerting himself to throw it up, whereas scarcely a man of those who had the new valise moved.

During the above trials, precisely the same amount of kit was carried by all the men.

The only complaint I have heard was after a short march on one of the hottest days of this season, when some of the men complained of the perspiration caused by the kit-bag sitting so close to the loins.

This I think was partly due to their not being properly carried on the day in question, the men having placed the straps which go down to the lower corners of the kit-bag underneath the waist-belt.

The adoption of these valises will necessitate the removal of the buttons from the backs of the men's tunics, and the following suggestions are made with reference to the yoke and valise itself:—

1st. The D in the waist-belt in front on one of the experimental sets is a decided improvement, but the brace connected with it may be simplified by the strap being attached to the D, and strapped up to a buckle to be stitched on to the ring of the yoke above.

2nd. The corps plate in the waist-belt is not suited for fastening it, being too large and exceedingly difficult consequently to undo when confined between the two front pouches. It is suggested that an ordinary snake-hook fastening would be preferable either to the corps plate or to the infantry clasp.

3rd. The ball-bag when suspended, as shown in the photographs sent with the instructions, prevents the yoke from being taken off without first undoing the waist-belt, and when filled with ammunition this bag weighs down the right side of the soldier unduly.

The

The weight of 60 rounds (upwards of 6 lbs.) is then carried on the right side as well as the firelock, thus weighting the soldier unequally. It is suggested, for consideration, whether it would not be better to get rid of the ball-bag, by placing 20 rounds in small bags to be made at each end of and outside the kit-bag, such as I have seen in the Austrian service, which would thus serve as a reserve from which to fill the pouches.

If, however, the ball-bag is to be retained, it is suggested that its attachment to the yoke might be improved by stitching a strap to it with a swivel at the other end, which should be capable of being hooked into a D on the bag.

By this means the bag could be taken off and carried in the hand occasionally as a relief, and the yoke also might be removed without removing the waist-belt.

4th. I would suggest that the attachment of the kit-bag to the yoke should be altered by suspending it by a hook to the buckle instead of being strapped on.

5th. Also that the greatcoat-straps should be altered so as to permit of the greatcoat being taken off without unstrapping the canteen, and that the loops should be altered so that the canteen may be carried higher and closer to the back.

6th. The loops on the yoke for the greatcoat-straps are too weak, and will tear off; suggested that D's should be substituted.

7th. The batton at the crossing of the yokes should be covered to prevent the discoloration of the tunics.

If approved, I would have one of the experimental sets altered to explain these suggestions.

The alterations are trifling, and the expense would be small.

I have, &c.
(signed) *J. L. A. Simmons,*
Major General Director.

The Deputy Adjutant General,
Royal Engineers, Horse Guards.

REPORT on the Yoke Pattern Equipment proposed for Infantry Regiments.

Sir,

Chatham, 26 August 1868.

WITH reference to the above, I beg to report as follows: The advantages are that the men to whom it has been issued (as per margin), find it a very great improvement on the old method of supporting the weight to be carried, as it is more distributed.

There is no particular pressure anywhere, no cutting under the arms, or tightness across the chest. The arms are left free to perform the usual exercises, and the ammunition is readier at hand than before. Each man also can put it on, or take it off, without assistance. It will also be more handy for the men to carry in railway journeys, or when embarking on or disembarking from on board ship.

One man who had a weak chest, and could never wear the old knapsack, but usually fainted and had to be sent off parade, was able to march three miles out and in without inconvenience or fatigue. Another weak chested man stated that he felt able to hit out straight when carrying it, which the old pattern pack always prevented.

The disadvantages are, that there is a loss of smartness in appearance; that on a march the free use of the hip-joints is impeded, additional perspiration is caused across the loins, which has a weakening effect, and would probably render men liable to sudden chills there, and to bowel complaints. The scarlet cloth would be soon stained by the blacking on the pouches in front. The sword hilt is more difficult to get at than before.

I take the liberty of making the following suggestions:—

That the pouches be made of patent or enamelled leather, which would not require blacking or be affected by perspiration. That the straps (which might be simplified) be made of some other material than buff leather (which requires pipeclay), either brown leather or blue web. That the brass stud in the centre of the brace be covered, as it is now liable to stain the scarlet cloth. That hooks be substituted for buckles for the support of the kit-bag, so that if a man were fatigued on a march, it might be unhooked without interfering with the rest of the equipment, and (if a loop were added to it as a handle) carried in the hand. The rings also to which the straps converge ought to be made larger.

With reference to the two other methods of attaching the braces to the waist-belts, forwarded lately for report, they are certainly improvements, as the strap has a straight bearing; the one with the triangular eyelet is the simpler, and therefore preferable.

As regards the four Prussian water-bottles recently supplied for trial, they are certainly very good.

I have, &c.
(signed) *Fitzroy Somerset,*
Lieutenant Colonel,
Royal Engineers.

The Director, Royal Engineer Establishment,
Chatham.

(Clothing 4504—G. S. 1868—C. 59.)

Sir, Gun House, 1 September 1868.
 WITH reference to your letter of the 21st ultimo, and previous correspondence, I have the honour to forward the enclosed report on the new pattern valises issued for trial to the 1st Battalion Grenadier Guards in the month of April last.

I have, &c.
 (signed) *Fred. Wm. Hamilton,*
 Major General,
 Commanding Brigade of Guards.

The Adjutant General to the Forces.

Sir, Wellington Barracks, London, 27 August 1868.
 IN obedience to the instructions contained in a letter, dated 21st August, I have the honour to report as follows:—

The new pattern valise is in my opinion far preferable to the old pattern knapsack. It is easier to carry, the limbs of the wearer are free, and the cutting under the arms, formerly complained of with the old knapsack, is done away with.

The waist-belt with a brass D is in my opinion the best.

The ball-bag is serviceable, and when drawn close up to the waist-belt, is comfortable to carry.

The new pouches have this defect, viz., when one only is worn (at the back) containing 20 rounds of ball cartridge, the weight being supported by the waist-belt alone, obliges the soldier to wear his waist-belt extremely tight to prevent the pouch from hanging back and dragging.

When both the pouches are worn in front, this defect would probably be augmented; the kettle, as now worn with the valise, drags back and destroys the appearance of what might otherwise be a neatly folded greatcoat; I would suggest that a soldier employed on garrison duty should carry neither kettle or water-bottle, except when on the march.

Not wearing the kettle, except on these occasions, would do away with one of the chief objections to the new equipment, its ugliness.

The new havresack is too small for regiments that wear stiff forage caps, as the Guards do.

The water-bottle is good in shape, but I think not strong enough for work.

I have, &c.
 (signed) *William de Horsey,*
 Colonel Acting Major,
 Commanding 1st Battalion Grenadier Guards.

The Officer commanding Grenadier Guards, Horse Guards,
 for Adjutant General.

(No. 88.)

Sir, Dover, 25 August 1868.
 I HAVE the honour to acknowledge the receipt of a letter, dated Horse Guards, 21st instant, forwarded with a memorandum from you, and calling for a report on the new pattern valises issued for trial to two companies of the regiment under my command.

Dover, 28 August 1868.
 Submitted: I have not yet seen enough of the new accoutrements to form a decided opinion on their merits, especially as there has not yet been an opportunity of ascertaining how they would stand the test of route-marching; but from inspection of them, and from the statements made to me by those who have worn them, I am inclined to think them to be clearly an improvement on the old pattern knapsack.

2. From my own observation, and from reports furnished by the captains whose companies have been supplied with the valise, I am enabled to make the following report:—

3. The valise equipment is far more comfortable and convenient in every way than the old knapsack. It is more easily carried, put on, and taken off. The weight is better distributed, and the men of these two companies all acknowledge greater comfort and freedom of limb, and little or no interference with the power of motion.

4. There seems to be some little difficulty at first, in arriving at a proper adjustment of the various straps and buckles, but I am of opinion that the experience to be gained from a few marches in the coming winter will almost, if not entirely, obviate this difficulty.

5. The straps are numerous, and the material of which some of them are made is inferior. Some of them will soon break. One has already broken. I here refer especially to the small straps, which are so closely perforated by the needle, that I am inclined to think they cannot last, and that leather will eventually have to be substituted for the material now used.

The material of which these small straps are made seems decidedly inferior to what it should be, and they ought, I think, to be made of brown harness leather.

6. The

6. The sewing also shows signs of giving way, especially in the upper loops on the cross-straps, through which the coat-straps pass, and which sustain almost the entire weight of coat and canteen. These loops, in almost every set, speedily showed signs of giving way, though perhaps a timely stitch from a careful soldier would prevent any mishap. As the weight of no part of the equipment is borne by any one strap, a single broken loop or strap would produce less inconvenience and discomfort than a similar accident in the old pattern pack, in which, if one sling gives way, the knapsack cannot be supported without the assistance of one hand.

This is the case, and the plan of depending so much on a few stitches for carrying the weight of the greatcoat and canteen seems to be faulty; it would, I think, be better if the coat-strap were to go under the other strap, but I think that it would be better if the coat were rolled instead of folded, and the canteen put on top of it; by this means the weight would be better placed, and the man's back would be less covered, and therefore be kept cooler than at present.

A moveable runner on the small straps which connect the others in front with the waist-belt would be an improvement on the fixed one now on them.

7. The buttons on the tunic behind will at no distant period wear holes into the valise, which already shows signs of wear. The bottom of the valise also will be easily injured by coming in contact with the ground, as it is not strengthened with leather like the corners of the old pack.

This might easily be obviated by taking away the useless buttons.

A leather band going under the valise, and for a few inches round the lower corners, would very much strengthen it, and would add little to the weight.

8. I am inclined to recommend the addition of two "D's" to the upper edge of the canteen cover, which would secure the canteen (it shakes considerably now, when the soldier doubles) to the coat-straps much more firmly than at present, with "D's" on the lower edge only.

The two extra "D's" would considerably tend to keep the canteens steadier.

(signed) *D. Russell*, M. Genl.

I have, &c.

(signed) *S. Lyster*, Major.

Commanding 94th Foot.

The Brigade Major, Dover.

VALISE EQUIPMENT, 98TH REGIMENT.

(No. 413—98th.)

Sir,

North Camp, Aldershot, 27 August 1868.

THE regiment under my command having at the end of June last been supplied with 106 sets of the valise equipment on the brace principle, with a view to a more extended trial, and as I have been ordered to make a report at the end of this month of the result of any further experience of the new system, I have the honour to submit the following, and to append a report from Lieutenant A. Raper, of the regiment under my command, the officer to whom I intrusted the thorough testing of the new-brace principle, as well as that of the yoke equipment supplied to us at Ports-mouth last year.

My former opinion, in favour of the brace and valise equipment, is confirmed. Its superiority over the old plan is so evident to all who have tried the two as to need no further remarks.

The freedom given to the soldiers on the march by unfastening the waist-belt, without disarranging the set of the equipment, has been satisfactorily proved.

I think that as we go on, making little alterations and improvements, the desired object will be fully obtained, viz., enabling the soldier to carry his kit, ammunition, blanket, and rations with ease and freedom from pain or restraint, and without injury to his health.

I found that when men were firing in line, either standing or kneeling, the soldier sometimes, in taking aim, struck the canteen of his right-hand man. I have therefore placed the canteen, as an experiment, on the top of the greatcoat, with the convex side uppermost. This alteration answers very well, and has a better appearance. The canteens filled with cooked rations could not of course be carried in that position. An alteration of straps only is required to place it on the top of the coat, in its proper position.

The ball-bag hangs too low. This can also easily be remedied.

All the other minor improvements suggested by Lieutenant Raper seem easy of arrangement.

The water-bottle I consider too flimsy an article for military use. The glass is too thin, and the black leather cover makes the water so hot as to be quite disagreeable. The trial of the water-bottles at a few divisional field-days in hot weather was not satisfactory.

I like the new haversack. We have worn ours in the usual place. They do not interfere with the bayonet, or other part of the equipment.

Colonel Greer's plan of steadying the greatcoat is an improvement.

Of the two trial waist-belts sent, the one with buckles is not liked. The one with D's is favourably reported upon.

The trial buckles for valises give strength to that article of equipment.

I think the best way of carrying the blanket is rolled with the coat.

In conclusion, I have the honour to report that I consider the brace and valise equipment, as improvements suggest themselves, to be the best obtainable.

I have, &c.

(signed) *Francis Peyton*, Colonel,

Lieutenant Colonel, 98th Regiment.

The Brigade Major, 3rd Brigade, Aldershot.

The BRACE EQUIPMENT.

Sir,

Aldershot, 25 August 1868.

I THINK it well to preface the Report I now have the honour to make by stating that, as in the case of the yoke equipment, my observations have been based mainly on the experience of the men who during drills, field-days, marches, the manual, platoon, and bayonet exercises, position drills, and ball practice have had the equipment constantly in wear.

I took notes of their experience at intervals, and only refrain from detailing their own words, in order to condense and apply their testimony in answering the questions at issue. I have myself, too, carried the equipment for hours together and marched a considerable distance with it.

The superiority of the brace system to the regulation knapsack I regard as a settled point: hence it only remains to inquire, 1st. What are the defects of the brace system? 2nd. What alterations can be proposed? 3rd. What is the best mode of carrying extra service equipment, (a.) water bottle, (b.) blanket. 4th. What are the relative merits of the brace compared with other systems?

Defects.

1st. What defects do you observe in the brace?

(1.) It is too loose as a whole; this is especially trying in doubling when the whole equipment jogs.

(2.) The coat drags, and by degrees settles uncomfortably low on the back.

(3.) The canteen is in the way for platoon firing, and in facing about.

(4.) The ball-bag hangs too low, is too loose, and with ammunition knocks against the leg at every step.

(5.) The 20-round pouch on sentry weighs disagreeably on the loins, being insufficiently supported by waist-belt.

(6.) The equipment requires ammunition to be carried, otherwise the belt is dragged upwards, and pressure caused on the belly; this is perhaps an unimportant objection.

(7.) Trifling defects in the straps, viz., (a), loop of front-ring strap interferes with the

Remedies.

2nd. What remedies do you propose?

(1.) Colonel Greer's alteration partially steadies the coat, and passing the centre valise-strap round the waist-belt partially steadies the valise, but neither will be found sufficiently steady in doubling, unless a separate steadying strap be added, as in Colonel Young's pack. This strap might be passed under the valise straps, thence upwards through the coat-straps and round the waist. I have tried this and found it answer perfectly.

(2.) Colonel Greer's improvement in part remedies this, but not completely. The coat will always be apt to fall too low from its own weight, unless the brace itself be made capable of being shortened by a buckle at the brace-ring, which can easily be done. The coat *rolled* rides better on most men.

(3.) Either place the present canteen on top of the coat, where it lies fairly well (in this case the loops for canteen straps being of course placed higher up on the coat straps), or adopt a canteen of a different shape, viz., hollowed at the bottom, so as to rest on the top of the coat. The latter is perhaps the better shape for a canteen.

(4.) Abolish the present ball-bag, and replace it by one which shall be at once a pouch and ball-bag, made as follows: The back part of stiff leather or tin, the front of thin leather, opening outwards from the sides like a purse, but prevented from giving, when closed, by a flap of moderately thick leather. Attach it to the waist-belt by runners like the present pouches, and like them it can be worn in front when equipment is carried, but behind or at the side during drill or on sentry.

(5.) Help to support it by a strap from the shoulders, as Colonel Young does.

(6.) This small defect will be less felt when the brace is made capable of adjustment to size of wearer; also the trial-belt with a small oblique D lessens the drag which occurs when the pouch is empty. The other trial-belt with a buckle is not approved.

(7.) (a). Dispense with the loop; (b), attach the brace to the ring by a buckle instead

Defects—continued.

Remedies—continued.

the true adjustment of the strap; (b), brace itself should be capable of alteration in length in order to fit men of different sizes; (c), the two upper loops for coat-straps are too low on brace and not strongly enough sewn on.

(8.) Reserve ammunition in valise too difficult of access and liable to be thrown away in the heat of action.

The fact must not be ignored that men on entering action have before now thrown away their packs, and in all likelihood will do so again, hence any system which fails to guard against such a contingency must be defective.

3rdly. How do you propose to carry the extra service equipment?

(1.) The Prussian water-bottles sent for trial appear useless. They are of a bad shape, break easily, and are suspended by cords which cut the tunic.

The water-bottle should, I think, be made of thick glass, covered with white canvass, in shape similar to the hospital water-tins now in use, only, of course, much smaller. It should be suspended from the shoulder by a strap passing underneath the bottle, and it could be secured to any part of the waist-belt by a runner in the same way as the pouches. The positions on the waist-belt which seem preferable are either to the left-front, clear of the pouch, or to the right-rear, behind the present ball-bag. For use, a man would simply have to unbutton the runner, and raise it to his mouth. The strap which supports it from the shoulder would allow of its being lowered several feet for re-filling. (I have caused a tin pattern-bottle of this description to be made, which I forward for inspection.)

(2.) There are four ways of carrying the blanket with the brace system: 1st. Bound up together with the folded coat. 2ndly. In a double roll, with the coat. 3rdly. Rolled, and resting on the top of the valise. 4thly. Folded, and bound round the valise. No additional straps are required for any of these methods. On trial, I found the fourth slightly the easier way, though I think the second the best for general use, as more readily protected from rain, and for appearance sake.

I may here remark that the present greatcoat, with its cape, is too heavy and thick. A light water-proof cape should be substituted for the heavy one now worn. It would be more useful for ordinary wear in barracks, and on the march could be wrapped round the coat or round the blanket, when carried, thus keeping the latter perfectly dry, even when rain necessitates the coat being worn.

4thly. What are the merits of the brace compared with other systems?

The only other system I have seen fairly tried is that invented by Colonel Young, which in principle somewhat resembles the old Prussian plan of fitting to the shape of the back. It is more compact, more soldierly, and, in many respects, more serviceable than the brace; remarkably so in the mode of carrying ammunition; but the weight presses a little too heavily where the old pack did, and hampers the arms. It is said to press on the loins and kidneys, though the testimony of the men who have worn it is opposed to this statement; and yesterday I wore it for five hours without experiencing any such pressure, indeed scarcely as much as from the valise. It has been urged, too, that it will not fit men of different sizes, but I found it to fit a man of 6 ft. 3 in., and a drummer boy of 4 ft. 5 in., as well as several men of medium height, in fact merely to require proper adjustment. (Dr. Elkington, of the Grenadier Guards, kindly offered to see it tried when his regiment marched from here to London, but the men evidently did not understand how to adjust the neck and other fitting straps, and accordingly reported to Professor Parkes, that it would not fit them.) I would summarise the results of my comparison as under, regarding,—

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|--|--|
| (1.) Comfort and ease in wear. | (1.) Brace system preferable. |
| (2.) Supply and carriage of ammunition. | (2.) Colonel Young's incomparably superior; in this respect unrivalled. |
| (3.) Facility and power of adjustment. | (3.) Nearly equal; Colonel Young's for choice. |
| (4.) Position of canteen. | (4.) Colonel Young's best. |
| (5.) Celerity of change by wearer himself. | (5.) Colonel Young's preferable. |
| (6.) Appearance. | (6.) Colonel Young's preferable. |
| (7.) Wet weather efficiency. | (7.) Brace system best. |
| (8.) Readiness for reception of extra service equipment. | (8.) Colonel Young's most complete. |
| (9.) Handling of rifle individually and in platoon. | (9.) Brace allows more freedom for the arms when position of canteen is altered. |

stead of by sewing, as suggested in Remedy 2.

(c), Colonel Greer's alteration remedies this, though the concealed loops would be better placed *higher* on the brace.

(8.) Either make a little pocket outside the flap of the valise, secure it by a stud, and pass the centre valise-strap over it, or support all the reserve ammunition by means of a strap from the shoulders separately from the equipment, on Colonel Young's plan. An expense-pouch in front, as proposed in Remedy 4, would suffice to balance the weight of valise, &c.

While I believe Colonel Young's system capable of improvement to a higher degree of perfection than the brace, the latter at present has the advantage, since comfort and ease in wear form an item of paramount importance.

[I have myself adopted a compromise between the brace system, Colonel Young's, and the old knapsack, which I am getting made roughly. Should it on trial prove comfortable, I shall solicit your permission to submit it to the Knapsack Committee.]

In conclusion, I presume it is desired that the best obtainable knapsack should be procured for the army. The brace system is, on the whole, the best I have seen, yet I do not think it the best obtainable. A few regiments might well be accoutred with it to test it fully, while, before the whole army changes its equipment, the Committee might, I believe, secure a more perfect system without a too lengthened delay, and with lasting advantage to the service.

I have, &c.
(signed) *A. Raper*,
Lieut., 98th Regiment.

To the Officer Commanding 98th Regiment,
Aldershot.

Sir,

Aldershot, 23 August, 1868.

WITH reference to Horse Guards letter of 21st instant, forwarded to me this day, calling for report on the new pattern valises, I have the honour to forward copy letter from the Adjutant General of the Army, dated Horse Guards, 25th ultimo, postponing my report on the new valises to the end of the current month.

May I beg to be informed if the Report is now required at an earlier period, as it would be more satisfactory to me to wait until the valises shall have been two months in use.

I have, &c.
(signed) *H. Peyton*,
Colonel and Lieutenant Colonel,
Commanding 98th Regiment and 3rd Brigade.

The Assistant Adjutant General,
Head Quarters.

The report was called for by a letter from Horse Guards, dated 21st instant, and marked immediate, and should, therefore, be sent in with the least possible delay.

By order,
W. E. Lockhart,
Dep. Assist. Adjut. Gen.

(Clothing—G.S. 1868—C. 59.)

Sir,

Horse Guards, 25 July, 1868.

I AM directed by the Field Marshal Commanding in Chief to acknowledge the receipt of your letter of the 22nd instant, and in reply to acquaint you that his Royal Highness approves of the report on the trial of the equipment on the brace principle issued to the 98th Regiment being postponed till the end of August, as therein requested.

With reference to Colonel Peyton's letter, dated 21st instant, forwarded by you on the 22nd idem, I am to add that the number of sets of equipment to be issued was changed from 124 to 106, which will be quite enough to equip two companies.

Lieut. General the Honourable
Sir J. Yorke Scarlett, K.C.B., &c. &c.

I have, &c.
(signed) *W. Paulet*, A.G.

(Clothing, 4,504—G.S. 1868—C. 59.)

Sir,

Clarence Barracks, Portsmouth,
27 August 1868.

IN compliance with your letter of the 22nd instant relative to the new valise equipment supplied to two companies of the 35th Royal Sussex Regiment under my command for trial and report, I have the honour to state that, although the valises have not yet been sufficiently long in use to test their capabilities to the fullest extent, and although the men report that they are much easier to carry than the old knapsack, still the following objections present themselves:—

1st. The multiplicity of straps, and the consequent length of time it takes to prepare the equipment for parade. In adjustment even, the same difficulty obtains, and in the event of a sudden parade, or assembly during the night in barracks or in the field in the dark very great delay would be experienced.

2nd. From the same cause, and the material the valise, &c., is composed; I am of opinion that it is not adapted for field service, nor do I think it would last through a campaign of even six months' duration.

3rd. A very grave objection is made by the men who have worn this equipment on guard, during field-days and escort duty, viz., that from the valise resting upon the loins, very great heat is caused, with consequent perspiration, which, on the removal of the valise, is followed by sudden chill, liable seriously to affect that portion of the body. A medical opinion has been taken on this subject, which fully concurs in the above remarks.

Finally,

Finally, therefore, it would appear that the only argument which can be advanced in favour of this equipment is the ease with which it can be carried, compared with the old knapsack. And I beg further to state that, in its present condition, I am unable to offer any suggestion for its improvement.

The Assistant Adjutant General,
South Western District, Portsmouth.

I have, &c.,
(signed) *J. M. N. Walter*, Colonel,
Lieut. Colonel Commanding 35th Royal
Sussex Regiment.

(Clothing, 4,504—G.S. 1868—C. 59.)

Portsmouth, 27 August 1868.

SUBMITTED to the Adjutant General of the Forces, for the consideration of his Royal Highness the Field Marshal Commanding in Chief, in reply to the letter, dated Horse Guards, 21st August 1868 (Clothing, 4,504—G.S. 1868—C. 59), with reference to the letter of the 27th April last, referred to in the above letter. The new valise was only received by the 35th Regiment on the 27th of May 1868, and fitted and taken into wear on the 2nd of June.

To the Adjutant General
of the Forces.

I have, &c.
(signed) *George Buller*,
Lieut. General,
Commanding South Western District.

(Clothing, &c.—G.S. 1867—C. 59.)

My Lord,

Manchester, 1 October 1868.

I HAVE now the honour to forward reports on the new pattern valise from the officers commanding the three battalions named in the margin. You will perceive it is stated by Colonel Ellington in that of the 25th August that it had then only been in use two months in the Rifle Brigade. I have now obtained from him a second report, after a three months' trial, which is transmitted, with enclosures.

68th Light In-
fantry.
2/22nd Regiment.
4th Batt. Rifle
Brigade.

I have to state for his Royal Highness's information, that the result of my own personal inquiries among the men of each regiment is very favourable to the valise. They are unanimous in regarding it as a very great improvement.

Being desirous of testing it still more thoroughly, I requested my aide-de-camp, Lieutenant Clayton, who went a few days ago, accompanied by Lieutenant the Honourable J. Abercromby, of the Rifle Brigade, on a walking excursion through North Wales, to carry the new valise, packed with the full weight of a soldier's kit. Both these officers, who have just returned, accordingly did so, and their opinion is very favourable. They walked the first day 17 miles over Snowdon, the next day 10 miles, the third about 23, and the fourth 12. In order to be in a position more completely to judge, Lieutenant Clayton yesterday walked 22 miles in this neighbourhood with a knapsack of the old pattern, and he remains fully convinced of the superiority of the valise. I enclose his report.

I regard the trial which has thus been made by these two officers, both practical men, as very valuable; as I do not believe that any soldier in this command has carried the valise for a greater distance than at the most seven or eight miles in the day, by no means sufficient to test its merits.

Colonel Greer, of the 68th, and Colonel Jackson, of the 22nd Regiment, have made some trifling alterations, which are shown in the two valises forwarded herewith.

I have, &c.
(signed) *John Garvoek*,
Major General Commanding North District.

NEW VALISE EQUIPMENT.

(No. 888.)

Salford Barracks, Manchester,
24 August 1868.

Sir,

ADVERTING to your letter as per margin, I have the honour to report, for the information of the Major General Commanding, that I have made a careful examination of the valise equipment sent to me for trial, and beg to make the following remarks:—

No. 815—59—
29 April 1868.

I consider the principle of the valise equipment I have had on trial is perfect, and that it now answers its purposes in all respects in the most satisfactory manner.

The soldiers who have been wearing the valises on guard, and drilling, and marching in them in the hottest weather are enthusiastic in their praises of the comparative ease and comfort with which they can accomplish their work in them.

I have found one or two little matters requiring alterations; for instance, the keepers on the braces on the back of the shoulder through which the greatcoat-straps run, are liable to give way, and by stretching allow the greatcoat to hang back in an uncomfortable manner.

The keeper and single buckle through which the side-strap passes from the top of the valise to the ring does not seem to answer; the keeper would certainly give way. I have altered all these; in the former by making a runner for the coat-strap under the brace,* similar to that under the waist-belt through which the strap from the ring passes, and in the latter by substituting a double buckle of peculiar form for the single one in use; in both cases the alteration answers well.

I approve of the Prussian water-bottle, but perhaps the glass might be a little thicker with advantage. I have attached a short strap to the neck of the bottle (in addition to the string), which makes it carry easier, and prevents it swinging about when the man is moving, particularly when doubling or acting as light infantry.

The Assistant Adjutant General,
&c. &c. &c.
Manchester.

I have, &c.
(signed) *H. H. Greer*, Colonel,
Commanding 68th Light Infantry.

Sir,

Newcastle-on-Tyne, 24 August 1868.

1. REFERRING to your letter of the 29th April 1868 (No. 815—39) and to 106 sets of new equipment received by the battalion under my command on the 24th May 1868, I have the honour to report that these sets of equipment have been constantly in wear since their receipt, and are in all cases favourably reported on by the men; all who have worn them preferring this equipment to the old pattern knapsack and belts.

2. Subsequent to the receipt of the 106 sets, two waist-belts with improved fastenings to the brace in front were received, and at a later date a brace with the upper greatcoat-strap loops, and a double buckle for the valise, as amended by the 68th Light Infantry. These have all been in wear.

3. Rather than attempt to describe the alterations that have suggested themselves during the three months' experience of the new equipment in the 2/22 Regiment, I send a set complete (canteen excepted) No. 97—2—22, whereon are all the alterations deemed improvements.

4. The main defect was a tendency of the greatcoat to fall down and away from the man's back, causing a drag on the throat at the front of the collar of the tunic. The two studs which retain the coat-straps to the lower greatcoat strap-loops, fix the coat in its place when on, and remove the drag on the throat.

5. The upper greatcoat-loops, originally buff, are replaced by brass loops.

6. The buff runners under the valise buckles are replaced by brass loops.

7. A buckle on a similar principle to the one proposed by Colonel Greer suggested itself to me, but I gave the preference to the original valise buckles, with the addition of brass runners in place of buff, as being stronger from possessing a double bearing, whereas in the 68th buckle the whole weight rests on the single bar in the buckle.

8. The greatcoat appears to sit closer when the straps pass through brass upper loops than when passed under the braces as proposed by the 68th Light Infantry.

9. The waist-belt No. 97, is one of the two mentioned in my second paragraph, and is the pattern I prefer.

10. I should prefer white, or brown ammunition pouches, to black; the last require to be cleaned with blucking at all times, but especially in rain, the men's hands, accoutrements, and tunics are soiled by the black pouches.

11. In fitting the 106 sets of new equipment received I have found the brace-straps too long for short, also for slight men, the braces should be made and numbered in sizes.

12. Should the Major General deem it expedient to forward on the set of new equipment transmitted, I have the honour to request it may be returned to the battalion when no longer required.

The Assistant Quartermaster General,
Manchester.

I have, &c.
(signed) *D. Anderson*, Colonel,
Commanding 2/22d Regiment.

Set of new equipment by parcel delivery.

* I prefer this method to having the coat-straps fixtures.

Sir,

Newcastle-on-Tyne, 24 August 1868.

IN connection with my letter relative to the new equipment, I have the honour to report that two Prussian water-bottles received for trial have been worn, and I consider them a decided improvement on the wooden kegs in use in the service. The cork might be improved by a wooden top similar to corks now much used by chemists, and a string through a hole in the rim would attach the cork to the bottle.

I should have wished to test the best method of carrying one of Torren's camp-kettles with the new equipment, but have been unable to do so from there being none in store here, or at Tynemouth.

I have, &c.

(signed) *D. Anderson*, Colonel,
Commanding 2/22 Regiment.

The Assistant Quartermaster General,
Manchester.

(No. 208—3.)

Sir,

Chester Castle, 25 August 1868.

WITH reference to your memorandum, dated the 22nd August 1868, calling for an immediate report on the new pattern valise, I have the honour to state that from the letter received intimating to me that the new accoutrement was to be served out to the two companies of the battalion under my command, and that after three months (which I understood to mean three months' trial) I was to report upon it.

29 April 1868.
No. 315—39.

They have now been in use two months, and I would have given them a severer trial by route marching, which owing to the recent hot weather I have been unable to do, but fully intended, thinking I had ample time to do so.

The men are unanimous in their approval of the new equipment, it being easier and more comfortable for them in every respect, either in firing, bayonet exercise or marching.

This comfort, in my opinion, makes them overlook the defects, the principal one being the manner of carrying the greatcoat and canteen, which I have had tried in all ways without arriving at any satisfactory manner, the least objectionable being the ordinary fold but rather narrower, though this is bad, as it flies about in "doubling," and very troublesome to put on when suddenly required to do so; the only way I can see of getting over this difficulty is carrying the coat "en bandolier;" this would do well enough going into trains or on embarkation, but for rank marching objectionable, being too hot upon the chest.

The many little straps are an objection, as they would assuredly get mislaid on service.

The brass D forwarded by General Eyre for trial on the 3rd July 1868 I consider a great improvement upon the original plan in the equipment sent down; this, I think, might be further improved were a hook used instead of the present strap; this has been tried with success.

The moveable buckle on the other belt submitted I do not consider so good an improvement.

The alteration made by the officer commanding 68th Regiment, in removing the upper loop for the coat-straps, would I think injure the tunic, but the buckle submitted by that officer I consider well adapted for the purpose, and far preferable to that on the original.

If required, I will make another and fuller report in the course of a month.

I have, &c.

(signed) *F. R. Elrington*, Colonel,
Commanding 4th Battalion, Rifle Brigade.

The Assistant Adjutant General,
&c. &c. &c.
Manchester.

(No. 211—3.)

Sir,

Chester Castle, 31 August 1868.

WITH reference to your memorandum, dated the 29th August 1868, relative to the four water-bottles recently supplied to the battalion under my command, I have the honour to report that I consider them very superior to the regulation wooden bottle.

I have, &c.

(signed) *F. R. Elrington*, Colonel,
Commanding 4th Battalion, Rifle Brigade.

The Assistant Adjutant General,
&c. &c. &c.
Manchester.

Sir,

Chester, 9 September 1868.

WITH reference to the new accoutrements, 53 sets of which have been in possession of my company since the 1st July,—

I have the honour, in accordance with your instructions, to state my opinion, which is that they are better than any other pattern I have seen; this opinion is formed from my own observations as well as from the answers of the men who have been and are now wearing them, and who appear to think them much more comfortable than the old pattern.

It appears to me the coat would ride more comfortably if the loops or D's by means of which it is fastened to the yoke were placed higher on the shoulders than in any of the sets received, and that the coat should be folded narrow enough to allow a space of some two inches between the bottom of it and top of the valise; this will keep the back cooler than if the coat rests on the valise as in the drawing, figure VIII., Appendix VI.

In accordance with your suggestion to carry the mess tin on the valise instead of on the coat, two loops being sewn on the valise through which to pass the mess-tin strap, I have drawn and enclose a sketch to show this marked A.

Instead of the buckle to fasten the yoke down to the waist-belt, I believe the hook and eye, as proposed by Captain Mildmay, Rifle Brigade, will be found an improvement. I have had two sets of accoutrements fitted thus, and they work well. My sketch marked B. will explain this.

I think the two hard pouches to be worn in front might be well replaced by a couple of soft ball-bags, which are more handy.

I have only to add that in my opinion all belts and accoutrements should be of brown leather, like those worn by the Military Train, instead of the black ones now in use.

I have, &c.

(signed) *H. M. Moorsom*, Captain,
4th Battalion, Rifle Brigade.

Colonel Elrington,
Commanding 4th Battalion, Rifle Brigade.

4th Battalion, Rifle Brigade, Chester,
30 September 1868.

Sir,

I HAVE the honour to make the following report to you with regard to the new infantry equipment, which was issued to the company under my command in the first week of July in this year.

This equipment has been in constant use since that date, and the men of the company pronounce strongly in favour of it, in preference to the old knapsack, &c.

They find it far easier and lighter to carry whether when walking or running; they also consider that the kit-bag is easily packed, and the whole equipment very easy to take off, but not easy to put on.

The greatcoat is not easily put on, and the mess-tin is most inconveniently placed, for it cannot be taken off or put on without taking off the greatcoat, and consequently without removing the whole equipment; also when a man is firing, his mess-tin obstructs his neighbour when he is at the position of the "present." The mess-tin might very possibly be conveniently placed on the kit-bag.

The kit-bag and greatcoat cannot at present be taken off except by taking off every article of the equipment, including the ammunition, but some slight alterations would enable a man to take off either kit-bag, or greatcoat, or both at will, without removing the waist-belt in case both are taken off, or waist-belt and yoke in case only the kit-bag is taken off. Hooks have been fitted to the front straps of the yokes, and small rings to the waist-belt of one equipment, and the man who wears it can now easily and quickly take off his kit-bag, yoke, and greatcoat without even undoing his waist-belt.

An advantageous alteration could be made in the waist-belt.

I have, &c.

(signed) *H. A. St. J. Mildmay*,
Captain commanding "E" Co.
4th Battalion, Rifle Brigade.

To the Officer commanding
4th Battalion, Rifle Brigade.

Sir,

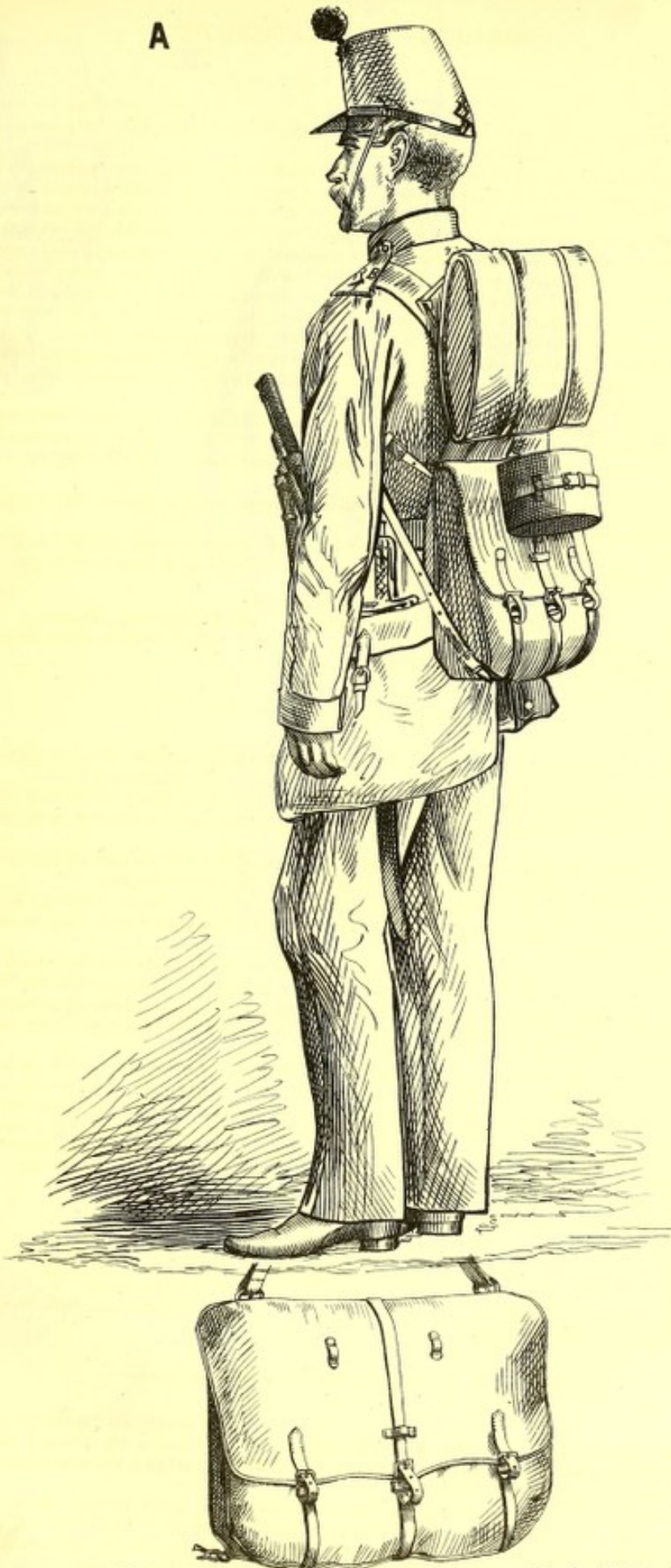
Chester, 30 September 1868.

I HAVE the honour to state for your information the result of a short tour I have just made in Wales with Lieutenant E. Clayton, R. A., both of us carrying the new knapsack or kit-bag on the brace-yoke principle.

The weight of our kits, including the bag and straps, was nearly 11 lbs. As we carried no ammunition, or anything to counterbalance in front the weight of the kit behind, a waist-belt was unnecessary, and was therefore left behind. Neither did we take greatcoat or coat-straps. When limited to this, the kit-bag was as easily taken off and put on (or even more so) as the old knapsack, and required no assistance.

In

A



Valise showing two D's as proposed for fastening
 Canteen to it
Sturmoorson Capt
Rifle Brigade

A

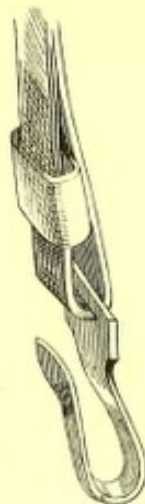


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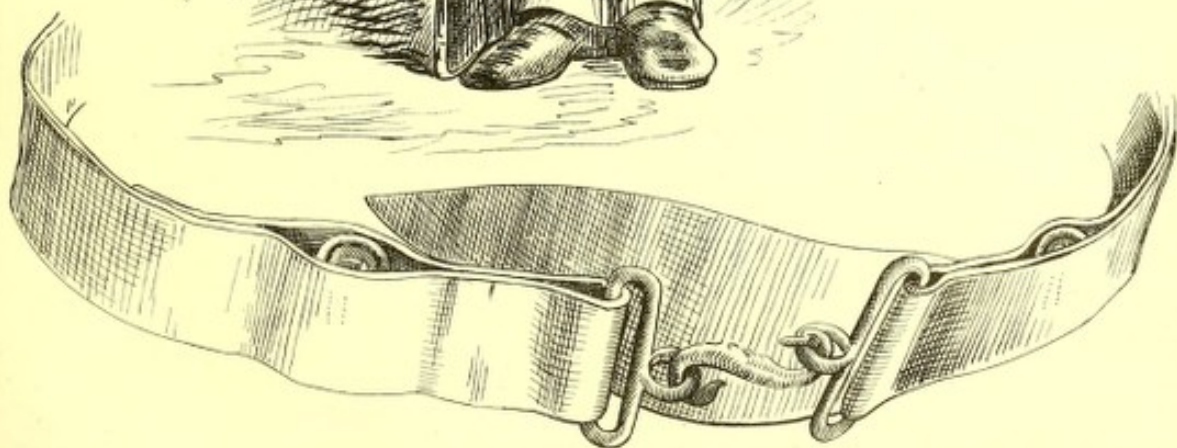
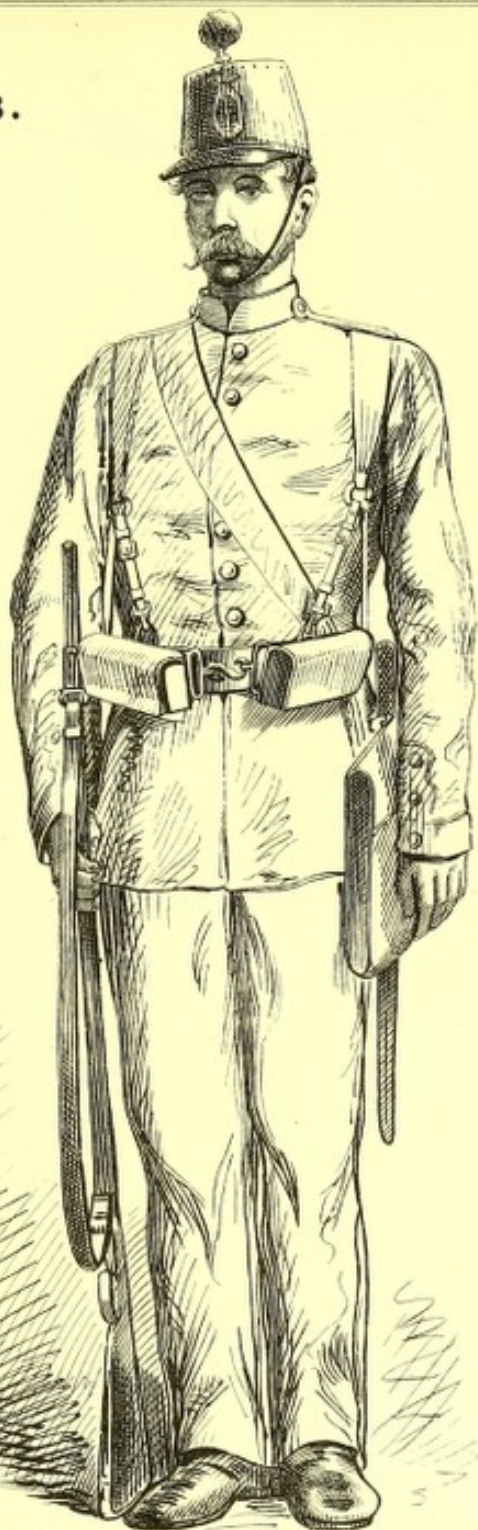
B.



Hook as proposed



Side view of Hook



Waist belt showing mode of fastening the Eyes into the double seam, where they can be pressed down out of sight if necessary.

*A. H. Moore, 1st Lt
Rifle Brigade*



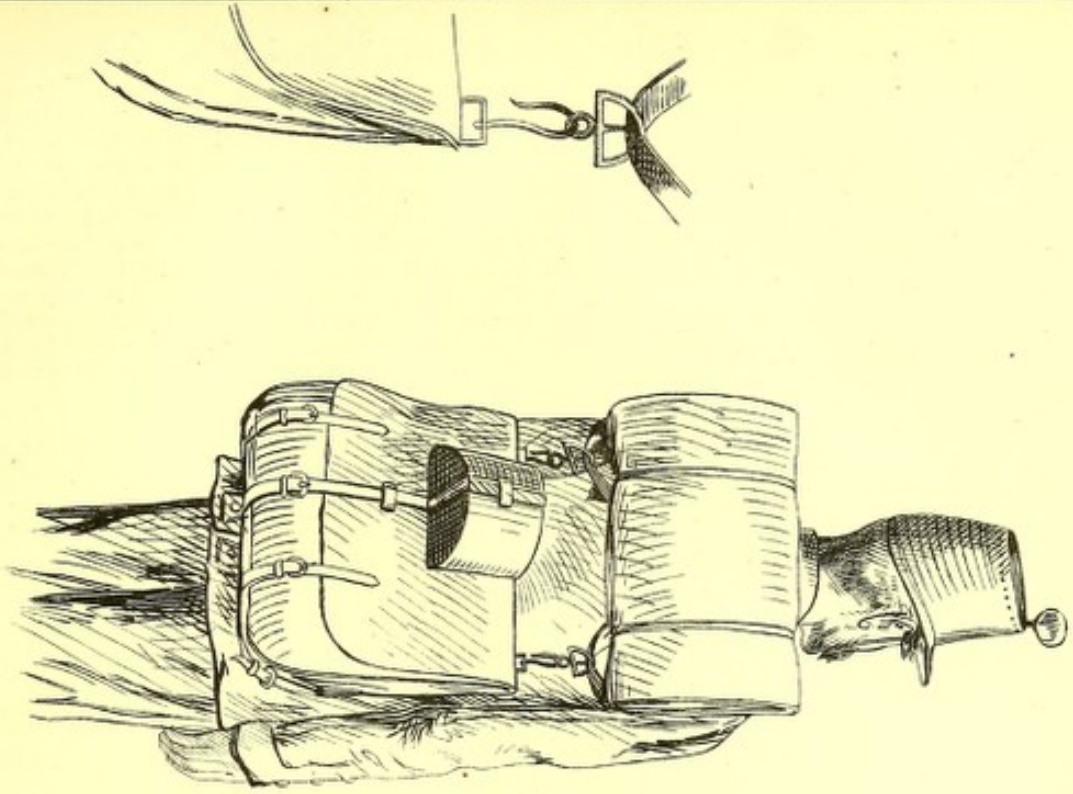
Fig. 1. Rifle.

Fig. 2. Gaiter.



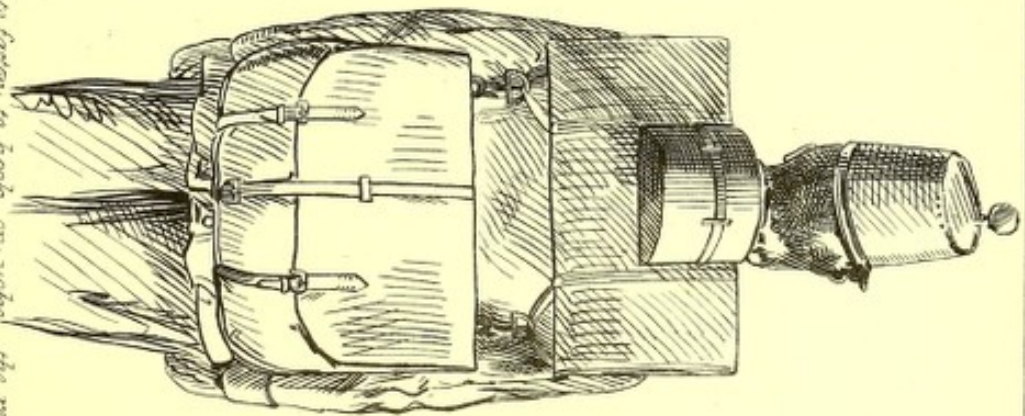
These sketches are intended to show the general appearance of the equipment and are not to be taken as a guide to the exact dimensions or proportions.

Wm. D. ...
1864

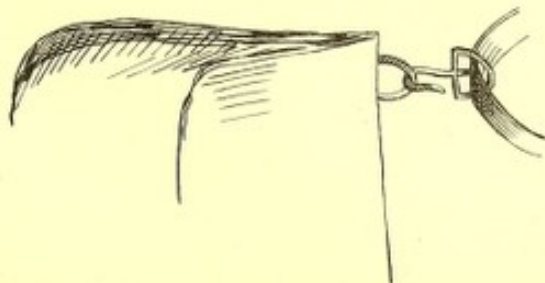


Valise with hooks to fasten to Eye on Yoke

C



Valise with eye to fasten to hooks on yoke. the regulation strap and buckle may be still retained, as well, thus having two modes of fastening the Valise to Yoke

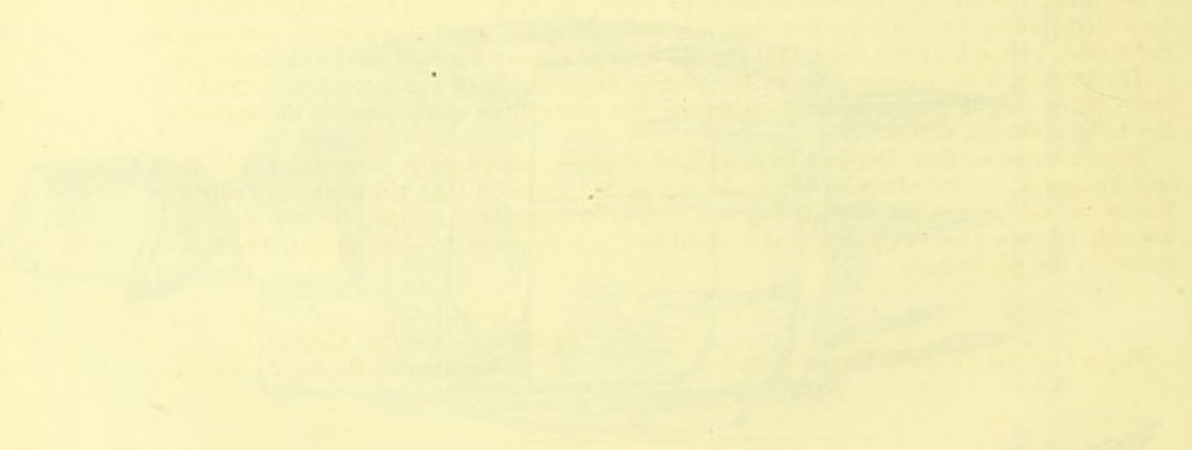


*John W. Morrison
Ninth Brigade*

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In going over rough ground or up steep hills the weight is better placed low down on the back than on the shoulders, because in these cases the body is leant well forward; and if the weight is placed on the shoulders it is placed where it acts with most effect, at the end as it were of a lever. This I found to be the case in practice.

On the first regular day's march we ascended two hills, each over 3,000 feet, and walked over some very rough ground, both ascending and descending without finding the weight of the packs to tell particularly against us. Indeed we should hardly have known we were carrying anything, though the weight must have told by the end of the day.

With the old knapsack after the first day's march my shoulders used to get stiff and even painful, which it took two or three days to remove. But in the present instance I felt no stiffness in the shoulders or any inconvenience at all.

I have, &c.

(signed) *John Abercromby,*
Lieutenant, Rifle Brigade.

To the Officer Commanding
4th Battalion, Rifle Brigade.

Sir,

Chester, 30 September 1868.

HAVING had a month's further trial of the new equipment since my last report, I beg to state, for the information of the Major General Commanding, that the whole of the men of the two companies who have been wearing it are still of opinion that it is superior in every respect to the regulation pattern, in which opinion I concur, with the exception of one or two points, viz., the mode in which the mess-tin is carried, at present it is in the way of the men firing. I would suggest that it be carried on the valise. I think it is a great objection that the valise cannot readily be detached, so leaving the soldier with his ammunition, side-arms, and coat, but this I hope I shall be able to overcome. The two pouches and ball-bag are objectionable, as being liable to get mislaid, though I cannot suggest any better way of carrying the ammunition, which is well distributed as regards weight, and comfortable to the soldier.

One great advantage of the new equipment in my opinion is, the ease with which a blanket can be carried, so necessary to the soldier's health and comfort in the field.

I have, &c.

(signed) *F. R. Elrington,* Colonel,
4th Battalion, Rifle Brigade.

The Assistant Adjutant General,
Manchester.

Sir,

Manchester, 1 October 1868.

I HAVE the honour to report, for your information, the result of my experience with the new pattern kit-bag gained during a walking tour which I took last week in North Wales, in company with Lieutenant the Honourable J. Abercromby, Rifle Brigade. We both carried the kit-bag, weighing, with its contents, about 11 lbs., and walked with it four days, doing in the day from 10 to 23 miles, a great part of the distance being not along roads, but over the mountains, in many instances where there was not even a track.

We found the kit-bag very comfortable to carry, in fact, except when we had to climb very steep places we scarcely felt that we were carrying any burden at all, and even in these steep places I do not think that the old form of knapsack would have any advantage.

The kit-bag, if so arranged as to be readily detached from the waist-belt in front, is easily taken off and put on without assistance, but it is rather troublesome if the waist-belt has to be removed with it.

Since my return from Wales I have walked 22 miles, carrying the same weight (11 lbs.) in a knapsack, on the old principle, and I am quite convinced that the method of carrying the weight adopted in the new kit-bag is a very great improvement upon the old plan, as it not only relieves the strain upon the shoulders, but appears to give greater freedom of action to the whole body.

I have, &c.

(signed) *Emilius Clayton,*
Lieutenant, R. A., A. D. C.

Major General Sir John Garvoek, K.C.B.
&c. &c. &c.

(Clothing.)

My Lord,

Chester, 6 October 1868.

With reference to my late report on the new valise and equipment, and the two sets forwarded as altered by the 2/22nd Regiment and the 68th Light Infantry, I have now the honour to state, for his Royal Highness's information, that at my inspection to-day of the 4th Battalion Rifle Brigade, a valise was shown to me by Colonel Elrington, in which I think considerable improvements have been effected.

The great drawback in the pattern sent down, and which is not in any way provided for by the suggestions of the 22nd and 68th, consists in the impossibility of detaching the valise from the rest of the equipment. The soldier cannot take off the one without the other, and it is unquestionably very desirable that he should be able to readily do so.

This objection is completely met by the arrangement of the two hooks for suspending the valise, shown in the accompanying sketch by Captain Moorsom. Should his Royal Highness desire to see a valise fitted in this manner, one can be at once forwarded from Chester.

Colonel Etrington is also of opinion that the mess-tin should be carried on the valise instead of on the greatcoat, in which I am myself disposed to agree.

An improvement in the waist-belt is suggested by Captain Mildmay, which I think worthy of attention. A belt will be forwarded with an explanatory memorandum.

I have, &c.

(signed) *John Garvoch,*

Major General Commanding North District.

The Adjutant General,
&c. &c. &c.
Horse Guards.

(52—68th Foot—266.)

(Clothing, &c., 2,026—G. S. 1868—C. 59.)

Sir,

Horse Guards, 22 June 1868.

I HAVE the honour herewith to forward a report upon the new pattern infantry valise received from Colonel Greer, commanding the 68th Light Infantry.

The report seems so satisfactory that little would be gained by a further trial; his Royal Highness the Field Marshal Commanding in Chief, therefore, recommends that as the 68th regiment are in great want of knapsacks, a sufficient number to complete the regiment with the valise should be issued without further delay.

I have, &c.

(signed) *W. Paulet,* Adjutant General.

To the Under Secretary of State for War,
Pall Mall.

REPORT OF 68th REGIMENT.

(52—68th Foot—266.)

(No. 844.)

Salford Barracks, Manchester,
17 June 1868.

My Lord,

IN compliance with the instructions contained in your memorandum, as cited in the margin, I have the honour to report, for the information of the Field Marshal Commanding in Chief, that I have made a careful examination of the valise equipment sent to me for trial, and although the time has not expired when I was directed to make my report, I consider that nothing could be gained by further delay.

I have probably been enabled to come to a speedier conclusion, having had for many months trial the yoke, and afterwards the first sample of the brace system. I think in this report it is sufficient to say that I consider the principle of the valise equipment I have had on trial is perfect, and that it now answers its purposes in all respects in the most satisfactory manner.

The soldiers who have been wearing the valise on guard and drilling, and marching in them in the hottest weather, are enthusiastic in their praises of the comparative ease and comfort with which they can accomplish their work in them.

I have found one or two little matters requiring alterations, for instance, the keepers on the braces on the back of the shoulder, through which the greatcoat straps run, are liable to give way, and by stretching, allow the greatcoat to hang back in an uncomfortable manner.

The keeper and single buckle through which the side-strap passes from the top of the valise to the ring, does not seem to answer. The keeper would certainly give way. I have altered all these; in the former by making a runner for the coat-straps under the brace,* similar to that under the waist-belt, through which the strap from the ring passes, and in the latter by substituting a double buckle of peculiar form for the single one in use in both cases the alteration answers well.

I approve of the Prussian water-bottle, but perhaps the glass might be a little thicker with advantage. I have attached a strap to the neck of the bottle, to go round the waist-belt (in addition to the string) which makes it carry easier, and prevents it swinging about when the man is moving, particularly when doubling or acting as "light infantry."

I have

* I prefer this method to having the coat-straps fixtures.

I have thought it better to send up an intelligent private with his accoutrements, which have been carefully fitted and altered, and who understands how and why they have been altered. I have directed him to report himself at the Horse Guards, and I request that when he is no longer required, he may be directed to rejoin his regiment.

I recommend a black waterproof haversack, with linen lining, which could be taken out for washing. In the present haversack the rations are reduced to pulp in wet weather.

I have, &c.
(signed) *H. H. Greer*, Colonel,
Commanding 68th Light Infantry.

The Adjutant General,
&c. &c. &c.
Horse Guards.

(24,362—1042.)

Royal Marine Office, S. W.,
6 August 1868.

Sir,
WITH reference to War Office letter of the 15th May, 1868 (No. 24,362—1,012), I have the honour to forward the accompanying letter (Plymouth, 5th August 1868, No. 540) and enclosures from the Colonel Commandant of the Plymouth Division of Royal Marines, reporting on the new pattern equipment.

I have, &c.
(signed) *S. Netterville Lowder*,
Colonel and Deputy Adjutant General,
Royal Marines.

The Under Secretary of State for War,
War Office, Pall Mall.

NEW PATTERN EQUIPMENT.

(No. 540.)

Royal Marine Barracks, Plymouth,
5 August 1868.

Sir,
1. WITH reference to Royal Marine Office Memorandum, No. 71, of the 20th May 1868, directing me to furnish a report on the new pattern equipments, I have the honour to acquaint you that 40 sets have been worn by a detachment consisting of two serjeants, two corporals, and 36 privates of the division under my command since the 10th July 1868, on all occasions of parade, and marched twice a week into the country, a distance of not less than eight miles, during very hot and oppressive weather, carrying 20 and 40 rounds of ammunition.

2. Lieutenant Colonel Forbes has had the entire superintendence of the detachment testing the equipment, and Captain Walsh accompanied it when on the march.

3. The reports of these officers I beg to enclose, from which it will be seen that the detachment are unanimous in their preference of the new equipment.

4. With reference to the suggestions made by the above officers, I would observe that I have given them very careful consideration, and am of opinion that if adopted, the result would be that the new equipment would be made much more serviceable, and more comfortable to the wearer.

5. With reference to that part of Lieutenant Colonel Forbes's Report, alluding to two waist-belts forwarded for trial, I beg to acquaint you that they were sent for that purpose by the secretary to the Committee on Knapsacks. I was requested to try these two plans, and to state in my report whether either is to be preferred to the original plan in the equipment sent down. The result of our test is that "both waist-belts are improvements, and the one with the brass D, which when not used is pushed in," is strongly recommended for adoption.

6. With regard to the Prussian water-bottles, there cannot be a doubt but that they are an immense improvement upon the ones now in use. I quite concur in the recommendation made by Lieutenant Colonel Forbes, that they should be flattened at the sides to enable them to fit snugly without knocking about on the line of march. The suggestion that they should contain a quart of liquid instead of a pint, is, I think, worthy of consideration.

7. The result to be deduced from the test of the new pattern equipment at these head quarters is as follows:—

1st. That the men would rather wear the new equipment all day than the old knapsack and accoutrements two hours:

2nd. The chest is entirely free from constraint, and the freedom of the limbs is in no way impeded:

3rd. No sensation of numbness is experienced from wearing these accoutrements, which is invariably the case when the knapsack at present in use is worn :

4th. That it would be an advantage if a little more air was admitted to the back and loins (this could be accomplished by having the greatcoat padded smaller) :

5th. That it would be an improvement if the braces were fitted with buckles in front, immediately above the rings, to enable the wearer to adjust the height of the valise and greatcoat without assistance :

6th. The dumb buckles replace visible loops on yoke for greatcoat slings.

I have, &c.
(signed) *W. F. Foote*, Colonel Commandant.

Colonel S. N. Lowder, C. B., A. D. C.,
Deputy Adjutant General,
Royal Marines, London.

Royal Marine Barracks, Plymouth,
4 August 1868.

Sir,

IN compliance with your directions, I have the honour to report the result of the trial of 40 sets of the new pattern equipments, which has taken place under my superintendence for the last month.

1. The non-commissioned officers and men have worn these equipments at all parades, and have marched into the country twice a week, a distance of from eight to ten miles under the immediate charge of Captain Walsh, who has given the matter his unremitting attention, and whose very able report containing several valuable suggestions I enclose, and strongly recommend to your favourable consideration.

2. The detachment are unanimous in their preference of the new pattern equipments to those at present in use, and having questioned them individually, I forward the opinions of the four non-commissioned officers, and two of the privates; the reasons given by the remainder being identical with these, I have condensed them in a collective expression of opinion.

3. The alterations suggested partly by the detachment who have been testing these equipments, and partly from my own observation, are as follow:—

SUGGESTIONS.

1. The buff is extremely liable to stretch, and also from the unavoidable multiplicity of straps, the pipeclay rubs and injures the clothing in many places; I would therefore suggest that the accoutrements should be of brown leather, similar to that worn by the Military Train.

2. I do not consider the valise to be made of a sufficiently durable material, and it is liable to tear, more especially where the strain comes on the buckles at the upper corners on the inner side; moreover, its colour (black) attracts heat. Suggested that calf-skin with the hair outwards be substituted.

3. Suggested that buckles be placed on brace-straps in front immediately above rings, to enable the soldier to adjust valise and greatcoat without assistance.

4. Dumb buckles to replace visible loops on yoke for greatcoat slings. These loops are liable to tear away, and are placed too low down, allowing the greatcoat to slip down on the valise.

5. Greatcoat to be padded smaller, so as to allow an interval between it and top of valise, to admit a free circulation of air.

The two waist-belts forwarded for trial are improvements on those previously sent, and I have no hesitation in strongly recommending for adoption the one with the brass D which, when not used, is pushed in.

The Prussian water-bottles are a great improvement upon the wooden ones at present in use, but I object to the shape. I think they should be flattened at the sides to enable them to fit snugly without knocking about when worn on the line of march. I also think they should contain a quart of liquid instead of only a pint as at present.

Colonel Commandant, W. F. Foote,
Royal Marine Light Infantry,
Plymouth.

I have, &c.
(signed) *G. W. Forbes*,
Lieutenant Colonel, R.M.L.I.

Royal Marine Barracks, Plymouth,
3 August 1868.

Sir,

I HAVE the honour to report to you that in accordance with directions received from the Colonel Commandant, I have had charge of a detachment consisting of two sergeants, two corporals, and 36 privates Royal Marine Light Infantry, since the 10th July 1868 employed in testing the proposed new equipment for infantry.

The detachment has been marched into the country, and over rough ground, twice a week, distances of eight or nine miles, carrying 20 and 40 rounds of ammunition during very hot and oppressive weather.

These distances were performed with comparative ease, and there can be no doubt that the proposed equipment is a great improvement on that at present in use.

The men when questioned state that they do not experience any disagreeable pressure or difficulty in breathing when wearing the equipment; that it is much more comfortable on the march, and at the double, than the present knapsack, and that their limbs are much more free and fit for work.

The equipment balances better, and is more easily carried with 40 rounds of ammunition than with 20.

Unbuttoning the waist-belt on the march affords considerable relief. On the other hand, the men complain of the great heat across the loins and the liability to chill on removing the equipment after marching.

This, I think, might be remedied, first by changing the material of which the valise is made, and secondly, by slightly altering the method of carrying the greatcoat.

The material of which the valise is made will not, I think, wear well; what we have had is already showing signs of wear, though it has been in use a very short time. Moreover, from its colour it attracts the heat. I would, therefore, suggest that the valise be made of calf or goat's skin, which would be much cooler, and equally, if not more durable than the material at present employed.

The method of slinging the greatcoat in the proposed equipment is, I think, defective; it easily slips down over the valise, thus entirely preventing the air getting to the man's back and increasing the heat complained of. It then also presents a most slovenly appearance.

The strain on the upper visible loops on the yoke is very great and the loops are liable to be torn off. I would therefore suggest that dumb buckles be substituted for them, and in order to get and keep them in their proper places which should, I think, be a little higher than at present, the rings in front to which the brace and side-straps are fastened should be fitted with buckles to enable the soldier to correct any error in the fit of the yoke caused by the stretching of the leather. By placing the dumb buckles high on the shoulder the bottom of the coat would be thrown out from the body, and if the coat was folded only 10 inches broad and pocketed there would be a considerable space between it and the valise, and the men's backs would be much cooler.

I think it would be a great advantage if brown leather similar to that used in the appointments of the Military Train could be substituted for the buff, as being more durable and not so liable to stretch, and it would not injure the clothing, I imagine, as the pipeclay does.

I beg also most respectfully to suggest the advisability of lessening the amount of clothing, &c., carried, and I think the second pair of boots and trousers might be dispensed with. These articles, which are both heavy and bulky, might be carried for the soldier in the proposed kit-bag; he would then be able to carry his provisions and more ammunition in the valise, and the haversack would be unnecessary. The water-bottles supplied for experiment seem very good and far superior to those at present in use.

I have, &c.

(signed) *Arthur H. H. Walsh,*

Lieutenant Colonel Forbes, R.M.L.I.,
Royal Marine Barracks, Plymouth.

Captain, R.M.L.I.

Royal Marine Barracks, Plymouth,
3 August 1868.

91ST COMPANY, William Brailey, Colour Sergeant, states.—I have worn the new pattern knapsack and accoutrements on the yoke system for the last month, and have frequently marched eight and nine miles during the present hot weather, carrying 20 and 40 rounds of ammunition. I would rather wear the new pattern equipment all day than the old knapsack and accoutrements two hours. The chest is entirely free from constraint, and the freedom of the limbs is in no way impeded. I experience no sensation of numbness from wearing these accoutrements, which I invariably do when I wear the knapsack at present in use. I think it would be an advantage, however, if a little more air could be admitted to the back and loins. I also think it would be an improvement if the braces were fitted with buckles in front immediately above the rings to enable the soldier to adjust the height of the valise and greatcoat without assistance. The waist-belt with the brass D has been worn by me and is a vast improvement upon either of the other patterns sent down for trial. The

loops on the outside of the yoke behind for the greatcoat strings are liable to tear away and stretch, allowing the greatcoat to slip down. I think that dumb buckles ought to be substituted.

(signed) *W. Brailey, Colour Serjeant.*

Royal Marine Barracks, Plymouth,
3 August 1868.

87TH COMPANY.—Arthur Tew, Sergeant, Royal Marine Light Infantry, fully endorses the opinion of Sergeant Brailey in all respects; but adds an opinion that brown leather would be a great improvement upon the buff for the accoutrements, as the buff stretches and the pipeclay is very dirty and injurious to the clothing.

(signed) *Arthur Tew, Serjeant.*

Royal Marine Barracks, Plymouth,
3 August 1868.

79TH COMPANY.—Henry Rendell, Corporal, Royal Marine Light Infantry, highly approves of the new equipment, which is in every way superior to the old. It is worn with ease and comfort, and the chest is free from constraint, and movement of the arms unimpeded. He has no improvement to suggest; but would like all the waist-belts to be fitted with the D similar to that worn by Colour Serjeant Brailey. He very much prefers the greatcoat padded to wearing it *en bandolier*, which is a clumsy and awkward way of carrying it, and inconveniently hot.

(signed) *Henry Rendell, Corporal.*

Royal Marine Barracks, Plymouth,
3 August 1868.

79TH COMPANY.—John Hobbs, Corporal, Royal Marine Light Infantry, states that the new equipment is a great improvement on the old one, being easier to wear and more comfortable to march in. The constriction of the chest, felt when the present knapsack is worn, is entirely absent with this equipment. Thinks it would be an improvement if a little more air could be admitted to circulate between the valise and the back.

(signed) *John Hobbs, Corporal.*

Royal Marine Barracks, Plymouth,
3 August 1868.

73RD COMPANY.—James Walters, Private, Royal Marine Light Infantry, considers the new pattern equipments very superior to the old ones in use at present. His reasons for preferring them are the same as those expressed by the non-commissioned officers previously questioned. He wore one of the Prussian water bottles the whole time, and considers it very superior to those at present in use. Thinks, however, that it might be improved in shape, being too round at present, and knocks about when on the march. Thinks it should be flattened at the sides and would hang easier with a narrow strap than with the cord as at present.

(signed) *J. Walters, Private.*

Royal Marine Barracks, Plymouth,
3 August 1868.

73RD COMPANY.—Richard Orchard, Private Royal Marine Light Infantry, thinks the new equipments a good deal easier than the old ones, and very much prefers them. He feels no constriction of the chest or numbness of the arms when he has on the new equipments, but always did when he wore the knapsack and present regulation accoutrements. Considers that the 40 rounds of ammunition balances the valise and greatcoat, and that it is easier marching with the ammunition, as without it the waist-belt is pulled up in front. Approves of the Prussian water-bottle, but thinks it would fit more snugly to the side if the sides of it were flattened in a little.

(signed) *Richard × Orchard.
mark.*

IN addition to the opinions given by the above six non-commissioned officers and privates, I have questioned the whole of the remainder, and they are unanimous in expressing their preference for the new pattern equipment to that now in use. Their reasons are identical with those already given.

(signed) *G. W. Forbes,*
Lieutenant-Colonel, R.M.L.I.

(24,362—1067.)

(No. 193.)

Royal Marine Office, S.W.
19 October 1868.

Sir,
WITH reference to War Office letter of the 15th May 1868, No. 24,362—1,012, I have the honour to forward reports from the colonels commandant of Royal Marines at Chatham, Gosport, and Woolwich, on the new pattern equipment, a set of which is forwarded herewith.

Chatham, 14 Oct.
1868, No. 560.
Gosport, 15 Oct.
1868, No. 485.
Woolwich, 13 Oct.
1868, No. 890.

I have, &c.
(signed) *Jno. Williams,* Colonel,
and A. A. G. for D. A. General,
Royal Marines.

The Under Secretary of State for War,
War Office, Pall Mall, S.W.

RESPECTING NEW PATTERN KIT-BAG.

(No. 560.)

Royal Marine Barracks, Chatham,
14 October 1868.

Sir,
WITH reference to Royal Marine Office Memorandum, No. 6, dated 12th instant, I have the honour to transmit herewith the reports and suggestions made by the officers, non-commissioned officers, and men who have been connected with the fitting and wearing of the new pattern kit-bag at these head quarters, and I would acquaint you that I concur with the enclosed statements, with the exception of that of Private Cordell.

With regard to the Prussian water-bottle, it being made of glass, I am of opinion that it would be too liable to be broken on active service.

Colonel S. N. Lowder, C.B., A.D.C.,
Deputy-Adjutant General
Royal Marines.

I have, &c.
(signed) *Richard K. Clavell,*
Colonel 2nd Commandant,
Commanding.

Royal Marine Barracks, Chatham,
14 October 1868.

Sir,
IN compliance with your request for me to report on the new equipment for infantry regiments, and the alterations made by Staff Serjeant Hart, Royal Marine Light Infantry.

I have the honour to inform you that the general advantages of the new equipment over the old pack are very great, leaving a freedom of action and circulation without any excessive tightness of the straps which is of vast importance and benefit to the soldier.

Its disadvantages are the number of straps, and their arrangement, which render their proper adjustment to each individual soldier a work of great care and time. They are easily deranged, the side-straps interfere with the bayonet and water-bottle, and in some men it is difficult to keep the ring well out from under the arm, in which case the straps cut nearly as bad as the old ones.

The arrangement of the brace-belts by Staff Serjeant Hart, Royal Marine Light Infantry, is a great improvement, and gives greater freedom to the arms; its simplicity is an immense advantage; two straps only being used instead of eight, it can be adjusted in a few moments by the soldier himself, and is much neater in appearance. The arrangement of the coat-slings is also very much better.

Its disadvantages are a slight strain brought on the waist-belt, which might be greatly reduced by the waist-belt being made broader, and the rejection of the broad leather flap which passes from the pack down through the waist-belt behind, thus bracing the pack to the belt which is the cause of the strain. I recommend instead an extension of the brace-straps, which, after fastening as now on the pack, should pass a strong runner, then down through the waist-belt, and buckle below the pack; this plan would divide the pull of the pack, and bring it more at the sides of the body. The leather flap is likely to pucker, and bring the strain direct to the rear, causing a slight pressure on the stomach, though with a full pouch that must be exceedingly slight.

The brace-straps might be a little broader over the shoulders, thereby increasing the friction and rendering them less likely to slip when the pack is worn without the balance weight of the front pouch.

Colonel R. Clavell,
Commanding Royal Marines, L. I., Chatham.

I have, &c.
(signed) *William Willis*,
2nd Captain, R. M. L. I.

Boyal Marine Barracks, Chatham,
14 October 1868.

Sir,
HAVING been called on by you to report upon the "new equipments" issued for trial to the Chatham division of Royal Marine Light Infantry,—

I beg to offer it as my opinion that Colonel Lambrick's alterations are a considerable improvement over the "War Office pattern," as several straps are thereby done away with, and the soldier can also put on and take off the greatcoat himself. I would suggest that the waist-belt should be broader, so as to ease the strain on the stomach, though I consider when the pouches are full of ammunition much of the pressure on that part of the body will be taken off.

I find it impossible for a soldier to "shoulder" his arms correctly with both the pouches on in front, and I think the "advance" ought to be substituted for it under the present system of wearing the valise, &c.

I beg to hand in the statement of Private Muncy, Royal Marine Light Infantry (who has worn Colonel Lambrick's plan for about 10 weeks), also that of a non-commissioned officer and two privates who have worn the "War Office" pattern for a considerable time. Lance-Corporal Young, who carried the latter since its first issue, and also the former, testified strongly in favour of Colonel Lambrick's; this non-commissioned officer is now embarked in Her Majesty's ship "Cumberland," having previously worn it at "Netley," Horse Guards, and "Royal Marine Artillery Head-quarters" for inspection, &c.

I have, &c.
(signed) *W. H. Pointz*,
2nd Commandant, R. M. L. I., Chatham. Capt. and Adjutant, R. M. L. I., Chatham.

REPORTS ON NEW EQUIPMENT.

War Office Pattern.

41st Company.—W. H. Boulton, serjeant, has worn the new equipment on the brace principle three months, states.—I like it far better than the old pattern. I do not feel the pressure on the chest that I feel with the old pattern, and I have the free use of my arms, and do not experience that difficulty of breathing caused by the old pattern; and I think a removal of some of the straps would be an improvement, and brown instead of buff leather used.

War Office Pattern.

89th Company.—Francis Wickinden, corporal, having worn the new equipment for three months, states:—I find it a great deal easier to wear, and preferable in all respects to the old pattern knapsack.

Brown leather and not so many straps would be a great advantage.

War Office Pattern.

97th Company.—John Welton, private has worn the new equipment on the brace principle three months, and states.—I consider it a great deal easier to carry than the old pattern knapsack in every respect, and causes a great deal less fatigue after a long march.

It would certainly be an improvement if some of the superfluous straps were done away with.

War Office Pattern.

53rd Company.—Thomas Cordell, private, has worn the new equipment on the brace principle three months, states.—I do not consider this plan any improvement whatever on the old pattern knapsack as regards myself, being corpulent, because it causes a great deal more perspiration, and consequently a weakness across the loins, and a pressure on the stomach when the full quantity of ammunition is carried.

Colonel Lambrick's Improvement.

81st Company.—James Munsey, private, has worn the new equipment on Colonel Lambrick's principle 10 weeks, states:—I should prefer this plan to any of the others, as it has less straps and rides much easier than the old pattern knapsack; and besides, a man is not nearly so much fatigued after a long march.

REPORT ON NEW EQUIPMENTS.

(No. 485.)

Royal Marine Barracks, Forton,
15 October, 1868.

Sir,

WITH reference to Royal Marine Office Memorandum of the 12th instant, No. 3, —

I have the honour to report that the new equipment is generally approved of, the non-commissioned officers and men who have worn it coinciding in the opinion that it has great advantages over the old fashioned knapsack, giving great freedom to the arms and not impeding the respiration. A set of the equipment altered according to some of the suggestions of Serjeant Hart, master shoemaker of the Chatham division, has been found very serviceable; when properly fitted the greatcoat remains in its proper place, whereas with the sets fitted with mere loops of buff for the straps to pass through, the loops are continually requiring to be re-adjusted.

With regard to the water-bottle, I deem the fact of its being glass most objectionable.

A set of the equipment has been forwarded as directed.

Colonel S. N. Lowder, C. B., A. D. C.,
Deputy Adjutant General Royal Marines,
London.

I have, &c.
(signed) *W. S. Haslett*,
Colonel Commandant.

Royal Marine Barracks, Forton,
14 October 1868.

FROM having fitted about 150 men with the new equipment, and from questioning them after our marches in the country and field-days, I am led to believe that the new equipment is a very great improvement over the old pack. I feel certain that a man could walk 20 miles with the new equipment with greater ease than he could 10 miles with the old pack.

My reasons for saying so are these:—

- 1st. With the new equipment the weight is more equally divided over the whole body.
- 2nd. Perfect freedom of the arms, which there is not with the old pack.
- 3rd. Total absence of cramp in the shoulders, which the old pack will cause in a very short time.
- 4th. It dispenses with that splitting sensation in the front of the centre of the chest, as there is after wearing the old pack about a quarter of an hour.
- 5th. In taking the new equipment off you feel, as is natural, that the load is gone; not so with the old pack, after it is taken off you can feel its effects for hours.

(signed) *Jos. Gibbs*, Serjeant Major.

I consider the new valise and accoutrements are worn with much greater ease than those now in use, and can be worn much longer with less distress to the wearer. My reasons for saying so are: The freedom given to the arms by the arrangement and fitting of the shoulder belts from the same cause, together with the absence of a pouch-belt, and the more equal distribution of the weight about the body makes them less fatiguing to carry, and the respiration more easy. I feel confident I could perform the duties of coverer at a field-day or march into the country with much less inconvenience and fatigue than I have ever done yet.

(signed) *William Salter*, Colour Serjeant.

I consider the new accoutrements an improvement to the old ones. In the first place, the weight of the kit is more equally distributed over the body, also supplying freedom to the arms and muscles, and having no cross-belts, there is no pressure on the chest.

I consider that I can do my duty with more ease and comfort in the new ones than in the old ones.

(signed) *J. R. Austin*, Colour Serjeant.

I consider the new accoutrement to be a very great improvement upon the old, as its weight is more equally divided on the body, it also allows free use of the arms without constraint, and adds greatly to the power of respiration.

(signed) *P. O. Phelan*, Colour Serjeant.

Having worn the new equipment for about two months, I consider it a very great improvement over the old pack, as there is a total absence of pain in the chest and numbness in the arms.

(signed) *George × Drew*
his
mark
Private, 46th Company.

I have worn the new equipment for about three months; I consider it a very great improvement over the old pack.

After a field day or a guard I do not feel any pain over the shoulders or on the chest. In fact, the weight is so well divided that I scarcely feel the weight at all.

(signed) ^{his} Henry × Griffiths,
mark
Private, 90th Company.

I have worn the new equipment for about a week. I consider it a very great improvement over the old pack. With the new equipment I have not felt any cramp or numbness in the arms as I always did with the old pack. The weight is so well divided that I would rather walk 15 miles with the new equipment than five with the old pack.

(signed) ^{his} Thomas × Hutchings
mark
Private 14th Company.

RELATIVE TO THE NEW EQUIPMENT.

(No. 890.)

Royal Marine Barracks,
Woolwich, S. E., 13 October 1868.

Sir,

Lieut.-Colonel
Charles McArthur.
4.

1. I HAVE the honour to forward the enclosed letter from the officer named in the margin together with reports from non-commissioned officers and men who have worn the new equipment, and to observe that Colonel McArthur has at my request given much attention to the fitting &c., of the new belts, and that I concur in all that he has said, with the exception of brown leather "being preferable to buff."

2. With regard to the water-bottle, the neck is too much exposed, and would not in my opinion stand any field wear.

Colonel S. Netterville Lowder, C.B., A.D.C.,
Deputy Adjutant-General, Royal Marines.

I have, &c.
(signed) W. Suther.
Colonel Commandant, R. M., W. D.

Royal Marine Barracks, Woolwich,
12 October 1868.

Sir,

In compliance with your instructions, I have the honour to report that the 32 sets of new equipments on the "brace system," issued for trial at this division, have now been in use four months, and the unanimous opinion of the various men who have worn them during that period is in favour of the proposed change.

My own opinion of the new system is, that with common care and attention on the part of the men in first fitting the equipments, they will insure to themselves the maximum of ease and the minimum of discomfort which can ever be expected in the carriage by the soldier of the cumbersome, but apparently unavoidable necessity, "his service kit."

I still think that for straps, &c., the brown leather would be preferable to the "buff." The latter may look smarter, but I think the former would stand more wear, and soon find favour, although so many still cling to the "pipeclay."

The upper loops on the braces for the coat-straps should be changed for flat buckles, we having found that with all care the greatcoat will settle down from its first position. On a long march, or during a field-day, the buckle, if nearly but firmly secured, would be no more unsightly than the present loops.

Of the two waist-belts forwarded for trial, the one preferred is that fitted with a brass D, and which gives an oblique bearing to the brace-strap.

The water-bottle is certainly an improvement on the old one, but I doubt if it is strong enough for service, the leather as at present not affording to the glass sufficient protection from unavoidable mischance.

I beg to enclose herewith the reports of Serjeant Major Hancock, those of two serjeants, as also those of two privates, who have been wearing the new equipments, from which some idea may be gathered as to the general feeling of those most interested in the question.

To Colonel Suther, C.B., Commandant,
Royal Marines, Woolwich.

I have, &c.
(signed) Charles M'Arthur,
Lieut. Col., Royal Marines.

Royal Marine Barracks, Woolwich,
13 October 1868.

Sir,
56TH COMPANY.—William Evans, private.—Prefers the new valise to present knapsack very much, and does not feel so much fatigued after wearing it for a number of hours as he did with the old one, but would very much prefer brown belts.

(Signed) *Wm. Evans.*

68TH COMPANY.—John Keevy, private.—Prefers the new valise to the old knapsack; feels more comfortable in every way, but would very much prefer brown belts, because the small straps are very difficult to keep clean, and very troublesome to keep the pipeclay off the clothes.

his x mark.

Witness, George Hancock,
Serjeant Major.

(signed) *George Hancock,*
Serjeant Major, R. M. L. I.

Royal Marine Barracks, Woolwich,
12 October 1868.

Sir,
I HAVE worn the new pattern equipment; do consider it suitable for light infantry, being far more comfortable than the old pattern now in use.
I also consider brown belts would be superior to the buff belts now in use.

(Signed) 100th Company, *John Orr,*
Serjeant, R. M. L. I.

Royal Marine Barracks, Woolwich,
12 October 1868.

Sir,
I HAVE had constant supervision over the men in possession of the new pattern valise for five months, and find it much preferred to the old knapsack. The men all say that they can stand longer under arms, and do not feel so much fatigued after having it on a number of hours. And the majority of them would much prefer brown belts, especially the small straps; they complain of them being difficult to keep clean, and the pipeclay rubbing off on their clothes. I perfectly concur with the above, and I think there might be a slight improvement made in the coat-straps by having a stud or some other contrivance, so as to prevent the strap from slipping through the loops when on the man's back.

I am, &c.
(signed) *George Hancock,*
Serjeant Major, R. M. L. I.

Lieut. Col. M'Arthur, R. M. L. I.

13 October 1868.

I HAVE had the new pattern knapsack about five months, and I have had it in use for all field-drills and guards, and I think it a great improvement to the old one, more especially when on guard, in having no cross-belt, and I think it a great relief in every way to the chest and shoulders, but in reference to the water-bottle not being sufficiently protected, I think it is liable to break.

(signed) *Phillip Hastings,*
Serjeant, R. M. L. I.

APPENDIX II.

INSTRUCTIONS for the Guidance of Inspectors of Clothing and Accoutrements, if the Valise Equipment be adopted.

As the ease of the valise equipment greatly depends on the correctness of the size and bearing of the various straps, the following instructions have been drawn up for the guidance of the inspecting officers.

Valise.—The top buckles should be oblique, as shown in the pattern, so as to properly meet the oblique brace-straps; they should be very firmly sewn, and the point of the supporting buff strap should be quite up to the seam of the valise. The under straps on the valise should be sewn obliquely, as shown in the pattern, and very firmly.

Brace.—The inside loop on the shoulder for the upper coat-strap should be well bevelled off, so as to leave no ridge to press on the shoulder. The distance from the central stud to the centre of the upper and lower loops which take the coat-straps, should be exactly the same above and below the stud, and on each side.

The first hole below the lower coat-strap loop in the oblique brace-strap should be very close to this loop; a proper number of holes should be pierced in all the straps to allow different sized men to be easily fitted.

All the brace-straps, the ring, and the buckles must be made identical with the pattern, both in length and width. The back-stud must not be larger than the pattern, and the part against the man's back must be perfectly smooth, and almost flat, so as not to wear the tunic.

Waist-belt.—The two D's must be at the same distance from the end of the belt, and must be sewn in such a way as not to be able to be turned round, but merely to be pulled out obliquely, as shown in the pattern.

Pouches.—The curve to fit the body must be properly preserved. The studs underneath to hold the runners must be conical, and sufficiently long to allow a good hold. The runners must be sewn as high as possible on the pouch.

The Greatcoat Straps.—The loops must be sewn at the exact distance from the buckles, as in the pattern.

APPENDIX III.

INSTRUCTIONS for fitting the NEW EQUIPMENT for INFANTRY REGIMENTS.

THE equipment consists of a waist-belt and frog; two pouches of 20 rounds each; a ball bag to be used in firing; a valise made large enough to hold the service kit; brace-yoke; and coat-straps.

While the object is to provide means of carrying a good supply of ammunition, and the articles of kit, which a soldier requires during peace, or which must be borne during a campaign, it is not intended that the full equipment shall be always carried, or that the whole of the service kit shall necessarily be in the valise. On the contrary, it is proposed to carry only one pouch on ordinary occasions in peace, to use the ball-bag only during rifle practice, and to place in the valise merely such articles of the kit as may be wanted at the time, the other articles being carried for the men.

The object is in fact to leave the soldier as unencumbered as possible, except when there is a necessity for weighting him.

The size of the brace-straps will be found to suit both tall and middle-sized men, but for small men they may be too large; in this case the straps can be shortened after issue, but it will be advisable in all cases that the man should wear the equipment a week or two before alteration, so that he may see how much shortening is necessary. Serjeant Hart, R.M., (who has made some good suggestions), has improved the fit of the shoulder straps in some cases by shaping a little the inner edge, just when the strap lies on the shoulder, as in some men the muscle is very large, and the inner edge may press a little. This slight cutting away, however, should not be done until the equipment has been worn some time, as the buff may accommodate itself to the shape. Fresh holes may have to be made in some of the straps.

1. During drill, on sentry, and on field-days when the valise is not carried, it is proposed one 20-round pouch only should be carried, which may be in front, or slipped round to the back, and which is sufficiently supported by the waist-belt. (Fig. I.)

2. If it is required to carry 40 or more rounds, two pouches should be in front, and the ball-bag may be added, into which, if necessary, 10 or 20 rounds may also be put. As this weight is too great for the waist-belt alone, it is necessary to support it by the brace-yoke, which should be now put on. (Fig. II.)

On looking at the brace-ring, it will be seen that one strap is made to take off; this should be removed and fastened to the valise, so that it may not be lost. The cross-strap at the back being then fastened to the buckle fixed to the back ring-straps, the yoke is put on like a coat, and the front ring-strap is passed through the brass D on the waist-belt, and back to the buckle just below the ring. Fig. VI. will show how this is done. It will be observed that the D can be pulled out farther at one end than the other so as to give the proper obliquity for the strap. The ball-bag, if required, is carried from the ring on the right side, the bag being brought up inside the waist-belt as far as it will go to keep it steady.

3. If it is wished to carry the greatcoat with the ammunition but without the valise, it can now be put on. Two upper and two lower loops (both concealed), will be seen on the cross-straps behind; the coat-straps should be passed through these loops from below, upwards, and the coat secured. The coat is very steady in this way and very comfortable when there are 20 or more rounds in the front pouch or pouches. (Fig. III.) The best size for the coat is about 10 inches high, by 15 or 16 in width.

DRAWINGS FROM PHOTOGRAPHS SHOWING THE MODE OF FITTING THE EQUIPMENT.



Fig. I.



Fig. II.



Fig. III.



Fig. IV.



Fig. V.



Fig. VI.



Fig. VII.

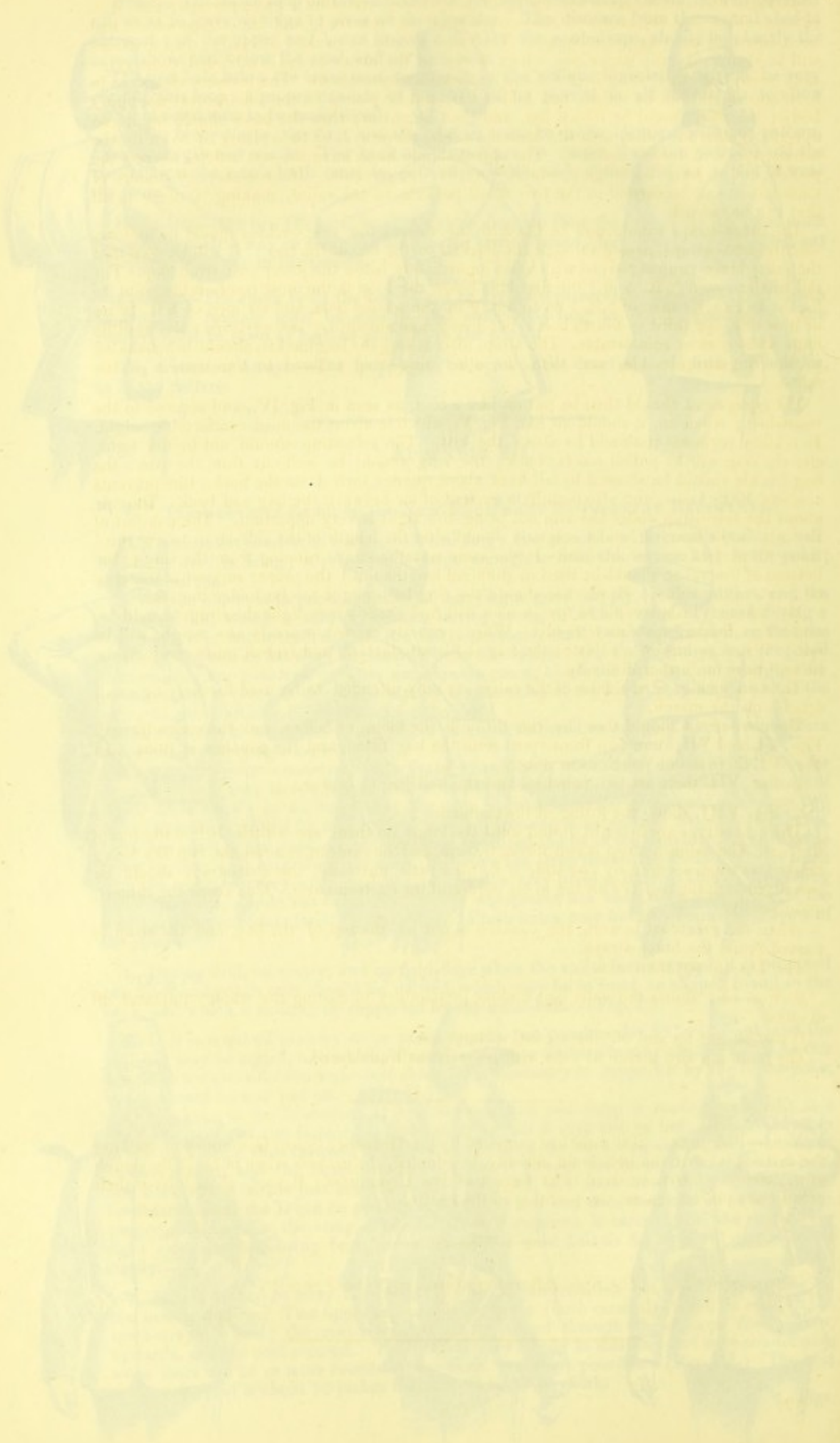


Fig. VIII.



Fig. IX.

DESIGNS FROM PHOTOGRAPHS SHOWING THE MODE OF FITTING THE EQUIPMENT



4. Figs. IV. and V. show the fixing of the valise. As this is an important point, it is recommended that the coat and coat-straps shall be removed, and the straps which had been taken off the ring put on again. The valise should be packed carefully; two divisions will be seen in it; the larger one, which is nearest the man's body, is intended to be generally used, the other being kept for small articles and provisions. The trousers should go in first, and should not be rolled, but folded flat, and be placed on the side nearest the man's body; the shirt should be folded flat, and then be put in; then the boots should be placed upright against the sides, with the heels outwards, there will be then plenty of room for the towels, socks, and other articles. The object should be to have the soft articles nearest the person, and to have no bulging, which may be disagreeable. If necessary, 20 rounds of ammunition can be carried in the two small pockets in the valise, making 70 or 80 in all that can be carried.

The brace-straps should now be fixed to the valise; the side buckles should be undone, and the cross-straps passed through the buckles at the top of the bag. It will be seen that the cross brace-strap is pierced with holes immediately below the lower coat-strap loop. For the smallest men (5 ft. 5 in.) the first hole below the loop is the most comfortable point to fix the bag to, for men of 5 ft. 7 in. to 5 ft. 9 in. the second hole, and for men of 5 ft. 10 in. or upwards, the third or fourth hole; but every man should try two or three holes until he finds what is most comfortable. The strap, after taking the bag buckle, should be rebuckled to the ring-strap buckle, and then the other ring-strap secured to the bottom of the valise.

The equipment should then be put on like a coat, as seen in Fig. IV., and secured to the waist-belt; when on, it should sit like Fig. V., which is about the most comfortable height. In a kilted regiment it should be above the kilt. The side-strap should not be too tight, else the ring will be pulled too far back; the ring should be well out from the arm; the bag buckle should be allowed to fall back about quarter inch from the back: this prevents rubbing of the tunic, and also permits a current of air between the bag and back. The rule about the side-strap under the arm not being too tight is very important. The comfort of the man is the best test, and a comrade should alter the length of the side-strap two or three times till perfect ease is obtained. In the same way the straps running from the ring to the bottom of the valise should be tried at different lengths until the proper support is found to be given to the valise. In no case should the ring be brought too far under the arm.

By taking a little trouble at first, a man will find exactly how tight the straps should be, and where the bag rests most easily. When properly carried, scarcely any weight will be felt. When he has once adjusted the bag to his satisfaction, and feels it quite comfortable, he will have no further difficulty.

The two buckles at the sides of the valise are only intended to be used for carrying small articles on the march.

The coat-straps should then be run through the loops, as before, and the coat adjusted. Figs. VI. and VII. show two front views with the bag fitted, and the pouches in front. In Fig. VI. there is one pouch as in peace.

In Fig. VII. there are two pouches, and the ball-bag as in war.

5. Fig. VIII. shows the fitting of the canteen.

The coat-straps are brought round until the loops on them are a little below the top of the coat. The canteen strap is run through them, and the canteen secured, the two D's being below; as when secured by one strap it is still a little unsteady, the coat-straps should be passed through the two D's on the lower border of the canteen cover. This keeps the canteen quite steady.

When the greatcoat is worn, the canteen is put on the top of the bag, and the strap is passed round the brace-straps.

The D's are not then used.

6. Fig. IX. shows the waist belt undone preparatory to casting the whole equipment off at once.

It can be put on and off like a coat, without aid.

The man can also march at ease with his waist-belt unclapsed.

Note.—POUCHES. If the method proposed by the Ordnance Select Committee of packing the cartridges, with the bullets all one way, be adopted, the packets when put into the pouch of the second pattern referred to at page 4 of the Committee's Report, should have their broad ends placed against the partition in the centre.

(For Figs. referred to above, see previous page.)

SUPPLEMENT to the FOURTH REPORT of the KNAPSACK COMMITTEE.

(24,362—1095.)

Sir,

War Office, 11 January 1869.

I AM directed by the Secretary of State for War to acknowledge the receipt of your letter of the 16th November 1868, enclosing the Fourth Report of the Committee on the Equipment of the Army.

The report has been referred to the Field Marshal Commanding in Chief, and after very careful consideration, Mr. Cardwell, in concurrence with his Royal Highness, has decided that the equipment recommended by the Committee should be adopted for the Army.

The Committee having now completed their labours, it affords Mr. Cardwell much satisfaction to convey to you and the other members of the Committee the thanks of Her Majesty's Government for the services you have rendered in conducting an inquiry which has resulted in introducing great and salutary improvements in those articles of equipment which are essential for the comfort and efficiency of the soldier.

Lieutenant General Eyre,
Care of
J. J. Frederick, Esq.,
Secretary to Knapsack Committee,
War Office.

I have, &c.
(signed) *H. K. Storks.*

(24,362—1095.)

Sir,

14 January 1869.

HAVING had the honour to receive your letter of the 11th instant, I have communicated its contents to the Knapsack Committee.

It is gratifying to the Committee to know that their endeavours to solve in a satisfactory manner such a difficult and long-pending question have been successful and are approved of.

As president of the Committee, I owe it to my excellent coadjutors to say a few words.

At an early stage of the inquiry, the Committee became so convinced of the grievous effects of the knapsack and accoutrements upon the efficiency and health of our soldiers, and of the absolute necessity for a radical change of system, that they one and all determined never voluntarily to give up the consideration of the subject till they could propose a remedy.

To this earnest and cordial co-operation, and this perseverance on the parts of Generals Rumley and Horsford, Dr. Logan and Professor Parkes, assisted by Mr. Frederick, the secretary, is due the successful result of an inquiry in which all took so much interest.

Of Mr. Frederick it is due to add, that he has acted as Secretary for four and a-half years on this Committee, which has certainly been the most troublesome one that I have ever been engaged in, and he has been most useful. I believe there is not in any branch of the War Office, a more industrious, more reliable, or more capable public servant of his order than Mr. Frederick. This is the unanimous opinion of the Committee, and I am responding to their wishes as well as to my own sense of justice in recommending him to favourable notice.

I cannot close the subject of this letter without repeating my conviction that the abandonment of the knapsack will be a blessing to the infantry soldier, and increase his efficiency immensely.

I have, &c.
(signed) *H. Eyre,*
Lieutenant General.

The Under Secretary of State for War.

LIEUTENANT COLONEL CARTER having represented to the Secretary of State, that his knapsack had not been fairly tried, Mr. Cardwell directed that 50 knapsacks of that pattern, and 50 of the valises recommended by the Committee, should be supplied to Highland regiments for competitive trial.

The results are given in following reports from those regiments.

(signed) *H. Eyre*, Lieutenant General.

Sir,

Horse-Guards, S.W., 16 June 1869.

WITH reference to your letter, dated 5th February (No. 84—C—1186), and to previous correspondence, I am directed by the Field Marshal Commanding in Chief, to forward to you the enclosed reports on the trial of the 50 sets of valise equipment, and 50 knapsacks of Colonel Carter's pattern, which has been made in the 42nd Regiment and the kilted depôts of the 11th (late 15th) Depôt Battalion, and as with the exception of the 92nd Depôt, the reports are strongly in favour of the new kit-bag, his Royal Highness considers that it should be generally adopted, and 10 regiments supplied annually.

I am to suggest that the packs which have been under trial be returned to store, as the valises will then be available for re-issue at a trifling reduction in price and Carter's knapsacks can be kept to meet demands from the 92nd Regiment.

The Under Secretary of State,
War Office, Pall Mall.

I have, &c.
(signed) *W. Paulet*,
Adjutant General.

Sir,

Aberdeen, 3 June 1869.

WITH reference to your memorandum, dated 8th February last, and copy of Horse Guards' letter of 6th February 1869, annexed thereto, I have the honour to transmit herewith reports from the officers commanding the depôts of kilted regiments as per margin,* on the relative suitability of the Carter knapsack and kit-bag equipment; and to state from personal inquiries of non-commissioned officers and men, that the *latter* pattern is much preferred, being more easily carried, as readily put on and removed, and free from the pressure on the loins that the Carter knapsack is generally found to give.

The Assistant Adjutant General,
Edinburgh.

I have, &c.
(signed) *R. Fraser*, Colonel,
Commanding 11th (late 15th)
Depôt Battalion.

Sir,

Aberdeen Barracks, 3 June 1869.

WITH reference to Battalion Orders, No. 4, of 2nd instant, I have the honour to report that the non-commissioned officers and men of the depôt under my command, who have worn both the "bag equipment" and Colonel Carter's knapsack, are all strongly in favour of the former. The reason they assign, is, that they have the free use of their arms, and no pressure across the chest, on account of the pouch-belt being done away with.

The Officer Commanding
11th (late 15th) Depôt Battalion.

I have, &c.
(signed) *George J. P. Taylor*,
Lieut. 78th Highlanders.

Sir,

Stirling Castle, 2 June 1869.

Six Carter knapsacks and six sets of the bag equipment having been now in use for more than two months. I am able to report the opinions of the men on their respective merits. After being worn one month I questioned each man, and those who wore the Carter knapsack were unanimous in saying that the bottom of the knapsack hurt them in the small of the back, the pressure was very great, and no arrangement of the kit appeared to remedy this fault; they

all

* Depôt 78th, 79th, 92nd and 93rd Highlanders.

all said it gave greater freedom to the arms, but five of the six men said they would prefer the old knapsack for a long march. The six men who wore the bag equipment, after one month's trial, spoke highly of its merits, it was far easier to carry than the old knapsack, gave greater freedom to the arms, and was preferable in every way; they also agree that when on guard they could rest more easily, as they could bring the ammunition pouch to the front, thereby enabling them to lie down comfortably.

The result of the second month's trial was the same; the men who had first worn the Carter and then the "bag equipment" were unanimous in stating their preference for the latter. The men who first wore the "bag equipment," and the second month the Carter, were equally unanimous in stating there was no comparison between them, "the bag equipment" was far easier than the Carter, and gave equal freedom to the arms.

I may therefore state, that the 12 men of the 79th Depôt all agree that the bag equipment is better, easier, and preferable in every way, to either the Carter or the old knapsack.

I have, &c.
(signed) *E. W. Cuming*, Brigade Major,
Commanding 79th Depôt.

Colonel Fraser,
Commanding 11th Depôt Battalion,
Aberdeen.

Sir,

Aberdeen, 3 June 1869.

I HAVE the honour to report that the men of the depôt under my command who have worn both Colonel Carter's knapsack and the yoke equipment, are all strongly in favour of the former. They state that they find the Carter knapsack more comfortable and convenient, and that they have a more free use of their arms than with the yoke equipment.

They are also of opinion that the present is a far more comfortable manner of carrying the ammunition than in pouches round the waist, and they particularly object to the pouch in the middle of the waist-belt, which they say is painful.

I have, &c.
(signed) *J. C. Hay*, Captain,
Commanding Depôt 92nd Highlanders.

The Officer Commanding
11th (late 15th) Depôt Battalion,
Aberdeen.

Sir,

Perth, 2 June 1869.

I HAVE the honour to report, in accordance with your memorandum of the 1st instant, relative to the qualities of the Carter knapsack and the bag equipment, respectively, as tried up to the present time.

From the evidence of the non-commissioned officers and men of the depôt under my command who have worn both, it appears that the "Carter knapsack" is in every way easier to carry than the old pattern, more easily packed and quickly put on. The objection is that the iron bars are easily damaged, and that then the knapsack would be useless; also in some cases the bottom of the inner side of the knapsack chafes the small of the back. There is a great advantage in having the greatcoat covered when not worn, as exposure to the rain makes it like a sponge, folded as it is in the bag equipment and old knapsack; more so in tropical climates where the rain is heavy, and the heat too great for the greatcoat to be worn.

The bag equipment is in every instance preferred to the Carter knapsack, as being less fatiguing to carry, and being of soft material, would be more durable and more easy of transport on active service. The objections are that the pouches at the sides, "as in active service," prevent the rifle coming close in to the shoulder at the "order." The one pouch in the centre has to be undone before the belt can be unclasped; the "snake hook" would be the most convenient method of fastening the belt; owing to the quantity of straps requiring pipeclay, the equipment gets soiled when putting it on.

I have, &c.
(signed) *A. Nightingale*, Captain,
Commanding Depôt 93rd Highlanders.

The Officer Commanding
11th (late 15th) Depôt Battalion,
Aberdeen.

Sir,

Edinburgh, 15 May 1869.

IN compliance with instructions contained in Horse Guards' letter, 17th August 1868 (Clothing—G. S. 1868—C. 59) I have the honour to submit the following report on the subject therein referred to,* for the information of the Major General Commanding in North Britain.

2. Having had fair opportunities of judging of the merits of the equipment in question on parade, on duty, and on the march, during the last three months, and from information gathered from the men themselves, I am of opinion that the valise equipment, though in appearance not the most soldier-like, promises all the advantages claimed for it. It can be adjusted to the size of the wearer; when so adjusted it is carried with ease, and it may be taken off and put on without assistance. Though unfavourably impressed with it at first sight, yet I admit that I have failed to detect in it any defect whatever. And the men who have tried both as ordered, with one voice favour the valise equipment.

Valise Equip-
ment.

3. With regard to the Carter knapsack, it has a decided advantage in keeping the greatcoat dry; also, it gives ease and freedom to the arms; and a good soldier-like appearance to the wearer; but it presses on the small of the back, and the men complained of it in consequence. I have been careful in observing whether this pressure might not be the result of a too tightly strapped knapsack, as suggested to me; which, however, I found not to be the case.

The Carter
Knapsack.

The pressure complained of arises, as it seems to me, from the weight being badly supported, causing a downward pressure, thus drawing the straps where they go over the shoulder backward, and then in their turn drawing the side bars forward and upward until the lower band is brought in contact with the wearer's back, where it finds a point of support for itself.

4. I would, however, bring to notice the careless way in which the knapsacks of Lieutenant Colonel Carter's pattern supplied to the 42nd, for trial, have been finished in workmanship, particularly the brass plates at the bottom of the packs were badly fastened, and from this cause several knapsacks immediately became unserviceable.

I have, &c.

(signed) *J. C. M'Leod*, Colonel,To Assistant Adjutant General,
Edinburgh.Lt. Col. 42nd Royal Highland Regiment,
"The Black Watch."

COPY of a DISPATCH received at the Foreign Office from the Military Attaché at Berlin.

My Lord,

Berlin, 21 April 1869.

Two patterns of the new kit-bags lately introduced as equipment for the English infantry, having been forwarded to me by the War Office for presentation to the Prussian military authorities, have for the last two months been subjected to careful trial in the 2nd Regiment of Foot Guards at Berlin. Last Wednesday, I called by appointment at the War Office, where I found the officer who had charge of the trials, Captain von Holleben, of the above-mentioned regiment, and three non-commissioned officers, two wearing the English kits, and the third a pattern kit made after them by a Berlin contractor, in attendance, when the kits were carefully examined by the director of clothing and the two chiefs of departments, and afterwards with great minuteness by the minister of war.

On Monday morning, after one of the spring inspections, they were shown, together with an old and new pattern knapsack, to his Majesty the King, who was pleased to express his warm thanks to me for the opportunity afforded him of seeing this new equipment. The alterations introduced in the Prussian pattern are, a portion of the *tente d'abri*, made of waterproof stuff, as a cover for the greatcoat, a pocket for cartridges on each side of the kit-bag, and an alteration is proposed in the Prussian cooking tins, which has evidently been suggested by the form of the English mess-tin, in flattening one of the sides.

In

* Knapsack and accoutrements of Colonel Carter.

In the principle of the system no alteration whatever has been made. I have watched the trials made by Captain von Holleben with great interest, but without endeavouring in the slightest degree to prepossess the officer or his men in favour of the new system, as I was desirous to obtain a thoroughly impartial opinion, and I have been greatly surprised at the almost universal approval of the new system of carrying the Infantry burthen. Captain von Holleben and the men who have worn the kits consider them in every respect so superior to the Prussian knapsack that they would gladly see them at once introduced. Colonel Count Kanitz, commanding the regiment, is not less favourably disposed towards them. Major General von Stosch, the chief of the department of military economy, is satisfied of the value and importance of the invention; the Minister of War not only highly approved of the principle, but added, "and it has a very soldier-like appearance." Major General von Berger, commanding the 11th Brigade of the 3rd Army Corps, kept me for half-an-hour while he spoke in unmitigated praise of the invention. Prince Frederick Charles, after having subjected the kits to a rigid inspection, which lasted over an hour, told me on our next meeting, that he considered that a great and difficult question had been solved, and that he was indebted to this invention for carrying out an idea which his Royal Highness had had for 10 years, but which he had not succeeded in bringing to perfection.

Opinions actually unfavourable to the system have been nowhere expressed, though improvements and modifications have been suggested. The great desideratum appears to be a simplification of the numerous straps, which I have no doubt time will bring about, and the reduction of the expense of so much leather work. The English mode of carrying the pouches, on a line with the upper instead of the lower edge of the waist-belt, is considered infinitely superior to the Prussian; and the possibility of carrying the greatcoat and cooking tin, independent of the kit-bag, is most important, particularly as the lighter portion of the equipment rests on that part of the body which contains the respiratory organs, while the main weight is adapted to the parts more capable of supporting it. The ball-bag is generally approved, though this was just the point which least appeared to please the King. The necessity of a cover for the coat, and that if possible a waterproof section of the *tente d'abri*, is universally admitted, as also that the cooking tin should be carried on the coat and not on the kit, where it interferes with the action of the second rank. The kit has been worn on marches and at target practices, and will now, I believe, be sent to the School of Musketry for further trial. The non-commissioned officers who wore our two kits, told me that the freedom of handling their firearms was materially increased, and one of them particularly mentioned that in firing five rounds against time he had made a higher figure than on any previous occasion. All appeared much surprised at learning that the kit-bag held everything comprised in the Prussian field-kit, with more spare room than there is in the new knapsacks introduced since 1866, while these have the disadvantage that the greatcoat will not go under the flap, but must be carried either *en bandolier*, which impedes the respiration, or folded over the top and sides of the pack. There appears to be a hearty desire on the part of the Prussian infantry to get rid of the knapsack, which, however practical in shape and fitting, always interferes with respiration; indeed the name the men give it is very characteristic of the incubus on the back, "der affe," the monkey. Not long since a man was asked whether the new Prussian knapsack was not a great improvement, to which the man replied, "Oh, yes, sir, but it's monkey all the same." "Affe bleibt immer Affe."

Having by my report on this subject been led to the consideration of the question, how can the infantry soldier be made mobile for war? I hope I may be permitted in conclusion to advert to the two main improvements to the infantry kit-bag which have suggested themselves to me, the first being the introduction of the Prussian cooking tin at an increase of weight of only nine ounces, thereby entirely obviating the necessity of carrying camp kettles; the second that of a waterproof *tente d'abri* as a cover to the greatcoat (the sheets of which would keep their owners from the wet ground where other shelter was obtainable), thereby obviating the necessity of transport for tents.

The Prussian cooking tin, of which there are patterns at the War Office, is capable of being used for cooking an ample meal for two men, so that but half the tins are required for this purpose, while the others may be used for carrying water

water; or half may be used for cooking meat and vegetables, the other half for boiling tea or coffee. Each tin is provided with the means of serving up the mess in the shape of a tin plate and basin. The advantages of the *tente d'abri* appear to have made themselves apparent here since 1866, and the Prussian officers with whom I have conversed on the subject, rate them far above those derived from the carriage of a blanket, more particularly if the sheets are waterproof, when they can be used to keep their owners off the *wet ground*. Campaigns are mostly fought in the summer and autumn, during which seasons protection from the dew when the tent is used, and from the wet ground after rain, are the main objects desirable. Warmth is generally to be had by the contact with neighbours, when a good greatcoat is an ample covering; indeed, during the summer, a greatcoat over the ordinary clothing is as much as a man can bear.

As a keen sportsman, and accustomed to lie out at night, my experience leads me to assert that it is not mere cold which stiffens the limbs after a bivouac so much as damp in any shape. The mere cold is soon remedied by a good run in the morning air, but the chill induced by damp clings to the man till his clothes are dry, and soon produces its effects in the shape of cramps and rheumatism.

Even in its present state the kit-bag is manifestly a great success, and I have much satisfaction in reporting the favourable reception which has met the new equipment in Berlin.

I have, &c.
(signed) *Beauchamp Walker*, Colonel,
Military Attaché.

His Excellency
Lord A. Loftus, G.C.B., Berlin.

CORRESPONDENCE on the subject of LIEUT. COLONEL CARTER'S KNAPSACK.

— No. 1. —

(No. 84—C—1065.)

From Sir *E. Lugard* to the President of the Committee on Knapsacks, &c.

Sir,

War Office, 1 May 1868.

I AM directed to forward, for the information of the Knapsack Committee, the accompanying copies of correspondence received from Lieutenant Colonel Carter, having reference to the knapsack designed by him, and I am to request a report of the Committee on the subject thereof, for the information of the Secretary of State for War.

Lieutenant General Eyre,
&c. &c. &c.
War Office.

I have, &c.
(signed) *Edward Lugard*.

Enclosure No. 1.

(No. 84—C—1065.)

Infantry Equipment, No. 1.

31, Edward-street, Portman-square, W.,
20 April 1868.

Sir,
THE Committee on Knapsacks have in their third report to you, in the first paragraph on page 5, misled you in their remarks relative to the trials of my knapsack in the summer of 1866, and as it would appear they have refrained from making to you any favourable recommendation of my knapsack consequent upon those trials, it is necessary that I should draw your attention to the error which the Committee have made.

I do not now touch upon the very favourable reports made by Colonel Hamilton commanding the 92nd Regiment of my knapsack, and which has been in use in this regiment for more than four years, though I beg to be allowed to observe the trying experiences of this regiment at Aldershot and with the "flying column," two sea passages, and in Ireland during the Fenian outbreak, ought, I conceive, to have more than counterbalanced the disadvantages which I was not permitted to surmount in the trials alluded to. The Committee, however, seem to ignore entirely the experiences and the recommendations of the 92nd Regiment, and now to add to their injustice they form an opinion from reports which strictly ought not to have been made. I early drew the attention of the Committee to the fact of the iron arms of my knapsack not being satisfactorily attached (different to the plan I had adopted for the 92nd Regiment), and I requested to be allowed to alter it. I was informed an opportunity should be afforded me. Though I have waited patiently, and reminded the Committee of their promise, the alteration has not yet been effected. I also told the Committee that the trials they had made of my knapsack, the principle not having been properly tried, were "nugatory." Notwithstanding my request, the Committee's promise, and the pointed statement I made of the worthlessness of the reports, the Committee formally report to you, as an excuse for their having set aside my knapsack, that "their opinion upon the question of framed knapsacks with irons has been recorded and remains unaltered."

The Committee have had sufficient regimental testimony of the value of my knapsack brought before them to have caused them to regard my efforts with some measure of favour, but they spontaneously show none, and had it not been for the support and encouragement I have received out of the Committee, I should have been compelled to have retired from the field of competition altogether. Now, by the Committee ignoring testimony they could have reliably acted upon, and deciding upon reports improperly, because unnecessarily, made, it is necessary for me again to seek redress elsewhere.

The Right Honourable
the Secretary of State for War,
&c. &c. &c.

I have, &c.
(signed) J. M. Carter,
Lieutenant Colonel.

Enclosure No. 2.

(No. 84—C—1065.)

Infantry Equipment No. 2.

No. 31, Edward-street, Portman-square, W.,
20 April 1868.

Sir,

THE Committee on Knapsacks at page 5 of their 3rd report have drawn your special attention to the report of the 92nd Regiment as the only regiment which reported unfavourably of their "first yoke plan." Other regiments differently equipped to the 92nd, seem to be more or less favourable to the principles of the Committee's equipment as issued, but the objections of some* are identical with the 92nd (*see précis*, pages 9 and 10), and as these regiments had the advantage of personal instruction, the surmise made by the Committee, that "the mode of carrying the new equipment was not well understood by the officers and men" of the 92nd Regiment, may be, I think, discarded; it will however be as well for me to add the information I have recently received from the officer commanding 92nd Depôt, respecting the trial in the 92nd Regiment, and as I cannot do better than give it in his own words I annex it to this letter. By it, it will be seen that a full and fair trial was made by six picked men; that they were unanimous in preferring the equipment they were wearing, and that their opinion was supported by Major General Borton and Lord Strathnairn. When it is borne in mind that in the new equipment means for carrying only 40 rounds of ammunition were worn, the "yoke plan" had an undue advantage, nevertheless its condemnation was unmistakable. This condemnation was owing, as Colonel Hamilton has reported, to the complete satisfaction which my knapsack has given.

While I have obtained by my equipment every advantage and improvement which the Committee are seeking for, no radical speculative change has been introduced. What I endeavoured to do was simply to remove the objections to the present regulation and long tried system, and trials at Hythe and in two battalions of the Guards by Major General Lord Frederick Paulet, besides those by the 92nd Regiment, have shown that the soldiers are satisfied. Owing to the Committee putting forward another system, it was to be proved which equipment can be best adopted. The Committee have reported to you that if any comparison is to be instituted with what they have devised, the present is a suitable time to make it, I therefore request you will be pleased to order, with the view to a fair and equal trial, as many of my equipment as may be directed of the Committee's plan.

The Right Hon. the Secretary of State for War,
War Office.

I have, &c.
(signed) J. M. Carter,
Lieutenant Colonel.

* General Renny, commanding 1st Brigade, Aldershot, 44th Regiment, 70th Regiment, Royal Marines, 4th Depôt Battalion, 8th Depôt Battalion.

Enclosure No. 3.

(No. 84—C—1065.)

My dear Sir,

Aberdeen, 31 March 1868.

I AM in receipt of your note of the 28th, regarding Colonel Hamilton's report on the yoke equipment as compared to the knapsack designed by you. I was on General McMurdo's staff in Dublin at the time the equipment was tried at the Curragh, but I have frequently heard it criticised by Colonel Hamilton, and always unfavourably as compared with your pattern pack. The assertion that the yoke equipment was not fairly tried in the 92nd Regiment is totally at variance with facts. In the first place, Colonel Hamilton is well known to be an officer who has the comfort and efficiency of his men thoroughly at heart, and no consideration would induce him to give any but a fair and candid consideration to anything which might have been proposed for their greater comfort.

I have made the most minute inquiries of the officers and non-commissioned officers who were at the Curragh (none of the men who actually wore the equipment are at the depôt), at the time the trial took place, and I learn that six of the smartest, strongest, best "got up," and best made men were selected for the trial. The six men were also of various heights.

The equipments were received with full instructions for their use, and Colonel Hamilton personally superintended the fitting. Brigadier General (now Major General) Borton inspected the men when fitted (with the instructions in his hand), and saw that all was done according to order.

The result of the trial was a unanimous opinion from all the six men that the yoke equipment was greatly inferior in all respects to their own pack (your pattern) in regard to comfort and convenience of adjustment, and they all expressed a hope that they might not be deprived of their present comfortable knapsack.

The yoke equipment was worn during the period of trial at marching-order parades, field days, and guards. The men complained particularly that they were much galled just below the waist.

Subsequently Lord Strathnairn had two men sent down to the Head Quarter Hut, one equipped in the new fashion, and the other wearing your pack. His Lordship then expressed himself strongly in favour of the latter. I think that Colonel Mackenzie, D.A.G., was also present and concurred. I know at all events Colonel Mackenzie took frequent opportunities of looking into the matter, and always expressed himself as of the same opinion as Colonel Hamilton, and I am sure he would be most happy to communicate with you on the subject. I do most sincerely hope that your most comfortable pack will not be discarded, for I am perfectly convinced of its advantage.

I was Colonel Lockhart's adjutant when we first got it, and as you are aware the favourable conclusion at which we eventually arrived was not jumped at, but was the result of long and careful observation.

Let the authorities go fairly to work and send a number of each to any unprejudiced regiment, that a lot of men may wear first one and then the other, and I would stake anything on the result.

Whatever may be the final decision, I can assure you of one thing, that you have earned the gratitude of many an old soldier of the 92nd.

Believe me, &c.

(signed) *H. Hay,*

Capt. Comd. Depôt, 92nd Highlanders.

Lieut. Colonel Carter.

— No. 2. —

From the Knapsack Committee to the Right Hon. the Secretary of State
for War.

Sir,

THE Committee beg to acknowledge the receipt of Sir Edward Lugard's letter, dated 1st May 1868 (No. 84—C—1065) giving cover to enclosures from Lieut. Colonel Carter in reference to the knapsack designed by that gentleman.

The Committee are sorry to write at length on this subject, but the statements made in Lieut. Colonel Carter's letter require explicit answers.

You are aware that when the Committee was first formed and had considered all the knapsacks then invented they found none which met all the military and medical conditions which had to be kept in view.

They required an equipment free from any possible objection on the score of health; light, simple, durable, and adapted in every way to the military exercises which the soldier is called on to perform, and the conditions under which he is placed during peace and war.

After great consideration they selected three patterns, and proposed a fourth, based essentially on the Prussian system.

One of the selected patterns was Lieut. Colonel Carter's, in which a framed knapsack is carried by means of two iron rods running from the bottom of the knapsack and fastening to straps in front.

The Committee at first hesitated in recommending a trial of this plan; it obviated the pressure under the arms, and was so far greatly superior to the regulation system, but the danger of breakage, and consequent possible injury to the man, and certain unserviceableness of the knapsack, made them feel extremely doubtful if they would be justified in advising a trial.

However, as the risk of breakage was represented not to be great, and as a trial of this system had been already sanctioned by the Commander in Chief, and was going on in the 92nd Regiment, the Committee decided on recommending that the plan should be tried with the three other patterns. (*Vide* First Report, pp. 9 and 10.)

Apart, however, from the chance of breakage, the mode of fastening the irons was very objectionable; and in proof that the Committee dealt most fairly by Lieut. Colonel Carter, it may be mentioned, that after they had decided on recommending his knapsack for trial with others, they themselves tried no less than four different modes of obviating the objection now referred to.

Lieut. Colonel Carter at length proposed a new plan of fixing his irons, and in their First Report the Committee recommended that his knapsack be tried, and that 12 sets should be procured from Lieut. Colonel Carter himself, so that he might introduce "his latest improvements."

The sets were furnished in the summer of 1866, were tried, and condemned by all the parties who had tried them. (*Vide* Appendix of Second Report.)

While the trials were going on in June 1866, Lieut. Colonel Carter requested that he might receive his knapsacks back, in order to make an alteration in the attachment of his iron bars, but the Committee considered that it would be harassing to the parties, and in fact that it would be unadvisable to interrupt the trials for the purpose of altering one or other patterns. They had the intention of allowing changes to be made at the end of the trial in any or all of the patterns, if the result authorised them, but the results did not authorise them, for when the reports of the trials came in they were found to be unfavourable to all the four patterns.

The Committee had to consider what was then to be done; whether efforts should be made to improve any of the sets, or some fresh plan sought for.

With respect especially to Lieut. Colonel Carter's proposal to correct the mode of attachment of his irons, what was it he wished to do? Simply to revert to the mode of fastening to which exception had been originally taken, and which he had altered.

How could the Committee sanction a recurrence to a plan they had deliberately disapproved? and would they be any nearer the aim they had in view?

But other considerations had still greater weight. As explained in their Second Report, a deeper study of the subject, the incidents of the Bohemian war, and the observations made during the trials of the four patterns by officers and men (as for example, by Surgeon Major Galbraith, in the Second Report, Appendix, p 9), convinced the Committee that the end would never be attained without a complete alteration of system. They formed a decided opinion that both for health and for efficiency the whole plan must be altered, that the heavy-framed knapsack must be abolished, all the weights lightened as much as possible, and merely the most necessary articles carried, in the lightest possible equipment consistent with durability.

When this point of view was reached it seemed less desirable than ever to sanction further experiments with Lieut. Colonel Carter's knapsack. In the eyes of the Committee, it, like all other framed knapsacks, had become obsolete. How could they recommend a trial of a plan which, apart from the irons, the Committee now considered an undesirable one?

The president had an interview with Lieut. Colonel Carter in the presence of Mr. Frederick, and informed him that all the four patterns were unmistakably condemned, and that the Committee did not consider further trials of them desirable, especially as they had come to the decided opinion that all framed knapsacks should be abandoned. In May 1867 Lieut. Colonel Carter wrote again, and in reference to the letter of June 1866 (already referred to, and annexed),
stated

stated that he had been promised an opportunity of correcting a mistake he had made in the attachment of his iron bars; but it is sufficiently evident that the letter he alludes to, which was written before the results of the trials were known, was only meant to be applicable in case of the reports being sufficiently encouraging to warrant a further competitive trial of those patterns.

The Committee will now ask you to consider the point at which they had arrived. They had from the first an unfavourable opinion of Lieut. Colonel Carter's iron bars, which they considered unsuitable to service; they had objected also to their mode of attachment, and no remedy had been found for this; and now, in addition to these serious objections, they had formed a strong opinion that Lieut. Colonel Carter's plan was wrong in principle, and could never give them what they sought for.

Under these circumstances would it have been right to sanction another trial of a plan which the Committee could not have recommended, at any rate unless they had failed to find anything better adapted for the purpose?

You are aware of the successive steps by which the Committee reached the present simple system now under trial. Even in its original imperfect form this plan was highly approved of by 15 out of 16 corps; the exception was the 92nd Regiment, which had been equipped with Lieut. Colonel Carter's knapsack.

The Committee may or may not be correct in inferring that the 92nd Regiment did not understand the fitting of the yoke-valise; that is a matter of little consequence, though they had some ground for their opinion.

The question is, whether the report of the 92nd Regiment in any way affects the reasons which led them to disapprove of Lieut. Colonel Carter's knapsack.

The Committee cannot perceive that it does so, or that it in any way lessens the strong objections which can be made to the use of a heavy-framed knapsack, and to the long iron bars which carry it. The Committee, then, adhere to their opinion, that the plan submitted by Lieut. Colonel Carter has been fairly tried and found unsatisfactory; that the alteration he proposes would not remove their objections, and that the progress of the inquiry and the inexorable logic of events have proved that the solution of the problem is not to be found in the way Lieut. Colonel Carter advises.

It would be a retrograde step to sanction further trials of heavy knapsacks, and, apart from that, the Committee could not venture to recommend an equipment which at any moment might become unserviceable.

We cannot conclude this letter without referring to the object for which this Committee was appointed. It was to find a remedy for a great evil; a remedy which might at the same time meet a sanitary necessity, and serve a military end.

Could the Committee at once have found a plan suited to all the requirements it would have relieved them of its finite trouble, whether it was proposed by Lieut. Colonel Carter or by anyone else.

It is difficult to persuade inventors that their schemes are not perfection, but the Committee have had only to consider the service and the soldier; they have looked at the subject in all its bearings, and have formed a judgment from a number of considerations and trials.

They cannot expect that inventors will give them credit for disinterested action, but they confidently anticipate that the Secretary of State will better appreciate the motives by which they have been actuated.

(signed) *Henry Eyre*, Lieut. General.
R. Rumley, Major General.
A. Horsford, Major General.
T. G. Logan, Director General Army
 Medical Department.
E. A. Parkes, M.D., F.R.S., Professor of
 Military Hygiene.

J. J. Frederick, Secretary, War Office,
 21 May 1868.

Enclosure No. 1.

Sir,
 As I should wish the attachment of the iron bars in my pattern knapsack to be altered to the plan I put forward for the 92nd Regiment, I beg to request the favour of the 12 packs of my pattern being immediately sent to Messrs. Hebbert & Co., to have this alteration made. The packs shall be returned with as little delay as is possible.

I have, &c.
 (signed) *J. M. Carter,*
 Lieut. Colonel.

J. J. Frederick, Esq., War Office.

Enclosure No. 2.

Sir,
 War Office, 25 June 1866.
 In reply to your letter (received on the 22nd instant), requesting that the 12 knapsacks of your pattern now on trial may be sent to Messrs. Hebbert & Co., in order that an alteration might be made in the attachment of the iron bars, I am directed by Major General Eyre, to inform you, that he considers it would be better not to interfere with the trials of the knapsacks, &c., at present, but allow them to proceed for a while longer, and then make any small changes which may be required in any of the several patterns.

It is very probable that some improvements or alterations may be suggested for each, and General Eyre thinks they can all be carried out at one and the same time, as it is impossible to call in first one and then another, for every little change that may be proposed from day to day.

I will inform you when there is a temporary stop to the trials for these alterations.

I have, &c.
 (signed) *J. J. Frederick,*
 Sec. to Com. on Knapsacks, &c.

Lieut. Col. J. M. Carter,
 &c. &c.

Enclosure No. 3.

Sir,
 41, Manchester-street, Manchester-square, W.
 24 May 1867.
 In July, last year, you were good enough to inform me that I should have an opportunity afforded me of correcting a mistake I had been induced to make in the mode of attaching the iron bars of my knapsack, and which, unfortunately, rendered the recent trials, so far as my knapsack is concerned, nugatory; that opportunity has now, I understand, arrived; I beg to request of the Committee, therefore, its permission to make the necessary alteration, with the view of competing in the next trials.

In case the Committee should not be able to discover a better knapsack than mine, or a better mode for carrying the soldiers' kit, &c., it will, I trust, be a satisfaction to it to know that the 92nd Gordon Highlanders are thoroughly satisfied with it, as the accompanying letters from Colonel Hamilton and Major Hamilton very clearly and forcibly show.

I have, &c.
 (signed) *J. Money Carter,*
 Lieut. Colonel.

Major General Eyre,
 &c. &c.

P.S.—I shall feel obliged by the enclosures being returned when done with.

Enclosure No. 4.

Sir,
 War Office, 3 June 1867.
 In reply to your letter, dated 24th May, addressed to Major General Eyre, requesting permission to make some alteration in the arrangements of your knapsack "with the view of competing in the next trials," I am to acquaint you that, pending the result of the trials which have been sanctioned with another system of infantry equipment, the Committee are not prepared to recommend any further trials with framed knapsacks.

The enclosures contained in your letter are herewith returned.

I have, &c.
 (signed) *J. J. Frederick,*
 Sec. to Com. on Knapsacks, &c.

Lieut. Colonel Carter, &c. &c.
 41, Manchester-street, W.

Enclosure No. 5.

41, Manchester-street, Manchester-square, W.,
5 June 1867.

Sir,

WITH reference to the view taken by the Committee which I have been favoured with as communicated to me in the Secretary's letter of the 3rd instant, I beg to observe that the other system of equipment to which allusion is therein made, will, in the contemplated trial, be inevitably compared with the one now in use, the best opinion therefore of its merits, which is highly to be desired, evidently will not by such trial be discovered.

I cannot say from the tenor of the Secretary's letter, what the ulterior plan of the Committee is likely to be with regard to framed knapsacks such as mine, but the Committee's proposed procedure to try the new scheme alone, and as I understand in greater number than has been its practice, does seem to convey that the judgment of the Committee is so favourable to it (its own) that, if possible, all others will be excluded. But should I be in error, delay can only ensue from a competition being now postponed, and this I well know it is desirable to avoid.

Upon these grounds, therefore, I venture to renew my request, and trust the Committee will not object to the 12 sets of my equipment now lying unused, an equipment too which has given on trial more or less satisfaction, being tried simultaneously with the new idea, and any other which is likely to meet with general approval, as well as prove beneficial to Her Majesty's service.

I beg further to state, and which may not be known to the Committee, that the promise made to the country by Mr. Sydney Herbert, in his place in Parliament, and as Secretary of State for War, was, that the soldiers themselves should be the judges as to the most convenient plan for carrying what is necessary to be carried, and as it was upon this promise that I undertook to prosecute the important inquiry, I conceive that the Committee would not be acting in consonance with that promise, nor justly to the soldier, the service, or myself, if it now decline a competition such as I now propose with its own scheme, however favourable the preliminary reports may have hitherto been regarding it, especially when it involves no expense, and when the request comes from one who has devoted so much time and labour as he who now has the honour of subscribing himself.

Yours, &c.
(signed) *J. M. Carter,*
Lieutenant Colonel.

Major General Eyre,
President of Committee on Knapsacks.

Enclosure No. 6.

Sir,

War Office, 8 June 1867.

IN reply to your letter of the 5th instant, addressed to Major General Eyre, I am directed to inform you, that until the present trials are completed, the Committee do not consider it desirable to recommend any trials of a framed knapsack.

I am, &c.
(signed) *J. J. Frederick,*
Secretary to Committee on Knapsacks, &c.

Lieut. Colonel Carter, &c. &c.
41, Manchester-street, Manchester-square, W.

No. 3.

From Sir *E. Lugard* to the President of the Knapsack Committee.

(No. 24,362—1006.)

Sir,

War Office, 6 May 1868.

I AM directed by the Secretary of State for War to forward to you the accompanying letter which has been received from the Adjutant General respecting the trial of the new pattern knapsack and equipment, and to request that it may be laid before the Knapsack Committee for any observations they may have to offer.

I am to request that the enclosure may be returned.

I have, &c.
(signed) *Edward Lugard.*

Lieutenant General H. Eyre,
&c. &c. &c.
War Office.

Enclosure No. 1.

(Clothing, &c.—G.S.—1868—C. 99.)

Sir,

Horse Guards, S.W., 4 May 1868.

REFERRING to the remark in the latter portion of the second paragraph at page 5 of the Third Report of the Committee on Knapsacks, &c., dated 20th February 1868,—

I am directed by the Field Marshal Commanding in Chief to request that you will be pleased to inform the Secretary of State for War, that as his Royal Highness considers doubts may arise whether the valise equipment about to be tried by two companies of six regiments is the very best which can be adopted for the infantry, he would suggest that to each regiment furnished with the proposed accoutrements a few sets of the new Prussian knapsack and accoutrements alluded to in the above report, and any other accoutrements received since the first trial which the Committee may consider likely to answer, should be also furnished, with the view of instituting a comparison with the plan recommended by the Committee.

As Lieutenant Colonel Carter has represented to his Royal Highness that the knapsack proposed by him, which has been worn for four years by the 92nd Highlanders, and has given great satisfaction, was not satisfactorily tried, the Duke of Cambridge would further suggest that a certain number of these packs, &c. should also be sent to the regiments alluded to for comparative trial and report.

If this course be adopted, his Royal Highness is of opinion that this important question may ere long be finally settled.

If the proposal to make the packs articles of equipment instead of necessaries be sanctioned, as recommended in my letter of the 12th March last (No. Clothing, &c.—G.S.—1868,—K. 1) the whole of the valises made, should they not prove as perfect as is anticipated, can be transferred to one regiment, and the other corps can be completed with knapsacks of a different pattern without any additional expense being incurred by the trial of the valises.

Be pleased to inform me whether Sir John Pakington concurs in this recommendation.

I have, &c.
(signed) *W. Paulet*,
Adjutant General.

The Under Secretary of State,
War Office, Pall Mall.

No. 4.

From the President of the Knapsack Committee to the Under Secretary of State for War.

(24,362—100 C.)

Sir,

War Office, 25 May 1868.

I HAVE the honour to acknowledge the receipt of your letter, dated 6th instant, with its enclosure, from the Adjutant General, which has been submitted to the Committee according to your desire.

The Committee having on various occasions fully and distinctly expressed their opinion upon the several knapsacks which have passed through their hands, as well as upon the question of equipment in general, have nothing to add to their former reports, which are in the hands of the Secretary of State, and which give the results of the lengthened series of trials and experiments which have been made with the knapsacks and equipment selected by the Committee with a view to obviate the evils so long complained of in the existing system, and which were specially directed to the consideration of the Committee in the instructions they received from Earl de Grey.

Should it be decided, however, to recommence the trials, the Committee will be prepared to forward in every way such further experiments as the Secretary of State shall think proper to direct with any patterns which may be selected for the purpose.

If new trials are made, and if knapsacks with iron rods are to be permitted, the Committee think that the American knapsack on that principle should be one of them.

I have, &c.
(signed) *Henry Eyre*,
Lieutenant General.

The Under Secretary of State for War.

Enclosure returned
herewith.

No. 5.

From Sir *H. K. Storks* to the Adjutant General.

(No. 84—C—1084.)

Sir,

War Office, 23 July 1868.

WITH reference to your letters of the 4th and 15th May last, upon the subject of Colonel Carter's knapsack, I am directed by the Secretary of State for War to transmit the accompanying report from the Committee, and to request you will inform me whether it is the wish of his Royal Highness the Field Marshal Commanding in Chief, that any further trials should be made of the knapsack invented by Colonel Carter.

As a question is to be asked in the House of Commons upon this subject on Monday, Sir John Pakington requests to be furnished with the views of his Royal Highness as early as practicable.

I have, &c.
(signed) *H. K. Storks.*

The Adjutant General, Horse Guards.

No. 6.

From the Adjutant General to the Under Secretary of State for War.

(Immediate.)

(84—C—1115. Clothing &c.—G.S./—1868/—C. 59.)

Sir,

Horse Guards, S.W., 23 July 1868.

I AM directed by the Field Marshal Commanding in Chief to acknowledge the receipt of your letter of this date (No. 84—C—1084) with its enclosure on the subject of Lieutenant Colonel Carter's knapsack, and, in reply, I am to acquaint you, that in order that no doubt might hereafter exist as to the superiority of the valise equipment, his Royal Highness suggested in May last that a final trial of any other knapsack which the Committee considered likely to meet the requirements of the army might be made, when the kit-bag was issued to two companies of each of a certain number of regiments.

The reports on the valise equipment have been most satisfactory, but from the preference shown by the 92nd Highlanders for the packs they have had in wear for some years, it appeared doubtful whether the proposed equipment would be suitable for kilted regiments.

I have, &c.
(signed) *W. Paulet, A.G.*

The Under Secretary of State for War.

CORRESPONDENCE respecting additional TRIALS of the NEW VALISE
EQUIPMENT and CARTER KNAPSACK.

(84—C—1238.)

Sir,

Wigmore-street, W., 21 July 1869.

THE communication made to me in War Office letter of the 24th ultimo (84—C—1177), as to the result of the trials of my knapsack with the kit-bag equipment in the 42nd Regiment and the 15th Depôt Battalion, though only partially satisfactory is nevertheless more so than the circumstances of the trials should reasonably warrant, the competition having been conducted on very unequal terms.

It will be seen by my letter of the 3rd July 1868, that though I assented to the foregoing arrangement it was not the one that I thought should be only made, for I urgently requested that I should be allowed a trial of my "complete equipment" as well. The answer I received (dated 14th August), if words are to bear their ordinary meaning, was an assent to my request, but the promise made to me, as I understand it, has been repudiated, and I have been hitherto unable to induce the authorities to grant me the fair competitive trial which seems so distinctly conveyed in the letter, and to which I feel I am so justly entitled.

To revert, however, to the recent trials, I have to remark that not one of the 50 knapsacks made expressly for them found its way to the North. This singular, and apparently unaccountable, misadventure I may have been indifferent to had the knapsacks sent to the North not been defective, of which I was informed by the officer commanding the 92nd Depôt soon after the trials at Aberdeen had commenced, and which I expect tended materially to prejudice the men (others than the 92nd) against them. These mishaps, combined with the lenient instructions, and, in some respects, looking at the matter as a soldier, impolitic directions which the Committee have taken care to put forward with their plan, evidently to induce a favourable verdict of their entire equipment, must cause any unprejudiced judge to say that the recent trials are worthless for establishing a preference for the Committee's radical scheme.

If the trials establish anything, it is that a regiment which has had my pack in constant use six years cannot be prevailed on, even under adverse circumstances, to part with it, and that it therefore must possess some extraordinary soldierly advantages which are deserving of retention.

Under the foregoing circumstances, it will not, I trust, be deemed unreasonable on my part, in such an important question, to request a trial *de novo* of the knapsack alone, and a trial of my complete equipment with the kit-bag plan, the privilege being accorded to me in both cases of making arrangements and submitting instructions which shall place me on an equal footing with the Committee.

Should my request be favourably entertained, I beg that the 50 knapsacks used in the recent trials may be returned to Messrs. Hebbert & Co. for examination and for correction where required.

I have, &c.,
(signed) J. M. Carter,
Lieutenant Colonel.

The Under Secretary of State for War,
War Office.

(84—C—1242.)

Sir,

War Office, 31 July 1869.

WITH reference to your letter of the 16th ultimo, transmitting reports on the recent trials on the valise equipment and Colonel Carter's knapsack, which have been made in the 42nd Regiment and the kilted depôts of the 11th (late 15th) Depôt Battalion, I am directed by the Secretary of State for War to forward herewith a copy

copy of a letter received from Colonel Carter, respecting the trials in question, and to request that you will move his Royal Highness the Field Marshal Commanding in Chief to cause reports thereon to be obtained from the officers commanding the 42nd Foot and 11th Depot Battalion.

The Adjutant General,
Horse Guards.

I have, &c.
(signed) *H. K. Storks.*

(82—C—1242.)

Sir,

85, Wigmore-street, W., 26 July 1869.

With reference to my last letter (dated 21st instant), touching the equipment question, I think that it may be as well for me to particularise what I mean by saying that the recent trials between the Committee's plan and that arranged by Sir John Pakington were "conducted on very unequal terms," for although it may be gathered from my letter that the "unequal terms" had reference to the lenient system adopted with the Committee's equipment, I wish to avoid all possible mistake thereon. I therefore beg to inform you that the "unequal terms" refer to exonerating the soldiers, when trying the kit-bag plan, from wearing the full apparatus for carrying the ammunition as on service, and enforcing the wearing of the full apparatus as on service with the other, and this when equality was of easy arrangement.

It would seem that the men mounting guard with my pack had to carry for more than 24 hours a 50-pound pouch behind with an uncomfortable and oppressive belt across the chest, and an expense-pouch on the waist-belt in front; whilst with the kit-bag a small pouch only on the waist-belt. Of course when the men see that on guard, which happens every third or fourth day, they are to carry so little by the adoption of the kit-bag, the likelihood is that they would decide in its favour regardless of the future war period, even though they would then be required to carry no less than three pouches, and all in front.

Knowing that Sir Thomas Troubridge refrained from recommending the carrying of the ammunition on the waist in front, and feeling myself confident of the impossibility of carrying it all there in a satisfactory manner, I made particular inquiry whether the three pouches of the Committee's plan were ever worn in the recent trials, and if they were, whether the same were used at a firing parade? The answer I have received from Captain Hay commanding 92nd Depot is in these words: "During the trial here the three pouches were never worn with the Committee's equipment. The small pouch was all that was worn on sentry with the bag-plan, so would of course suffice with yours." I respectfully submit therefore that the recent trials were not fairly conducted.

I have, &c.
(signed) *J. M. Carter,*
Lieut. Colonel.

The Under Secretary of State for War,
War Office.

(84—C—1238).

Sir,

War Office, 12 August 1869.

With reference to your letter of the 21st ultimo, I am directed by the Secretary of State for War to acquaint you that it appears on investigation that a supply of 50 knapsacks of your pattern, ordered from Messrs. Hebbert & Co. on the 25th September 1868, and delivered in the following month for service of the depot 92nd Highlanders, was issued for competitive trial to the 42nd Highlanders and kilted depôts of the 11th (late 15th) Depot Battalion instead of the 50 knapsacks which you were authorised on the 30th July 1868 to provide for the purpose, and which, having been delivered by Messrs. Hebbert & Co. on your account, were, after passing your inspection, issued for service of the depot above referred to.

Under these circumstances Mr. Secretary Cardwell has decided that the 50 knapsacks inspected by you on the 1st October 1868 for the competitive trial shall be returned to the Royal Army Clothing Depot, Pimlico, with a view to their being tried and reported on by the 42nd Regiment and kilted Highland depôts.

With reference to your letter of the 26th ultimo, Mr. Cardwell has decided that the further experiment with your knapsacks authorised to take place shall include a trial of the accoutrements proposed by you for the army, and that the knapsacks and accoutrements shall be forwarded by you direct to the corps which are to try them.

I am therefore to acquaint you that a further communication will be addressed to you from this department relative to the provision of the requisite accoutrements, and that the 50 knapsacks to be returned by the Depôt Battalion at Aberdeen will be forwarded to you at any address you may communicate to this office.

Lieut. Colonel Carter.
85, Wigmore-street, W.

I have, &c.
(signed) *H. K. Storks.*

(84—C—1259).

Sir,

Wigmore-street, 17 August 1869.

It is with great pleasure that I do myself the honour of acknowledging the receipt of War Office letter dated 12th instant (84—C—1238), in which is conveyed to me the decisions of Mr. Secretary Cardwell respecting a renewed trial of my knapsack and the ordinary accoutrements, and a trial also of my complete equipment in competition with the kit-bag plan. For these marks of approval of my labours in this important matter I beg to tender my best thanks, and I trust the issue will justify the favour thus shown to me.

An impartial and thorough scrutiny into the merits of the two systems is now of course the thing to be aimed at, and therefore I feel persuaded I may, with such an object, deferentially suggest that the trials should not now be confined to kilted regiments. It is desirable that these may again have an opportunity of considering the question as it will now be placed before them, so I quite coincide in the arrangement proposed, but under existing circumstances conclusiveness probably can only now be arrived at by having similar trials made in two or three other regiments. The Guards, for instance, who have to study appearance, should be specially asked for their opinion, and as General Hamilton officially applied to the Horse Guards for such a trial he would no doubt be pleased if it were now accorded to him. Colonel Knox, c.b., commanding 2nd Battalion 9th Foot (stationed now at Warley) also made a similar application. When commanding officers volunteer inquiry it may be taken as a proof that the subject is one which interests them; it is therefore likely to receive at their hands a full and satisfactory investigation.

It has been publicly announced that the Prussians are inclined to give a favourable opinion of the valise equipment. Not improbable the system will meet with greater favour amongst them than it will in the long run amongst British troops, as they have been more accustomed to front pouches, but this testimony it would not be safe to attach much importance to for forwarding its adoption in the British service, inasmuch as my equipment has been now inspected by the Prussian military representative in London, and he has taken steps to ensure some sets as patterns being sent to Berlin, not as presents from me, but as purchases by his own government. He expressed his intention to me of asking permission for the purpose, and if he reports, as I have no doubt he will, the opinion he has formed of my accoutrements, especially as he knows well the valise equipment, his request is not likely to be denied; that opinion being "decidedly the best that he has yet seen."

I have, &c.
(signed) *J. M. Carter*, Lieut. Colonel.

The 50 knapsacks to be returned by the Depôt Battalion at Aberdeen I beg may be forwarded to Messrs. Hebbert and Co., 16 James-street, Haymarket.

The Under Secretary of State for War,
War Office.

(84 - C—1259.)

Sir,

War Office, 30 August 1869.

84—C—1238.

I AM directed by the Secretary of State for War to acknowledge the receipt of your letter of the 17th instant, and to acquaint you that in compliance with the request made therein, Mr. Cardwell has decided that the further trial of your knapsack and accoutrements, referred to in the letter from this office of the 12th idem, shall be made in the Brigade of Guards and in the 2nd Battalion, 9th Foot, as well as the 42nd Regiment and 11th Depôt Battalion.

In accordance with your wish expressed in the postscript to your letter under reply, orders have been given for the 50 knapsacks of your pattern returned from Aberdeen being forwarded to Messrs. Hebbert and Co., and I am to request that you will inform me so soon as you shall be ready to send the knapsacks and accoutrements to the corps in which the trial is to be made, in order that you may receive instructions from this office as to the respective numbers to be sent to each corps, and that steps may be taken for obtaining, through his Royal Highness the Field Marshal Commanding in Chief, reports from the commanding officers on the merits of your system of equipment.

I have, &c.

(signed) *H. K. Storks.*

Lieut. Colonel Carter,
85, Wigmore-street, W.

SECOND REPORTS UPON THE TRIALS IN HIGHLAND REGIMENTS.

(Vide Supplement to the Fourth Report of the Knapsack Committee.)

(84—C—1265.)

Sir,

Horse Guards, S.W., 25 August 1869.

IN compliance with the request contained in your letter of the 31st ultimo, I am directed by the Field Marshal Commanding in Chief to forward herewith, for submission to the Secretary of State for War, reports which have been received on the recent trials of the valise equipment and Colonel Carter's knapsack, which have been made in the 42nd Regiment and the kilted depôts of the 11th (late 15th) Depôt Battalion, together with a letter on the subject from the general officer commanding in North Britain.

5

G. O. Edinburgh.
23/8/69.

I have, &c.

(signed) *W. Paulet,*
Adjutant General.

The Under Secretary of State,
War Office, Pall Mall.

My Lord,

Edinburgh, 23 August 1869.

IN returning the enclosed papers relative to the mode in which the recent trials of the valise equipment and Carter's knapsack have been carried out, I have the honour to transmit, for the information of his Royal Highness the Field Marshal Commanding in Chief, the reports thereon from the officers commanding the 42nd Highlanders and the 11th Depôt Battalion.

W. O., 31 July 1869.
(With 1 Inclosure.)

5.

With regard to the statement of the officer commanding the 93rd Depôt, that he had received orders at the Spring inspection for his men to wear one of the valise-equipment pouches only, with 20 rounds of ammunition, instead of the two pouches with 10 rounds in each, I beg to offer the following remarks:—

By the printed instructions for fitting the new equipment, which were supplied for the guidance of those by whom it was to be worn, the number of pouches, the occasions on which they are to be worn, and the mode of wearing them, is distinctly defined, viz., one pouch to carry 20 rounds, two pouches to carry 40 rounds and the ball-bag, if required.

The wearing more pouches than necessary for the amount of ammunition to be carried being obviously contrary to the instructions, I gave the order that these should be strictly adhered to.

If it should be the intention to try the experiment of handicapping the two systems, by suppressing any advantages incidental to the one, in order to obviate

the possibility of the expression "unequal terms" being used by the advocate of the other, that becomes a different question, and would involve the necessity of specific instructions; but, as the avowed object was to ascertain whether the new equipment was applicable to kilted regiments, as well as to test the respective merits of the two systems, I do not see how these trials could have been more fairly conducted, the amount of ammunition carried with each being identical on all occasions.

I have, &c.
(signed) *R. Rumley*, Major General,
North Britain.

The Adjutant General,
Horse Guards.

Sir,

Aberdeen, 13 August 1869.

IN returning the enclosed correspondence, and with reference to your letter of the 9th instant, I have the honour to state that, though only one of the pouches of the valise equipment was worn here by the 92nd Highlanders, as mentioned by Captain Hay to Colonel Carter (which occurred through some misunderstanding as regards the true meaning of the instructions that accompanied the valise equipment by the officer in command at Aberdeen at the time of its receipt), yet that the three pouches were worn by the 93rd Highlanders at Perth, and Captain Nightingale's report, which was forwarded, very fairly (I think) set forth the relative advantages and disadvantages of the respective equipments.

As regards Colonel Carter's remark, "as to his feeling confident of the impossibility of carrying all three pouches of the valise equipment in a satisfactory manner," I may observe that Captain Nightingale in one respect found it objectionable, and I personally observed with one pouch on, when worn at the right side, as must be the case when all three are worn in active service, that the men in swinging the rifle from the "ready" to the "present" constantly struck the flap of the pouch, and hurt their hands.

I have, &c.
(signed) *R. Fraser*, Colonel,
11th (late 15th) Depôt Battalion.

The Assistant Adjutant General,
&c. &c. &c.
Edinburgh.

Adjutant General's Office, Edinburgh,
14 August 1869.

It is requested that it may be stated in addition:—

1. How were the trials of the Carter and valise equipments conducted in the 79th and 93rd Depôts; that is, were all the pouches of the equipment ever carried at the same time? if so, when?
2. What number of rounds were carried in each pouch of the two systems on different occasions during the trial?

By order,
F. Colborne, Colonel,
Assistant Adjutant General.

Officer Commanding 11th Depôt
Battalion.

Sir,

Edinburgh, 17 August 1869.

IN reply to your memorandum, transmitting Horse Guards' letter, with enclosures, on the subject of the recent trial of valise equipment and Carter knapsack, and referring to the question asked by Colonel Carter, "Whether the three pouches of the Committee plan were "ever worn on the recent trials?" I have the honour to report that the three pouches were worn with the valise equipment, and that the men's decision in its favour was given not exclusively in

in reference to its merits on guard, but on its general ease and comfort to themselves after two months' trial on parades, on guard, and on the march.

The trial was fairly conducted.

I have, &c.

(signed) *J. C. McLeod*, Colonel,

Lieutenant Colonel 42nd Royal Highland Regiment,
"The Black Watch."

Assistant Adjutant General,
Edinburgh.

Sir,

Perth, 17 August 1869.

In reply to your memorandum of the 16th instant, I have the honour to state:—

1st. Five Carter knapsacks were issued to and worn by men of "C" Company, Depot 93rd Highlanders, and five valise equipment to men of "E" Company, for one month, after which they were exchanged. Up to General's inspection on the 13th May 1869, both of the pouches were worn with 10 rounds of ammunition in each, also the ball-bag was worn. After that date, by the Major General's order, only one pouch was worn, with 20 rounds of ammunition in it.

2nd. With the Carter knapsack 20 rounds were carried, and the same number with the valise equipment.

I have, &c.

(signed) *A. Nightingale*,

Captain Commanding Depot 93rd Highlanders.

The Adjutant, 11th Depot Battalion,
Aberdeen.

Stirling, 19 August 1869.

With reference to memorandum, dated Aberdeen, 16th instant, relative to the valise equipments,—

1. Only one pouch was worn during the trial of the valise equipments.
2. Twenty rounds of ammunition were carried during the trial of both systems.

The valise equipment was not received till after "marching out," for the season was over, therefore it was not thought necessary to use the two pouches and ball-bag.

(signed) *E. W. Cuning*,
Brevet Major, 79th.

(84—C--1267.)

Sir,

War Office, 1 September 1869.

With reference to previous correspondence respecting Colonel Carter's knapsack and accoutrements, I am directed to acquaint you, for the information of the Field Marshal Commanding in Chief, that at the request of Colonel Carter Mr. Secretary Cardwell has decided that 50 knapsacks and 50 sets of accoutrements shall be issued for distribution to the services marginally named, and to request that steps may be taken for obtaining, through his Royal Highness, reports from the several commanding officers on the merits of the equipment in question.

I am to add, that a further communication will be made so soon as the equipment is ready to be supplied.

The Adjutant General,
Horse Guards, S.W.

I have, &c.
(signed) *H. K. Storks*.

14 sets to the Guards.
10 sets to 2nd Battalion
9th Foot.
10 sets to 42nd Regi-
ment.
16 sets to 11th D. B.
(4 sets to each kilted
battalion.)

(84—C—1269.)

Sir,

Horse Guards, 4 September 1869.

Clothing, 16,797.
G. S.—1869.
C. 59.
14 sets to the Guards.
10 sets to 2nd Battalion
9th Foot.
10 sets to 42nd Regi-
ment.
16 sets to 11th D. B.
(4 sets to each kilted
depôt.)

I AM directed by the Field Marshal Commanding in Chief to acknowledge the receipt of your letter of the 1st instant (No. 84—C—1267) stating that the Secretary of State for War has decided that 50 knapsacks and 50 sets of accoutrements of Colonel Carter's pattern shall be issued for distribution to the corps named in the margin, and requesting that steps may be taken for obtaining reports on the merits of the equipment.

In reply I am to acquaint you that trials of Carter's packs and the new valises have already been made in the 42nd Regiment and in the 11th (late 15th) Depôt Battalion, and the reports (with the exception of that from the 92nd Depôt) were strongly in favour of the kit-bags.

As the issue of the 50 packs and 50 sets of accoutrements now proposed to be made is not so much to decide on the merits of Carter's knapsacks as compared with the old pattern pack, but as against the new valise, I am to request that you will convey to Mr. Secretary Cardwell, his Royal Highness' suggestion that they be supplied to the 1st Battalion, 4th, 33rd, and 68th Regiments, which have the valises in wear, and to the 1st Battalion Grenadier Guards, in which a trial of the valises was made last year.

If this suggestion be concurred in, reports on the relative merits of the two descriptions of equipment will be obtained from corps which have had practical experience of both.

I have, &c.

(signed) *Arthur Herbert,*

Colonel, A. A. G.

The Under Secretary
of State for War, War Office, Pall Mall.

(84—C—1269.)

Sir,

War Office, 13 September 1869.

Clothing, 16,797.
G. S.—1869.
C. 59.
1st Battalion Grenadier
Guards.
1st Battalion 4th Foot.
33rd Regiment.
68th ..

I AM directed to acknowledge the receipt of your letter of the 4th instant, and in reply to acquaint you that the Secretary of State for War concurs in the proposition of his Royal Highness the Field Marshal Commanding in Chief that the trial of the 50 sets of Carter's knapsacks and accoutrements should be made in the regiments as per margin, and Lieutenant Colonel Carter has been informed accordingly.

I have, &c.

(signed) *H. K. Storks.*

The Adjutant General,
Horse Guards, S.W.

(84—C—1269.)

Sir,

War Office, 13 September 1869.

(84—C—1269.)
1st Battalion Grenadier
Guards.
1st Battalion 4th Foot.
33rd Regiment.
68th ..

I AM directed to acquaint you that on the representation of his Royal Highness the Field Marshal Commanding in Chief, the Secretary of State for War has decided that the trial of your knapsacks and accoutrements shall take place in the regiments named in the margin, instead of those mentioned in War Office letter of the 30th ultimo.

I have, &c.

(signed) *H. K. Storks.*

Lieutenant Colonel Carter,
85, Wigmore-st. W.

(84—C—1273.)

Sir,

Horse Guards, S.W., 16 September 1869.

Clothing, 17,057.
G. S.—1869.
C. 59.
14 sets to 1st Battalion
Grenadier Guards.
12 sets to 1st Battalion
4th Foot.
12 sets to 33rd Regi-
ment.
12 sets to 68th Regi-
ment.

WITH reference to your letter of the 13th instant (No. 84—C—1269) I am directed by the Field Marshal Commanding in Chief to acquaint you, for the information of the Secretary of State for War, that the officers commanding the regiments named in the margin have been informed that knapsacks and sets of accoutre-

accoutrements of Colonel Carter's pattern, as stated, will shortly be supplied, and instructions have been given for them to be taken into constant use, in order that the merits, or otherwise, of these knapsacks, as compared with the valise equipment, may be fairly tried and reported on.

I have, &c.
(signed) *Arthur Herbert,*
Colonel, A. A. G.

The Under Secretary
of State for War, War Office, Pall Mall.

(84—C—1276.)

Sir, 85, Wigmore-street, W., 20 Sept. 1869.

I HAVE the honour of reporting the receipt of 50 knapsacks, with straps of my pattern, from 92nd Regiment, at Messrs. Hebbert & Co.'s. Finding that the rivetting of the brass plates can be done in a stronger and superior manner (which is very desirable), and wishing to render the side of the knapsack, which comes in contact with the soldier's back, thoroughly elastic, a principle of the pack, I beg to request that the expense for making these and the other alterations detailed in the estimate herewith sent, also for a supply of my improved canteen, will be allowed.

I have, &c.
(signed) *J. M. Carter,*
Lieutenant Colonel.

The Under Secretary
of State for War, War Office.

MEMORANDUM from Hebbert & Co., 16 James Street, Haymarket, S.W., to
Colonel Carter, dated 20 September 1869.

Estimate for altering and repairing 50 knapsacks of Colonel Carter's pattern received from the War Department :—

31 painting out "92" on flap and re-japanning	-	-	} Say, 50 at 5 s. 3 d. each.
50 new plates, rivets, and wrought-iron arms, and re-rivetting ditto.	-	-	
50 taking out sticks and making good	-	-	
37 sets new buff-slugs (this number being of an old pattern, and not those supplied with the knapsacks in question). Will be returned to the Army Clothing Store, Piccadilly.	-	-	
50 new parts of frames and re-making knapsacks	-	-	} At 3 s. each.
50 Colonel Carter's pattern canteens, with japanned cover and canteen strap. The number does not admit of a manufacturing price.	-	-	

(signed) *Hebbert & Co.*

(84—C—1273.)

Sir, War Office, 24 September 1869.

WITH reference to the letters from this office, dated the 30th ultimo and 13th instant, I am directed by the Secretary of State for War to inform you that the number of your knapsacks and sets of accoutrements that should be sent for experimental trial to the under-named corps is as follows :—

- 14 to 1st Battalion Grenadier Guards.
- 12 „ 1st „ 4th Foot.
- 12 „ 33rd Regiment.
- 12 „ 68th „

I have, &c.
(signed) *H. K. Storks.*

Lieutenant Colonel Carter,
85, Wigmore-street, W.

1259.
1269.

(84—C—1276.)

Sir,

War Office, 28 September 1869.

With reference to your letter of the 20th instant, I am directed by the Secretary of State for War to inform you that the expense of 5s. 3d. each for making the 50 knapsacks fit for the new trial will be allowed.

I am to state that Mr. Secretary Cardwell regrets that the application for authority to supply 50 improved "cantzeus" cannot be acceded to.

Lieutenant Colonel Carter,
85, Wigmore-street, W.

I have, &c.
(signed) *H. K. Storks.*

(84—C—1285.)

Sir,

85, Wigmore-street, W.,
8 November 1869.

I HAVE the honour of enclosing for approval a printed copy of the instructions for wearing the knapsack equipment of my pattern, and, on approval, beg to request the favour of a few being transmitted officially to each of the selected regiments. Should this course meet with sanction, either I or Messrs. Clowes & Son, military publishers, 14, Charing Cross, can supply them.

I have, &c.
(signed) *J. M. Carter,*
Lieutenant Colonel.

The Under Secretary of State for War,
&c. &c. &c.

INSTRUCTIONS FOR WEARING LIEUTENANT COLONEL CARTER'S KNAPSACK EQUIPMENT.

Waist-belt and Frog.—To be worn as hitherto. The only difference in construction is the addition of a small strap with stud, to simplify the fixing of the bayonet scabbard in the frog.

Black Pouch and Belts.—This pouch is worn behind, in the centre of the waist, the top being in a line with the upper edge of the waist-belt. This is higher than heretofore; but this superior position is feasible, because the ammunition is withdrawn for use at the side nearest the right hand. The opening of the pouch at the side causes its enlargement, whereby room is obtained for throwing in quickly the handful of loose cartridges of the first broken package. Each package should be tied with a good string, to attach it on to a wire loop. It is detached by simply sliding it upwards. In the vacant space of tin, rag or tow can be pressed, and as the pocket under the cover is for oiled rags, and the pocket above for oil-bottle, turnscrew, &c., the pouch itself will contain every requisite for cleaning the rifle in the field.

The *belts* support the pouch at three points, and from both shoulders, avoiding the chest. The strap to centre of pouch raises the lower inner edge of the pouch off the body, so freeing the muscular action of the whole leg. The ring, though there is no buckle for regulating the length of the strap from it to centre of back, should be so placed (by re-sewing, if necessary) that the arm may be fairly cleared, and no more. The small strap from ring to waist-clasp, which has a buckle, will regulate the adjustment. Were the belts made in sizes, the buckle on this strap could probably be done away with. After fitting, objectionable surplus strap should be cut off.

Buff Pouch.—This is a 20-round pouch, to be worn on the waist-belt. It has been added chiefly for guard. It should be worn behind, and centrally, except during the night, and when required for loading, then to the right-front; also, if preferred to black pouch, at target practice, if a similar lenient regulation exists for the valise equipment. It can be worn on parade when thought sufficient. On the line of march, whenever the full complement of ammunition is not carried,

ried,

ried, it can be used as a pocket, or placed in the pack or squad-bag. At reviews and all firing parades when the black pouch is worn, the buff pouch should be left in barracks, it not being required as an expense-pouch.

Knapsack.—The kit is packed in the ordinary way, but the shirt or socks, or both, can be placed, if so preferred, under the wooden bars, not to extend, however, more than about three inches from the bottom of the pack. By this method the bottom part of the frame clears the "small" of the back, and space is economised. The greatcoat is to be folded flat, and placed under the flap, the edges only visible.

To sling on the pack, loosen the iron arms, and place them in position for the waist, only wider than ultimately required, especially the right one, screw them up tightly, and loop on the left strap. The pack can now be slung on to the back. When on, fasten the right strap on iron bar, place, or rather wriggle, the pack into the most comfortable position, which can be done by stooping and by means of the iron bars taken in each hand. When in position, press the iron arms to the waist, and if the straps have been adjusted moderately tight, the pack will remain firm throughout the longest march.

N. B.—When the knapsack and black pouch are worn together, the pressure of the pack on the centre buff strap of the pouch actually helps to carry the pouch and keep it firmly in a good position; and by the same strap the knapsack is raised off the small of the back.

Canteen.—The ordinary one is to be carried, as no change will be made in the mode of carrying the new pattern, should it be eventually approved of.

Blanket.—The blanket is to be strapped, or temporarily strung, on three sides of the pack; loops are placed for the purpose.

For a day or two (until the soldier can handle the knapsack intelligently and freely) the pack should be worn empty, and then gradually weighted.

(84—C—1285.)

Sir,

War Office, 19 November 1869.

WITH reference to your letter of the 8th instant, I am directed by the Secretary of State for War to inform you, that if a supply of the instructions for wearing the knapsack equipment of your pattern are forwarded to this office, they will be sent to the regiments about to try the equipment.

Lieutenant Colonel Carter,
85, Wigmore-street, W.

I have, &c.
(signed) *Geo. D. Ramsay.*

(84—C—1287)

Sir,

85, Wigmore-street, W.,
26 November 1869.

IN compliance with the War Office letter, dated 24th September (84—C—1273), I have the honour to report that the 50 knapsacks and accoutrements of my pattern, as decided on for trial, will be dispatched this day to the following regiments:—

1st Battalion Grenadier Guards	-	14	-	-	Dublin.
1st „ 4th Foot	-	12	-	-	Dover.
33rd Regiment	-	12	-	-	Portsmouth.
68th „	-	12	-	-	Cork.

Twelve printed instructions are herewith sent, which I beg may be distributed, four to each regiment, through the Horse Guards.

The Under Secretary of State for War,
&c. &c. &c.

I have, &c.
(signed) *J. M. Carter,*
Lieutenant Colonel.

(84—C—1287.)

Sir,

War Office, 30 November 1869.

I AM directed by the Secretary of State for War to transmit to you, for the information of his Royal Highness the Field Marshal Commanding in Chief, a copy of a letter from Lieutenant Colonel Carter, together with the enclosed printed instructions, and to request that the latter may be transmitted to the battalions concerned.

The Adjutant General,
Horse Guards, S.W.

I have, &c.
(signed) *H. K. Storks.*

(84—C—1287.)

Sir,

War Office, 30 November 1869.

I AM directed by the Secretary of State for War to acknowledge the receipt of your letter of the 26th instant, and to acquaint you in reply that the printed instructions for wearing your knapsack equipment have been forwarded to the Horse Guards for transmission to the battalions concerned in its trial.

Lieutenant Colonel Carter,
85, Wigmore-street, W.

I have, &c.
(signed) *Geo. D. Ramsay.*

(84—C—1297.)

Sir,

28, Duke-street, Grosvenor square, W.,
28 January 1870.

BEING desirous that my views on the present position of the infantry equipment question should be generally known, I have embodied them in a small pamphlet. I have now the honour of asking your acceptance of three copies for the information of those in the War Office who have to assist the Secretary of State for War in this important matter. I believe, as I hope, that my views and statements will commend themselves; nevertheless a decision on this subject will, I know, chiefly depend upon the reports from the regiments now trying the two equipments, the Committee's and mine. When so much depends upon their expressed opinion, it was necessary that in the selection of the regiments no advantage should be given to the advocates of either system. I am apprehensive that such a selection has not been yet made, except in one instance, the 1st Battalion Grenadier Guards. The other three regiments are what may be termed valise regiments, and as such, unless the valise system is too faulty to be allowed to continue while the present issue lasts, these regiments would be *indisposed* to upset it, for by so doing they would be placing themselves behind the times, which no regiment likes to be. Again, a few of my equipments being sent to a valise regiment, they become the only strange pattern, whereas both systems under trial should be equally strange. And as by a large number, from general uniformity, appearance is improved, the valise has thereby an undue advantage. If these regiments should, notwithstanding these disadvantages to the election of my system, report in its favour, their report would of course be all the stronger, but as regard the 1st Battalion, 4th, and the 68th Regiment, such a decision cannot, I think, be reasonably expected, for over and above the reasons I have already given, the former regiment has officers in it of high standing, who (though the actual pouches of the Committee have been abolished!) are, as inventors, publicly and strongly upholding valise principles, which cannot but bias the men; and the 68th Regiment have by official reports committed themselves to so strong an expression of approval of the Committee's pattern as to justify their exclusion from the jury list. True, the 68th were at the time they so approved in the greatest want of accoutrements, and would be disposed to welcome anything; but their official position is, I think, as I have described it.

I hope my apprehensions may prove groundless, but if otherwise, I trust entirely to your sense of justice to submit again the question to regiments upon *equal* terms, and which are really free to give an opinion according to their consciences,

sciences, without which, probably, a wise decision cannot be arrived at. You will, I am sure, therefore excuse my making the foregoing observations at the present time, especially as I may not be consulted when the reports are made. If such a course, however, as a reference to me can be accorded, I should be glad of the privilege, if necessary, for it is more than probable that I should be able to afford you satisfactory explanations.

I have, &c.
(signed) *J. M. Carter,*
Lieutenant Colonel.

The Under Secretary of State for War.
&c. &c. &c.

(84-C--1297.)

Sir,

War Office, 4 February 1870.

I AM directed by the Secretary of State for War to acknowledge the receipt of your letter of the 23th ultimo, with its enclosures, on the subject of your pattern infantry equipment.

I have, &c.
(signed) *H. K. Storks.*
Lieutenant Colonel Carter,
28, Duke-street, Grosvenor-square, W.

THIRD SERIES OF TRIALS, AND THE REPORTS UPON THEM, BY THE 1ST BATTALION, GRENADIER GUARDS, 1ST BATTALION, 4TH REGIMENT, AND THE 33RD AND 68TH REGIMENTS.

(84-C-1301.)

Sir,

Horse Guards, S.W., 18 February 1870.

REFERRING to your letter dated the 30th November last (No. 84-C-1287), and to previous correspondence on the subject, I am now directed by the Field Marshal Commanding in Chief to forward, for the information of the Secretary of State for War, the enclosed reports from the officers commanding the regiments specified in the margin, which were selected by his Royal Highness to make the trial of the Carter knapsack and accoutrements. As the valise equipment had been universally acknowledged to be superior to the old knapsack, the trial, his Royal Highness considered, was between the Carter and the valise equipment. For this purpose three regiments were selected which had or were to have the valise equipment. The 1st Battalion, 4th Foot, and 33d Regiment had lately returned from Abyssinia, where much experience in the requirements of troops on the march had been obtained; and it was considered, as neither corps could have any prejudice, unbiassed and practical opinions would be obtained from these corps. The 68th had had the valise equipment in wear about a year, and therefore ought to have become thoroughly acquainted with the merits or failings of the valise. It was consequently considered advisable to have the Carter accoutrements tried by this corps. The 1st Battalion Grenadier Guards was selected, as it was considered advisable to have the Carter pack tried by a battalion of the Foot Guards, and the above battalion had already tried the valise equipment.

Clothing, &c.
G. S.—1870.
A. 10.
1st Battalion Grenadier Guards.
1st Battalion 4th Foot.
33rd Regiment.
68th "
1st Bat. Grenadier Gds.
2
1st Battalion 4th Foot.
3
33rd Regiment.
2
68th Regiment.
4

The reports of the officers commanding are unanimous in favour of the valise equipment; indeed, in the Guards the men liked the Carter pack so little that they begged to have their own packs to wear; whereas, when the companies of the same regiment wore the valise equipment in 1868 with great regret they resumed their own packs.

In order, however, to ascertain thoroughly the opinion of the men his Royal Highness desired that the following questions should be put to each of the men wearing the Carter pack, and that their answers should be recorded. The officers were specially desired to endeavour to obtain the exact and unbiassed views of the men.

To the Grenadier Guards 14, and to each of the other three corps 12, packs had been issued. In the 68th Regiment these packs were worn by 25 men of different companies.

The following gives the questions, and a summary of the replies :—

QUESTIONS.	Grenadier Guards.		4th Foot.		33rd Regiment.		68th Regiment.	
	Valise.	Carter.	Valise.	Carter.	Valise.	Carter.	Valise.	Carter.
1. Which equipment do you prefer, the Valise or the Carter?	14	-	12	-	9	3	21	4
2. In which equipment have you most freedom, the Valise or the Carter?	14	-	12	-	10	2	21	4
3. In which can you shoot and walk in greatest ease?	14	-	12	-	10	2	21	4
4. With which equipment can you most easily carry 70 rounds of ball ammunition?	14	-	10	2	9	3	17	8

These statements, combined with the reports of the commanding officers, and the general satisfaction which continues to be expressed by the regiments wearing the valise equipment induce his Royal Highness to consider that further trials are useless, unless it be intended to re-open the question again, which certainly does not appear to be at all advisable while the valise continues to give so much satisfaction.

His Royal Highness would therefore recommend that the Carter packs may be withdrawn from the regiments which have had them on trial and returned into store, and that the question of infantry equipment be considered closed for the present.

The Under Secretary of State,
War Office, Pall Mall.

I have, &c.
(signed) *W. Paulet, A. G.*

Sir,

Beggar's Bush Barracks, Dublin,
19 January 1870.

With reference to the comparative trials that have taken place on the respective merits of the valise equipment and the Carter pack and accoutrements, I have the honour to state that the men of the 1st Battalion Grenadier Guards who tried the two equipments are unanimous, without exception, in giving the reply recorded opposite the questions on the other side.

I have, &c.
(signed) *Wm. De Horsey,*
Col. Commanding 1st Batt. Gren. Gds.

The Adjutant General to the
Forces, Horse Guards.

QUESTIONS. (Vide Horse Guards Letter, 15th January 1870.)	ANSWERS.
No. 1. Which equipment do you prefer, the Valise or Carter? - -	The Valise.
„ 2. In which equipment have you the most freedom, the Valise or Carter?	The Valise.
„ 3. In which can you shoot and walk with the greatest ease? -	The Valise.
„ 4. With which equipment can you most easily carry 70 rounds of ammunition?	The Valise.

(signed) *Wm. de Horsey,*
Col. Com. 1st Batt. Gren. Gds.

Beggar's Bush Barracks, Dublin,
8 February 1870.

Sir,

IN compliance with your order that I am to report on the comparative merits of the Carter knapsack and the valise, I have to state that I carefully inquired into the merits of the Carter knapsack in 1866, and have now again examined those lately furnished to this battalion, with improvements introduced. The arrangement of the brace-shaped belt is good, as it supports the waist-belt, and the mode by which the weight of the whole equipment is borne on the shoulders is excellent when first put on, but the back-strap which supports the pouch must necessarily be pressed down by the knapsack, and then falls very heavily on the shoulders. Notwithstanding the strap above, and the irons below, the knapsack always falls on the small of the back after marching, and the irons thus pushed prominently forward interfere with the free movement of the man's hands. Colonel Carter urges the improbability that these irons should ever be broken, as a man must be shot before a ball could strike the irons; but there are other ways in which they might suffer, and a very obvious one is, that when hurriedly thrown into a cart or hold of a ship the irons would be easily damaged, and then the knapsack becomes almost useless.

If it be intended to retain the principle of a stiff knapsack I have no doubt that with a few modifications the Carter might become useful.

But when I compare the merits of this knapsack with those of the valise, which two of my companies carried in 1868 for three months, I have not the slightest hesitation in deciding that the valise is far superior in every way.

A loose bag is better than a stiff box, which may be knocked out of shape and portability; a bag carried on the small of the back, leaving the arms free, is obviously better than the box on the shoulders, which impedes a man's free movements, and seriously interferes with his neighbour's action, especially in shooting, and a bag which will endure any amount of knocking about is better than a box with iron arms, which may be broken.

The valise is carried from the top of the shoulders which bears the whole weight, but the straps of the Carter pack press uncomfortably on the fore part of the shoulders, after a few minutes' wear, and the pack itself on the small of the back.

The expense-pouch attached to the valise is a far better mode of carrying ammunition available for use than the Carter pouch, and the objection raised to the position of the front pouches (valise equipment) is untenable, since they can be moved along the waist-belt. In conclusion I may say that the wearers of the Carter knapsack dislike it so much that they have petitioned to be relieved from carrying it; while the men who wore the valise were unanimous in their regrets at parting from it.

I have, &c.
(signed) *Henry F. Ponsonby*,
Maj. and Col. Commanding 1st Batt.,
Grenadier Guards.

The Adjutant General, Dublin.

(A.—8078.)

Sir,

Dover, 10 January 1870.

I HAVE the honour to state, for the information of his Royal Highness the Field Marshal Commanding in Chief, that I have given the Carter pack and equipment a thorough trial, and to avoid being led into any mistake in reporting thereon have carried it myself, both on the march and for practice.

Were there any doubt as to the relative merits of the Carter and valise equipment I should have delayed this report, but the objections to the former are so serious, that such delay is not only unnecessary, but might also cause useless trouble and expense in continuing these experiments.

The difficulty in firing when carrying the Carter pack, would alone be an insuperable objection to its adoption in our service.

Put a party of men in close order through the platoon exercise (and recollect that men in action are sometimes crowded), and it will be seen at once that there is not sufficient space for them to come to the "present" when firing, standing or

kneeling, as their right elbows come in contact with the packs of their right-hand men, especially when the company or party is not sized.

2ndly. The pouch and knapsack straps overlap each other on the shoulders and prevent the butt of the rifle being properly bedded in the shoulder when firing. Many men can hardly keep the rifle in the hollow of the shoulder on this account, and it was one of the first objections I noticed myself when carrying the Carter.

3rdly. When firing lying down (and without canteen) the head cannot be sufficiently raised and thrown back, as it is stopped by the top of the knapsack, and, moreover, it is difficult to raise the fore-part of the body with a heavy pack on.

4thly. The rear-rank men are impeded by the packs of the front-rank men from firing with the requisite freedom through the intervals.

5thly. The iron hooks injure the butt of the rifle when brought to the "ready," and frequently the men's hands also. The small of the butts of the rifles used by some of the men carrying the Carter knapsack only this short time (one month) are already much cut. With regard to other defects, the Carter knapsack is a greater strain on the respiratory organs, when marching long distances or doubling, than is the case with the valise, and has a tendency to throw a man back when climbing steep hills, though not, perhaps, in ascending ladders, or escalading, and when there is something to lay hold of; but even here the defects of the Carter are apparent, as the rifle cannot be easily and securely slung, an objection which would also hold good on the baggage guard and other occasions. In a personal contest between soldiers, the one with the pack soon loses his equilibrium from a push, and falls backwards, especially if standing on an incline.

I would further remark that a soldier's pack should serve as a pillow at night; that it should be as light as possible, stand any amount of rough usage, and be easily repaired on active service; and in none of these respects can the Carter knapsack be considered a serviceable pack.

The slender brass hooks of the brace-straps, the iron arms and framework of knapsack, would soon go to pieces, if exposed to the usage they would have had in Abyssinia, or if carried for the men and tumbled into baggage waggons.

Other defects could be mentioned, and a fuller explanation given, perhaps, of those already recorded, but I thought it superfluous to say more, except that I entered on this trial quite unprejudiced, especially as I carried the Carter pack before trying the valise.

The men of the battalion to whom the former has been issued, one and all complain that it is much more fatiguing to carry than the valise, and presses uncomfortably on the lungs, and also causes a slight choking sensation about the throat.

The Brigade Major, Dover.

I have, &c.
(signed) *W. G. Cameron,*
Colonel Commanding 1st Battalion,
4th K. O. R. Regiment.

(A.--8088.)

Sir,

Dover, 12 January 1870.

WITH reference to my letter of yesterday regarding the "Carter" equipment, I have the honour to request that, in forwarding it to the Horse Guards, with such remarks as the Major General may think fit to make, the accompanying answers to certain questions I have been directed to put to the men equipped with the Carter knapsack may be attached to the letter.

The Brigade Major, Dover.

I have, &c.
(signed) *W. G. Cameron,*
Colonel Commanding 1st Battalion,
4th K. O. R. Regiment.

1ST BATTALION, 4TH REGIMENT.

QUESTIONS put to and ANSWERS made by a party of Men of the above Corps, upon the respective Merits of the Valise and Carter Equipments.

Regimental Number.	Rank and Name.	Question 1. Which Equipment do you prefer, the Valise or Carter?	Question 2. In which Equipment have you the most Freedom, the Valise or Carter?	Question 3. In which can you Shoot and Walk with the greatest Ease?	Question 4. With which Equipment can you most easily Carry 70 rounds of Ammunition?
719	Serjeant Edwin Sharpe -	I prefer the Valise	In the Valise -	In the Valise -	With the Valise equipment.
286	Private George Allen -	I prefer the Valise	In the Valise -	In the Valise -	With the Valise equipment.
1170	" John Beggs -	I prefer the Valise	In the Valise -	In the Valise -	In the Valise equipment, because the weight is equalised over the body.
4067	" John Mahoney -	I prefer the Valise	In the Valise -	In the Valise -	With the Valise, because the Carter pouch hurts the back.
870	" Joseph Chivreal -	I prefer the Valise	In the Valise -	In the Valise -	In the Carter pouch, because the weight of front pouches in Valise equipment hurts my stomach.
690	" William Drakeford -	I prefer the Valise	In the Valise -	In the Valise -	With the Valise, as the ammunition in front counteracts the weight of Valise behind.
2852	" James W. Hides -	I prefer the Valise	In the Valise -	In the Valise -	With the Carter equipment.
240	" Richard Seodnam -	I prefer the Valise	In the Valise -	In the Valise -	With the Valise, as it counteracts the weight behind, and the Carter pouch hurts my back.
4206	" Patrick McAvoy -	I prefer the Valise	In the Valise -	In the Valise -	With the Valise equipment.
3065	" William Rankin -	I prefer the Valise	In the Valise -	In the Valise -	In the Valise on account of balance. Carter knapsack hurts my stomach and back.
59	" Charles Crookes -	I prefer the Valise	In the Valise -	In the Valise -	With Valise, because the Carter straps hurt my shoulders.
3910	" Samuel Clarke -	I prefer the Valise	In the Valise -	In the Valise -	With the Valise, as the Carter pouch hurts the small of my back.

The whole of these men state that the iron arms of the Carter knapsack injure the butts of their rifles more or less by cutting the wood, and also that they hurt their hands.

Dover, 13 January 1870.

W. G. Cameron,
Colonel Commanding 1st Battalion,
4th K. O. R. Regiment.

(A.—8273 a.—2.)

Sir,

Dover, 11 February 1870.

I HAVE the honour to report to the Major General commanding South-Eastern District, for the information of his Royal Highness the Field Marshal Commanding in Chief, that the new valise* equipment has now been in use in this battalion for 11 months, has been subjected to a most searching trial, both with the full amount of ammunition (80 rounds ball), and without, and is highly approved of by the men for the ease with which it is carried long distances, and the small impediment it is to the free action of heart and lungs.

I have myself carried it with full field-kit and 80 rounds of ball ammunition for four hours on the march, without once taking it off, or even unclasping the waist-belt, and found it far superior to any other equipment; either when marching, doubling, or running, jumping over obstacles, ascending or descending steep inclines, or firing in any position.

It seems also to satisfy every other requirement. The valise can be trodden on in crowded tents with impunity, or subjected to any other rough usage, serves as a soft pillow for the men at night, and the flap lengthened and turned down on the ground will, with the waterproof cape of greatcoat placed in continuation, protect the soldier from the damp.

If the valises are ever carried for the men, they may be tumbled into baggage waggons or strapped on baggage animals without any fear of injury.

As regards the general principles of the valise equipment and the position of the straps, I see hardly any room for improvement.

Each strap appears to have its use in distributing equally the weight over the soldier's body, or keeping the equipment in its place; so necessary, when troops are doubling or moving and scrambling over rough ground.

The ball-bag strap attached to brace-ring and the greatcoat-straps are the only ones I would dispense with.

As the result of much inquiry and many trials, I can only think of the following defects and suggestions which still deserve consideration; after the introduction of the improvements recommended in General Eyre's Fourth Report.

VALISE.

Is not easily detached, as may be sometimes desirable at a moment's notice, should the men be required to make cover with their valises in the heat of action, or carry some important position with greater ease and rapidity than if encumbered with valise and kit.

Men may also be allowed to take off their valises when halting in the neighbourhood of an enemy, but to remain otherwise fully accoutred and ready to defend themselves at any moment, and the same will apply to picquets and outposts. In fact, there are many occasions easily imagined on which it is desirable to remove the valise without the rest of the accoutrements.

This is now a long operation, as also to replace the valise when so detached, and might prove very inconvenient under fire, or when moments are of consequence.

I would therefore propose that the valise be provided with two brass rings, and that Colonel Greer's buckles on the back-straps should have brass chains attached to them, with T fastenings at the end, to be passed through the rings of valise.

These rings should be placed some inches below the top of valise, which will then fall away more from the soldier's back and give free ventilation, as is very desirable in hot weather.

The chains must be as short as possible, that the valise may be brought up close to the yoke-straps.

The bottom of the valise should have studs on either side for the straps from brace-ring to button on to.

The material of the present valise I consider good and durable, and do not think that much will be gained by making it of the more expensive material recommended in some of the reports.

The valises issued to this battalion nearly a year ago look quite new.

GREATCOAT.

As carried at present, folded on the back, it prevents the waterproof cape from being thrown over the shoulders and interferes with the rifle being securely and comfortably slung across the body, as may be necessary when climbing, escalading, or helping baggage animals over rough ground; it causes perspiration; is not protected from the wet, and involves two extra straps which may be lost on service.

I propose that the coat should be carried under flap of valise, which would remedy all these objections, and be no greater burden than at present, as I experienced personally on an eleven-mile march with the men in three hours and eighteen minutes (halts inclusive) and carrying 80 rounds.

The men have also been marched on more than one occasion with the greatcoat so carried and prefer it to the present system.

Should the men at any time be required to carry the greatcoat without the valise, which will not be often, it can be carried as in Abyssinia, over the left shoulder, pioneer fashion, but with the sleeves (only) in front of body and over the shoulder, the rest of the coat being rolled.

The coat should be a lighter one and, although not waterproof, should throw off rain better than the material used at home and in India, both of which are highly absorbent and the weight nearly double when wet.

The waterproof cape (to be used also as a sheet) I suggest should form part of the greatcoat, and be made of the same material, rendered thoroughly waterproof, and the whole not to weigh more than the present regulation greatcoat.

I think that waterproof cloth is warmer and more durable than oilskin, painted canvas, or any India-rubber preparation.

The cape, of course, is to be made detachable, and only to extend as low as the serge frock, being longer behind to cover valise.

I propose to carry the cape (rolled) either on the top of valise and under the centre strap or strapped on to the bottom of valise under all three straps.

The latter I have found far preferable.

It should be rolled so as to touch the soldier's loins slightly, and keep the bottom of valise off his back.

Placed in this way it steadies the valise, and being soft, does not press uncomfortably on the loins.

With the cape thus attached to valise, I have carried the equipment for 12½ miles with full amount of ammunition and 3½ lbs. in the canteen, and found it more comfortable than on any other trial.

The cape placed on the top of valise interferes with the blanket being carried when necessary, and tends to throw the valise rather too far back from the soldier's body.

STRAPS.

Suggested that in order to detach valise more easily the straps from brace ring to bottom of valise should be fastened to latter by means of studs (as previously explained), and that the strap from brace ring supporting ball bag may be dispensed with, as also the greatcoat straps in case the coat be carried under valise flap.

WAIST-BELT.

Is easily unclasped, but not so easily clasped again when worn with the two front pouches.

For the latter purpose the men always take off one or both pouches, very inconvenient on service, and sure to occasion frequent loss.

It is suggested that the rings or links on the waist-belt through which the brace-straps pass may be moved nearer to the clasp, and made large enough to admit also the inner loops of the pouches.

There will then (without altering their present position) be sufficient room between the pouches for clasping the belt, and they will not be pushed forward during the operation, as at present.

The waist-belt should be worn tight *without* ammunition, and loose *with* the full complement, in which latter case the weight of the valise behind is better counterbalanced in front, especially with the ball bag suspended to belt as proposed.

The straps from brace-ring attached to bottom of valise pull in the same direction as ammunition, and help to equalise the strain in front and rear.

I incline to think, with others, that the snake fastening proposed by the Committee will neither afford the same support to the ammunition, especially when the belt is loose, or look as well as the clasp fastening.

CANTEEN.

Should have no oil-skin cover, so liable to be lost on service, and which only adds to the weight and causes the canteen to ride less firmly on the straps.

The canteen itself should be provided with tin loops for the straps to pass through, as used in India.

The present pattern, I consider, is very objectionable, forms a most inconvenient excrescence under the greatcoat, and from its sharp corners and angles requires to be soldered in several places, which would soon render it unserviceable when constantly exposed to the fire.

The shape may have been the most appropriate when the canteen was carried on the top of the knapsack, and behind the head, but not so now, when a flatter one would be preferable, like two inverted saucers.

Supposing the greatcoat to be under the valise flap, the canteen should be carried on the back yoke straps two or three inches above the valise and touching the rolled waterproof cape.

POUCHES AND BALL BAG.

The only alteration I would suggest is in the ball bag, to be suspended to the waist-belt instead of the brace ring.

This not only does away with a strap, but in my opinion the full amount of ammunition is more easily carried; at least so I have found.

I certainly would never recommend soft pouches as proposed by some officers.

They will not protect the ammunition when the men are lying down under fire, or when they are themselves firing in that position and with the stomach resting on the ground, neither (with their unequal pressure) will they be as comfortable to wear under these circumstances as the present stiff pouches rounded inside to the shape of the body.

They are not the slightest impediment to a soldier when firing in any position, and might be made even a little stiffer with advantage.

As regards the objections often urged of the difficulty in opening them with sufficient ease for rapid loading, it should be recollected that the pouches only contain reserve ammunition on service, the loading being done from the ball bag, which if suspended from the belt as I propose can be always carried at field days, and the men practised at loading from it as on service.

TUNIC, OR SERGE FROCK.

I would recommend that there should be a hook on each side to support the waist-belt and ammunition instead of only on one side as at present, and also that on the frock there should be a breast pocket, well adapted to hold loose cartridges for firing.

The present pockets, with loose lining and very deep, will not answer, but I am convinced that loading can be performed more rapidly from a good breast pocket than from any pouch or ball bag; at all events it might be a useful auxiliary sometimes.

I do not mention a similar pocket for the tunic, as I presume it will never be worn in the field.

A valise and straps are forwarded with this report, altered as proposed, but only in a rough manner to illustrate what I have described.

The straps are made of brown leather, as the only material available; but, from experience at home and abroad, I am of opinion that good buff is stronger and more durable than leather, more especially in hot and dry climates, where the latter soon deteriorates, unless very well cared for.

I have tried the equipment thus altered, and found it more comfortable than with the greatcoat and canteen carried as at present, and as regards the valise, it keeps its place with the τ fastening just as steadily.

There is nothing which is more liable to injury in the altered pattern than in the present one, or, if injured, is not as easily repairable on service.

The valise being fitted with rings, can always be tied on with rope to the buckles on the cross straps, in case the chain should be broken.

I cordially concur in nearly every decision come to by General Eyre's Committee in their Fourth Report, and especially as regards the objection raised to the valise on account of the heat and perspiration on the back and loins.

The Committee might have added to their remarks on this objection that the soldier, when marching, can easily keep his hand between the bottom of valise and his back whenever he requires relief, either from the perspiration or pressure of the only part of valise which should touch the body.

I have marched for half-a-mile at a time in this way with great comfort, and without in the least checking the pace.

The men do not care much to march with the waist-belt open, even when desired to do so. The pouches interfere with the free movement of the arms, but it might be otherwise in hot weather, especially if the men wanted to throw their coats open in front.

As regards the surplus kit alluded to by the Committee, and recommended to be carried in kit bags, I do not see that the soldier requires for a two months' campaign beyond what he carries, with the exception of a blanket.

He should, on service, always have a thick flannel cholera belt round the waist; it is a preventive against cold and bowel complaints.

For nearly two months in Abyssinia the men kept the field through frost, heat, and heavy rains, with nothing but the clothing they stood in: a waterproof sheet, greatcoat, blanket, change of socks, an extra flannel shirt, soap, and a few necessary articles from the hold-all, and were very healthy.

The present field kit is quite sufficient, *without the second pair of boots*, and with the addition of a waterproof cape, blanket, and leather gaiters.

As

As the upper part of the body should be always dry in wet weather, under a waterproof cape, I do not consider a second coat necessary.

The kit bags might be kept with the remainder of soldier's kit, to be brought up to the front when there is a long halt, or the men go into quarters; but as long as they are moving, they will require nothing but what has been mentioned. An army with a large baggage train perpetually following is not likely to be very "mobile."

I would here most earnestly urge, as I have done on other occasions, that the second pair of boots may be dispensed with on service.

Boots are now made of very different quality from what they were formerly, and one pair will last two months, even with such rough usage as they had in Abyssinia. Well greased, they will kept out the wet.

Campaigns are likely to be short. Communication is easy, and supplies can be rapidly moved up. A small supply of boots might always accompany a regiment, to replace those that wear out before their time; but why permanently give the soldier 3½ lbs. extra to carry, and make the valise much more bulky than necessary?

Boots should always be tipped with iron, as it is at the toes they wear out first.

If the soldier is ever to carry a blanket in addition to his other kit, it is still more desirable to dispense with the second pair of boots; but it is to be hoped that the blankets will as a rule always be carried for him on the march, though not of course in the case of picquets proceeding from camp to their posts.

On the utter unserviceableness of the Carter knapsack, as compared with valise equipment, I have already fully reported, as also on the inadvisability (in my opinion) of soldiers carrying entrenching tools, which would seldom have to be used in such a hurry as to render them a necessary part of every man's equipment.

I still think that a couple of empty sand bags and a small hand trowel, which I recommended last year, would answer all purposes in such cases of emergency as may occur.

Should any regiment be required to carry entrenching tools, I would propose that special corps be formed of picked powerful men for the purpose, as in India and elsewhere.

A large proportion of men in ordinary infantry regiments would soon be "hors de combat," if as heavily weighted as proposed, and this would probably be still more the case in war time with the army full of very young recruits, and with no time to train and inure them.

Should it however be decided that each regiment is to carry a proportion of entrenching tools, I would recommend that two companies of picked men be formed for the purpose, to be kept in reserve when skirmishing.

I have, &c.

(signed) *W. G. Cameron,*

Col. Commanding 1/4th K. O. R. Regt.

The Brigade Major, Dover.

(43—1870.)

Sir,

Portsmouth, 1 February 1870.

WITH reference to my memorandum of the 17th ultimo, forwarding answers to certain questions on the relative merits of the Carter and valise equipment, in continuation of that paper, I have now the honour to report as follows, for the information of the Lieutenant General Commanding, with a view to ultimate transmission to the Horse Guards.

Twelve knapsacks of Colonel Carter's pattern have now been tried in the 33rd Regiment under my command for nearly two months. They have been fairly tried in every possible way, and have been carried on every duty, with ammunition varying from 20 to 90 rounds (the men with the valise equipment always carrying the same); and I am decidedly of opinion, both from my own personal observation and from frequent inquiry of the men, that the valise is the better and more serviceable equipment of the two.

Portsmouth, February 3rd, 1870.—Submitted to the Adjutant General of the Forces for the consideration of his Royal Highness the Field Marshal Commanding in Chief. Colonel Cooper's letter fully enters into and explains the merits and demerits of the "Carter" knapsacks.—Geo. Buller, Lieut. General Commanding S. W. D.

The Carter knapsack.

The Carter knapsack contains the complete kit easily, but when full the strain is so great upon the bottom board that it is very liable to break (one out of the 12 under trial did break), and the knapsack is thus rendered utterly useless.

Iron arms.

The bars in the interior of the knapsack frequently become displaced. The iron arms for the support of the pack are in my opinion objectionable. The nuts cannot be screwed sufficiently tight to confine the ends of the arms. They become loose after being in use a short time, and the arms project, when it becomes impossible for a man either to "shoulder" or "support" his rifle properly, and the iron bars moreover damage the stock of the rifle.

In any case I would suggest that the arms should be rounded off and covered.

Black pouch.

The large pouch is not sufficiently steady unless the pack is worn; when a man is doubling it bumps heavily against him.

White pouch.

This pouch is generally approved of.

Weight.

The weight of the Carter equipment is not sufficiently distributed. The straps rub the shoulders and cause discomfort, and in some cases sores, after a long march in marching order.

The Carter pack can be put together, and put on in a little shorter time than the valise.

Greatcoats.

The Carter has the great advantage over both the valise equipment and the old knapsack, of keeping the greatcoat dry when not worn.

I have, &c.

(signed) *Arthur S. Cooper,*
Lieut. Col. Commanding 33rd Regt.

The Assistant Adjutant General, &c.,
Portsmouth.

H.M. 33RD (THE DUKE OF WELLINGTON'S) REGIMENT.

QUESTIONS AND ANSWERS upon the Carter Equipment versus the Valise.

Questions.	Private Willis.	Private Palmer.	Private McKinnamoy.	Private McKelvie.	Private Bradshaw.	Private Pratt.	Lance-Corpl. Harry.	Lance-Corpl. Oughton.	Private Rogers.	Private Docker.	Private Ives.	Private Lennan.
1. Which equipment do you prefer, the valise or the Carter?	Valise	Valise	Valise	Carter	Valise	Carter	Valise	Valise	Valise	Carter	Valise	Valise
2. In which equipment have you the most freedom, the valise or the Carter?	Valise	Valise	Carter	Carter	Valise	Valise	Valise	Valise	Valise	Valise	Valise	Valise
3. In which can you shoot and walk with the greatest ease?	I cannot come to the "ready" with ease. Valise	Valise Valise	Valise Valise	Carter Carter	Valise Valise	Carter Carter	Valise Valise	Valise Valise	Valise Valise	Valise Carter	Valise Valise	Valise Valise
4. With which equipment can you most easily carry 70 rounds of ammunition?	Valise	Valise	The Carter throws the weight on the back, and strains the shoulders and the small of the back.	Carter	Valise	Carter	Valise	Valise	Valise	Carter	Valise	Valise

This paper is limited to the verbatim answers of the men, and especial care has been taken not to influence them in making their replies. I abstain from offering any opinion of my own, with a view to making a detailed report at a later date.

Arthur S. Cooper,
Lieut. Col. Commanding 33rd (D.W.) Regt.

Cambridge Barracks, Portsmouth,
17 January 1870.

(No. 121.)

Sir,

Barracks, Cork, 9 February 1870.

IN reply to your letter of the 7th instant, requesting me to furnish my own report on the comparative merits of the Carter and valise equipment issued to the regiment under my command, I have the honour to state, for the information of his Lordship the Commander of the Forces, that the Carter pack can, in my opinion, bear no comparison to the valise equipment in any way whatever, either for active service in the field or for the ordinary duties of a soldier on home service.

The valise equipment appears to me, and also from the testimony of the soldiers themselves, to afford greater ease and comfort than the Carter knapsack and accoutrements do.

When the Carter knapsack is full, and the pouch heavy with ammunition, the pouch-strap fastened to the yoke cuts or pinches the man in the neck, and would, I consider, be very irksome and wearisome to him during a long march. This large pouch is also, I am of opinion, a very serious inconvenience to the soldier when lying down upon the guard bed, from the fact of his not being able to shift it, whereas the pouches worn on the waist-belt can easily be brought round to the front of the body, thus enabling the man to lie down, when on guard, with greater ease and comfort.

The iron arms on the Carter pack are, I consider, objectionable, as, in my opinion, they are liable to be broken, and, should this take place on active service, could not easily be replaced, in which case the knapsack would be rendered perfectly unserviceable.

I would here beg to mention that one of the brass rings attached to a waist-belt belonging to this equipment broke when only seven days in wear; and also that I am of opinion that the soldier's equipment (more particularly for all active operations in the field) should have no article attached to it which could not be repaired in a rough way, such as stitching on a piece of leather by the aid of an awl and strong twine, &c., materials always at hand, and which could readily be applied to the repair of the valise equipment should an emergency occur on active service to require it.

I have, &c.

(signed) *J. H. Kirby,*

Lieut. Col. Commanding 68th L. Infantry.

To the Deputy Adjutant General,
Dublin.

68TH LIGHT INFANTRY.

CAPTAIN KAY'S COMPANY.

REPORT on the respective Merits of the VALISE EQUIPMENT and CARTER PACK.

Questions.	Names of Men who have worn both the Valise Equipment and Carter Pack, with their opinions.							
	Private W. Bant.	Private Cameron.	Private Crawley.	Private Murphy.	Private Rowley.	Private T. Watts.	Private Hall.	Corporal Smith.
Which equipment do you prefer, the valise or Carter?	Valise.	Carter.	Carter.	Valise.	Carter.	Valise.	Carter.	Valise.
In which equipment have you the most freedom, the valise or Carter?	Valise.	Carter.	Carter.	Valise.	Carter.	Valise.	Carter.	Valise.
In which can you shoot and walk with the greatest ease?	Valise.	Carter.	Carter.	Valise.	Carter.	Valise.	Carter.	Valise.
With which equipment can you most easily carry 70 rounds of ammunition?	Carter.	Carter.	Carter.	Carter.	Carter.	Carter.	Carter.	Carter.

Cork, 18 January 1870.

W. A. Kay,
Captain Commanding Company.

68th LIGHT INFANTRY.

CAPTAIN J. SPRATT'S COMPANY.

REPORT ON THE RESPECTIVE MERITS OF THE VALISE EQUIPMENT AND CARTER PACK.

QUESTIONS.	Names of Men who have worn both the Valise Equipment and Carter Pack, with their Opinions.							
	Private W. H. Thread- gold.	Private J. F. Weaver.	Private S. Wilson.	Corporal A. Stevens.	Private T. Carter.	Private J. Rhodes.	Private J. Winter.	Private M. Rogom.
1. Which equipment do you prefer, the valise or Carter?	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.
2. In which equipment have you the most freedom, the valise or Carter?	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.
3. In which can you shoot and walk with the greatest ease?	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.
4. With which equipment can you most easily carry 70 rounds of ammunition?	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.

Cork, 18 January 1870.

G. F. Marx,
Ensign Commanding Company.

68TH LIGHT INFANTRY.

CAPTAIN A. F. MARSHALL'S COMPANY.

REPORT ON THE RESPECTIVE MERITS OF THE VALISE EQUIPMENT AND CARTER PACK.

QUESTIONS.	Names of Men who have worn both the Valise Equipment and Carter Pack, with their Opinions.								
	Private J. Fitz- gerald.	Private G. Bell.	Private D. Towers.	Private W. Sant.	Private G. Green.	Private J. Roberts.	Private D. Bell.	Private W. Davies.	Private J. Milsop.
1. Which equipment do you prefer, the valise or Carter?	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.
2. In which equipment have you the most freedom, the valise or Carter?	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.
3. In which can you shoot and walk with the greatest ease?	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.
4. With which equipment can you most easily carry 70 rounds of ammunition?	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.	Valise.

Cork, 18 January 1870.

Arthur F. Marshall,
Captain Commanding Company.

(84—C--1301.)

Sir,

War Office, 12 March 1870.

WITH reference to the letter from this office of the 24th September last, notifying to you that the corps named in the margin had been selected by the Field Marshal Commanding in Chief to make a trial of your knapsack and accoutrements, I am directed by the Secretary of State for War to inform you that the reports on the trial have now been received, and that the opinions expressed are so strongly in favour of the valise equipment in preference to the knapsack and accoutrements proposed by you, that Mr. Cardwell has finally decided, with the concurrence of his Royal Highness, on the adoption of the valise equipment for Her Majesty's troops.

1273.
1st Batt. Gren. Guards.
1st " 4th Foot.
33rd Regiment.
68th Regiment.

I have, &c.

(signed) *H. K. Storks.*

Lieut. Colonel Carter,
28, Duke-street, Grosvenor Square, W.

FURTHER CORRESPONDENCE respecting COMPETITIVE TRIALS between
the VALISE and CARTER EQUIPMENTS.

28, Duke-street, Grovesnor-square, W.,

31 May 1870.

Sir,

I HAVE the honour of acknowledging the printed copy of the correspondence respecting the recent trials of the "valise" and "Carter" equipments, and beg to thank you for this favour. I have given my attention to the subject as therein revealed, and perceiving that it was first suggested at the Horse Guards that the equipment question should be closed, I have addressed myself to the Adjutant General with the view to a withdrawal of that advice, and to recommend instead further trials, on the ground of the recent trials having been flagrantly mismanaged. I have supported my assertions with comments and evidence that cannot fail, I should think, of conveying conviction. You will remember that the trials in the North were conducted unequally, and that it was owing to my investigation that that discovery was made, and so proved the trials to be worthless. A similar mismanagement has not only occurred in the recent trials (owing very much, I suppose, to the Committee having got the troops to discard the most objectionable portions of their equipment from everyday wear), but I may say even worse, for the worst principles of the valise seem to have been generally grafted on to my equipment, and thus, it has not only had its own defects (and which every soldier's equipment has more or less) to contend against, but those of the valise as well!

The "Observations" in the recent trials, the same as sent to the Adjutant General, I herewith forward for your information, and with the view also to their being duly recorded as a portion of the history of the investigation.

When a fair trial has been completed, I shall not hesitate, if the decisions be adverse to my system, to cease endeavouring to advance in England, but until that has been effected I feel sure that the Secretary of State for War would not wish me to hold back and to retire. I therefore confidently submit the question anew for consideration.

I have, &c.

(signed) *J. M. Carter,*

Lt. Col.

The Under Secretary of State for War.

28, Duke-street, Grosvenor-square, W.,

31 May 1870.

My Lord,

THE printed reports of the competitive trials on the valise and Carter equipments made in the four regiments selected I have had the honour of receiving from the War Office, and I have given my attention to their contents. It affords me a pleasure to be able to state, with reference to the selection of the regiments and the course laid down for the commanding officers to pursue, as announced in your Lordship's letter to the Under Secretary of State, dated 18th

February, that, had I been consulted, my concurrence would have been willingly given; for although a long previous training with the valise, in some regiments, gave to that plan an undue advantage, yet, as the Commander in Chief had a right to expect, from the nature of the subject submitted for elucidation, as well from clear, impartial, and explicit instructions, unbiassed and intelligent opinions, I should have been satisfied with the decision of each regiment, had his Royal Highness's views been carried out, and my printed instructions adhered to in their integrity, but as that was not done, it is not possible for me to be content.

I append some comments and evidence on the trials and reports which will, I think, sufficiently explain and reveal that the recent trials (like the former ones in the North were regimentally mismanaged, so that no progress whatever has really yet been made in the investigation; and, if I have satisfactorily demonstrated this to be the case, I humbly beg to request (since the subject was first suggested to be closed at the Horse Guards) that his Royal Highness will be pleased to recommend further trials.

The Adjutant General of the Forces,
Horse Guards.

I have, &c.
(signed) *J. M. Carter,*
Lt. Col.

A copy of the observations on the recent trials hereunto annexed will be forwarded to the War Office, with the view to their being duly recorded as a portion of the history of the investigation, and for general information.

J. M. C.

(84—C—1339.)

Sir,

War Office, 25 June 1870.

I AM directed by Mr. Secretary Cardwell to acknowledge the receipt of your letter of the 31st ultimo, and to acquaint you in reply that, as it has been decided to introduce the valise equipment into the service for infantry, he does not propose to order any further trials of other patterns of accoutrements or knapsacks.

I am, &c.
(signed) *H. K. Storks.*

Lieut. Col. Carter, 28, Duke-street,
Grosvenor-square, W.

(Clothing, 23,154—G. S.—1870—A. 10.)

Sir,

Horse Guards, S.W., 28 June 1870.

I HAVE duly received and submitted to the Field Marshal Commanding in Chief your letter, dated the 31st ultimo, with the accompanying observations on the regimental reports on the comparative merits of the valise equipment and that proposed by you, and I am directed to inform you that, as it has been finally decided to introduce the valise equipment into the infantry, his Royal Highness is not prepared to recommend that any further trials of knapsacks or accoutrements should be made.

I have, &c.
(signed) *W. Paulet, A. G.*

Lt. Col. Carter, &c. &c. &c.,
28, Duke-street, Grosvenor-square.

28, Duke-street, Grosvenor-square,
30 June 1870.

My Lord,

YOUR Lordship's letter, dated the 28th instant, reached me only last night. I confess I am greatly disappointed with the information it conveys. I trust I may, therefore, be permitted to observe thereon that, as the case now stands, a decision has been made upon trials which were, as I have, I believe, sufficiently recorded, regimentally mismanaged. If I am right in this deduction, I cannot conceive that his Royal Highness can be satisfied to allow his orders to the troops to be virtually disregarded, and that the Secretary of State for War should have had to decide an important question upon reports which are really worthless. I rest my claim for a renewed trial upon what I have advanced with respect to the recent regimental trials. My observations and evidence have not been controverted, and I believe them to be substantially unassailable. If the present position of the question is such as I have stated it to be, then it is clear that I have grounds for not being content with it, and to ask anew the favour of a reconsideration of the request made in my former letter, dated 31st May. I much regret to have to trouble you again upon the subject, but I can say this by way of apology, that had your Lordship simply forwarded the regimental reports which the Secretary of State had asked for without recommending the closing of the equipment question, I should not then have had occasion to trouble your Lordship at all personally myself thereon. I have shown in my former letter of the 31st May, what I conceive would secure proper and reliable reports, and if I have urged only what is reasonable, then I may surely rely upon obtaining the redress I seek.

It may be as well for me to remark that I lost no time in proving the defectiveness of the recent trials, and it would have been done sooner had my request to see the reports, before a decision was made, been complied with. I clearly, therefore, should not be made to suffer from any tardiness in the matter.

The Adjutant General to the Forces,
Horse Guards.

I have, &c.
(signed) *J. M. Carter*,
Lt. Col.

(Clothing 23,974—G. S.—1870—A. 10.)

Sir,

Horse Guards, S.W., 7 July 1870.

I HAVE received and laid before the Field Marshal Commanding in Chief your letter, dated the 30th ultimo, and I am directed to acquaint you in reply, that his Royal Highness, having carefully perused the reports on the experiments with your pack and accoutrements and the valise equipment, and your letter of the 31st May last, in which you object to the trials, cannot agree that the objections made by you could ever vitiate the reports which were so conclusive against your proposed equipment.

He, therefore, sees no reason to alter his recommendation to the Secretary of State for War, that the question should be considered as decided, and that no further trials should be made.

His Royal Highness fully appreciates the trouble you have taken in the matter, but as he considers the decision which has been arrived at after mature deliberations final, he cannot see the necessity of further correspondence on the subject, and requests that this letter may, therefore, be its close.

Lt. Col. Carter, &c. &c. &c.,
28, Duke-street, Grosvenor-square.

I have, &c.
(signed) *W. Paulet*, A. G.

Infantry Equipment.

28, Duke-street, Grosvenor-square, W.

7 July 1870.

Sir,

YOUR letter of the 25th June (84—C—1339) conveyed to me the same information I have since received from the Adjutant General, and I infer therefrom that the decision come to by the Secretary of State for War on the equipment question has been made consequent upon the Field Marshal Commanding in Chief having declined to alter the advice he tendered in the Adjutant General's letter, dated 18th February. I have consequently appealed once more to his Royal Highness to re-consider the request I made to him, and I have done so on the ground of the recent trial having been unfair and misconducted, the consequence of which was, reports were forwarded to the Secretary of State for War upon which no reliance ought to have been placed. This being as I believe and have proved, the actual state of the case, I trust that the Secretary of State for War will not object to his Royal Highness furnishing other reports such as will enable him to decide, without any misgiving and doubt, a very important question.

I have, &c.

The Under Secretary of State for War,
War Office.

(signed) *J. M. Carter*,
Lt. Col.

Infantry Equipment.

28, Duke-street, Grosvenor-square, W.,

18 July 1870.

Sir,

SINCE I last addressed you (7th July), on the subject of the infantry equipment question, I have been informed by the Adjutant General, in reply to my appeal to his Royal Highness the Field Marshal Commanding in Chief to withdraw his advice to you, as conveyed in Horse Guards' letter, dated 18th February, that he sees no reason for altering that recommendation. As the evidence I possess, and mainly from the commanding officers themselves, so clearly establishes the unfairness of the recent trials, quite sufficient to provoke hostile opinions of my equipment, and too favourable views of the valise plan, it is not possible for me to be contented with them, and as I only wish to have the question satisfactorily solved, I beg the favour of being allowed the opportunity of personally submitting this evidence, to show that the Secretary of State for War himself should not be satisfied with the reports which have been submitted to him. This course, however, I only request in case the Secretary of State for War cannot well proceed in granting a new trial without further explanation than that already given.

I have, &c.

The Under Secretary of State for War,
War Office.

(signed) *J. M. Carter*,
Lt. Col.

(84—C.—1350.)

Sir,

War Office, 26 July 1870.

IN reply to your letter of the 18th instant, I am directed to acquaint you that Mr. Secretary Cardwell has again considered the objections raised by you with regard to the recent trials of your equipment, and sees no reason for the decision conveyed to you in War Office letter of 25th June last being departed from; and I am at the same time desired to request that further correspondence on the subject may now cease.

I am, &c.

Lieut. Colonel Carter,
28, Duke-street, Grosvenor-square, W.

(signed) *Northbrook*.

Infantry Equipment.

28, Dukstreet, Grosvenor-square, W.

My Lord,

29 July 1870.

HAD your Lordship's letter of the 26th instant been really a "reply" to mine of the 18th, I should certainly have abstained from writing again to the War Office on the infantry equipment question in accordance with your request. I suppose I may infer from your Lordship's letter that my offer to submit personally the evidence I possess, and mainly from the commanding officers themselves, as I mentioned, is therein declined; but as this is only an inference, and which under the circumstances I think I ought to have no right to make, I must claim the privilege of pointing out to your Lordship that my letter of the 18th instant has not yet been answered.

I have, &c.

The Under Secretary of State for War,
War Office.

(signed) *J. M. Carter*,
Lt. Col.

OBSERVATIONS ON THE REGIMENTAL REPORTS ON THE VALISE AND CARTER EQUIPMENTS.

1st Battalion Grenadier Guards.—The number of rounds of ammunition regarded as sufficient by the Horse Guards to test the merits of the two systems was 70. The number actually carried by the Guards with the Carter was 80. Why the Horse Guards number was exceeded I cannot say, and the reason to justify that excess does not appear in the report; but as the valise system was never in the Guards similarly tested, the competition was in this respect unequal; and as the larger number rendered necessary the wearing of a front pouch, which the men of the Guards are not accustomed to and dislike, and is contrary to the principles I advocate, no greater mistake could well have been made. As, moreover, so I was informed, 80 rounds were constantly in the two pouches, it cannot be a matter of surprise that the men should have petitioned to be relieved from carrying the equipment. To justify such a request every conceivable objection would be raised, and thus the commanding officer would receive the most unfavourable impression. On the other hand it is said, "the men who wore the valise were unanimous in their regrets at parting from it." No doubt they were, when they never once wore the valise plan complete at any drill or any firing parade, only on the line of march when the three pouches can be worn with the least inconvenience. The unfairness of the trials was so apparent to Colonel Ponsonby, on my pointing out the foregoing and other particulars, that he immediately applied for permission to have another trial.

The objections made to my pack in Colonel Ponsonby's report being mostly *ideal*, I may here pass them by, only remarking that it is only the inexperienced who imagine the iron arms are liable to break, for the 92nd Regiment, the longer the pack is worn, deny the assertion and other similar ones all the stronger.

Colonel Ponsonby regards a bag as preferable to a framed knapsack. Were the frame of my knapsack withdrawn, except the bottom board, and which it could be, Colonel Ponsonby would then have a soft pack, but then packing could not be so quickly and easily performed, and men studying appearance, which the Guards and all soldiers do, would soon re-introduce frames.

When Colonel Ponsonby declares that the objection raised to the *position* of the front pouches of the valise equipment is untenable, his answer, "Since they can be moved along the waist-belt," really proves the correctness of the charge; for (1), the pouches could not be moved (never an easy operation) when the soldier is fully equipped; and (2), at no time ought their removal to be a necessity. If pouches require to be moved, their ordinary *position* clearly must, at times, be objectionable. As stress was laid upon the Guards' report, I would therefore repeat

that the valise equipment never was perfectly tried; that the Carter equipment was tried improperly, and that as the valise equipment was not in possession at the same time as the Carter equipment was worn, a competitive trial upon equal terms between the two was not practicable. As each of these statements is capable of easy proof, the correct opinion of the Guards has yet to be obtained.

1st Battalion 4th Foot.—"The officers," it is announced in the Adjutant General's letter to the Under Secretary of State, "were specially desired to endeavour to obtain the exact and unbiassed views of the men." By Colonel Cameron wearing the Carter equipment publicly at the head of the regiment, this instruction, since the men would be inevitably biassed to his views, whatever they might be, became impracticable. A subordinate officer acting publicly as a private soldier (and which was done) was, with such instructions, most indiscreet, but when a commanding officer assumed so remarkable a position, however much his zeal may be applauded, the trial as enjoined by the Commander in Chief was thereby completely frustrated. No soldier appearing in the orderly room to give an opinion could, except under the greatest difficulty, speak contrary to the views formed and expressed by his commanding officer; and the commanding officer's views would have been as well known in every barrack room as they were, no doubt, in the orderly office.

Colonel Cameron, too, not only as commanding officer, and as one comparatively inexperienced in carrying a load, should have abstained from all public interference, but as an inventor (which his long report on the valise reveals him to be) he was likewise disqualified. It must have been his zeal as an inventor that caused the impolitic course he took, and so intent was he to put forward his own views, rather than the men's, that they were dispatched three days before their opinions, as required by the Adjutant General's letter, were recorded.

The condition upon which I entered upon this difficult investigation, was by an appeal to the men, and although there are objections even here, they are not removed by officers taking their place. I respectfully submit, however, that the Horse Guards' instructions for the officers to endeavour to obtain the exact and unbiassed opinions of the men were not carried out in the 1st Battalion, 4th, under Colonel Cameron.

Though the foregoing observations are, I conceive, sufficient to prevent any weight being attached to the report sent in by the 1st Battalion, 4th, it may be desirable that I should make the following remarks:--

1. Though only in temporary command, Colonel Cameron allowed the trial to last only a short time. Had the pack been so treated by the 92nd, the satisfaction it has given that regiment would never have been known as it now is.

As the pack is the same size as that which has been used in the British service from time immemorial, Colonel Cameron's first objection that it takes up too much room is equivalent to saying the objection of the old pack as to size still remains; but then I have made no proposition as the Committee have done, and Colonel Cameron does, for reducing the kit.

His second objection would diminish by use. Buff straps when new are stiff, but they soon adapt themselves to the shape, and then they would not prevent a steady retention of the butt of the rifle at the shoulder, whilst they shield it from the recoil.

His third objection I regard as hypercritical. From the man's stomach being free from excrescences he has, when lying down to fire, power to rest upon his left elbow, and weight facilitates good shooting.

The fourth objection is similar to the first. The men are not so close now as they formerly were, and "crowded" files could always be remedied by the supernumerary rank directing a file or two to drop to the rear.

The objections under "5thly" are also hypercritical, as the 92nd regiment would no doubt testify.

As

As my equipment possesses the following palpable advantages over the valise, which every *soldier* cannot but appreciate, it is not easy to account for Colonel Cameron, c.B., omitting all notice of them.

Fewer straps and less complicated to put on.

The knapsack sooner packed, and can be put on and thrown off quickly by the soldier himself. He is thus independent.

Throwing away the pack does not necessitate the throwing away of any ammunition.

Pouch behind and out of the way. Nothing in front to interfere with the effective handling of the rifle.

One pouch only to care for in the field in place of three.

The waist-belt can be unfastened on the march, and the tunic unbuttoned, which, although put forward as an advantage in the valise plan, is not resorted to by the men wearing it; the pouches, according to Colonel Cameron's report, seem to prevent it. Thus will all the boasted advantages of the valise, one by one, be found out as impracticable, through these front pouches. That they have not been fully discovered, is owing to the men not wearing them.

Greatcoat under cover, thus securing a dry change after a march.

33rd (Duke of Wellington's).—Colonel Cooper being evidently impartial, only required a longer acquaintance with my equipment to remove his objections; and this I say because there is really not one that he has stated that ought to have been advanced, inasmuch as they are either purely ideal, or ought not to have occurred. For instance, when Colonel Cooper says "the large pouch is not sufficiently steady unless the pack is worn; when a man is doubling it bumps heavily against him;" I answer, had the pouch been raised up to the waist-belt, and not worn as the old pouch was, low down, there would have been no bumping. And the assertion that the breaking of the bottom board of the pack renders the pack useless, is a mistake, as the splitting of the wood does not affect the brass plates.

Colonel Cooper is the only one who has remarked that my equipment takes a man a shorter time to get ready for parade. This observation proves its greater simplicity. Colonel Cooper is also the only one who has directed attention to the "great advantage of keeping the greatcoat dry when not worn," even though he does not observe, as Colonel Cameron does of the present greatcoat, that it is so highly absorbent that the weight is nearly double when wet.

Owing to the Committee's instructions for wearing their equipment different during peace than war, the trial in this regiment has been unequal.

68th Light Infantry.—As the men of Captain Kay's company generally preferred my equipment, while the two other companies universally approved of the valise, this singular coincidence merited, I think, some explanation from Colonel Kirby.

The objections stated by Colonel Kirby are mostly such as are made by every one who is not well acquainted with my equipment. As they have been remarked upon before, they require no further comment here; but there is one objection mentioned by him which others have not noticed, and it is that he is of opinion the large pouch is a very serious inconvenience to the soldier, from the fact of his not being able to shift it so as to enable him to lie down (on his back, I suppose, is meant) when on guard. My answer to this is, that as the black pouch was not expected to be used for guards, the hook which I attach to the strap, and which enables the man to bring the pouch to the side, I did not introduce. With the set sent to Prussia, this provision was made.

It is now, I think, only requisite for me to add the following particulars:—

I have communicated with each of the four regiments, and the commanding officers of all, except the 68th, have favoured me with answers to several questions I submitted to them, with the view of finding out whether the principles

of the two systems had been properly and fairly tried, and which, from the reports made, I felt sure had not been done. The answers I have received have confirmed the accuracy of my apprehensions.

By reference to page 10 of the report, it can be seen that in my printed instructions sent to each regiment, I distinctly announced that "at reviews and all firing parades, when the black pouch is worn, the buff pouch should be left in barracks, it not being required as an expense-pouch." I found in the Guards the buff pouch was always worn with the black pouch; in the 4th, Colonel Wilby writes, "in route-marching, and for comparison with the valise equipment, it was worn, as a rule, with black pouch;" and Colonel Cooper writes, "always in marching out."

While the men have been overburdened with my equipment, they have been under-burdened with the valise plan, for the Guards have never worn at any ordinary parade the three pouches of the valise plan, and they have never fired with them. The fourth have only used them. Colonel Wilby writes "as a trial, not as a rule," and the 33rd apparently never even saw them on a parade, as Colonel Cooper writes, in answer to any inquiry, "the three are not worn except on service."

Again, the Horse Guards' questions limited the amount of ammunition to 70 rounds, and had this number been adhered to in the trials there would have been no necessity to torment and irritate the men when wearing my equipment with a 20-round pouch in front, as both Colonel Wilby and Colonel Cooper inform me my large pouch carried 70. The Guards carried 80, the 4th, 80, the 33rd, 90 rounds, thus necessitating the wearing of a front pouch, which is really in opposition to the principles I have always strenuously upheld. My system is, and my pamphlet, sent to each regiment, explained the point fully, ammunition all behind as a rule and out of the way, whilst the valise system is really all in front. Exceptionally, and along a road, I did not object to a front pouch being worn, so that the possibility of carrying 90 rounds could be seen, but as a rule 70, for the reasons stated, should have been the limit. This number, too, is really 10 more than the valise plan legitimately permits, for the three valise pouches carry but 60, all over that number having to be placed in the valise, which is not, as must be admitted, a suitable place for ammunition; but, however this may be, I have, I believe, sufficiently shown that the recent trials have been singularly defective, and that in consequence I am justly entitled to another trial. That the necessity has arisen cannot, I hope, be thought attributable to me. As 50 of my equipments are in store, it would cost nothing to have another trial, and a competitive trial upon equal terms would not now, after the experience obtained, be of difficult arrangement. To effect this I conceive that,—

1. The two equipments should be sent in equal numbers to regiments now wearing the old knapsack, &c.

2. That the valise and the three pouches (not necessarily always full) should be worn at drill and at firing parades as on service, and not limited to an occasional march along a road.

3. That as 60 rounds can only be carried in the pouches of the valise, no greater quantity should be carried in the black pouch of the Carter, except to show its superiority.

4. That the trial should last for four months, every man selected having two months for each equipment.

(signed) *J. M. Carter,*
Lieut. Col.

That the fullest information may be gleaned *from the men*, I would suggest that the following questions be put to each soldier in a printed form, and his answer recorded. I am inclined to think, also, that these questions should be given to each soldier when the equipments are issued for trial, that he may see the exact inquiries that will be made at its termination. Some of the questions require more consideration than could be given at a hurried examination.

Form.

Form.—The following questions will be asked the men trying the valise and Carter equipments at the termination of the trial, viz., in four months' time:—

Answers.

1. Which equipment* takes you the least time for getting ready for parade, the valise or the Carter?
2. In which equipment* can you, in the ranks, best go through the manual exercise?
3. Ditto - - ditto - - platoon exercise? - - -
4. In which equipment* can you load the quickest? - - -
5. In which equipment* can you shoot the best standing? - -
6. Ditto - - - - ditto - - - - kneeling? - -
7. Ditto - - - - ditto - - - - lying down? - -
8. In which equipment* can you manœuvre best in? - -
9. Which equipment* do you prefer on the march? - - -
10. In which equipment* have you the most freedom? - -
11. Which accoutrements do you prefer for carrying 60 rounds of service ammunition?
12. Which system do you prefer for the ammunition? If all in front, insert "Valise;" if all behind, insert "Carter"?
13. Can you remove the valise by itself, and without assistance? -
14. Ditto - - - - pack - - - - ditto? - - -
15. Which method for carrying the greatcoat do you prefer? -
16. Which pouch do you prefer for guard, the black 20-round of the valise, or the white 20-round of the Carter?
17. Which waist-belt do you prefer? - - - -
18. Which frog for bayonet scabbard? - - - -
19. Taking your duties all the year round, which equipment* would you prefer to have during peace?
20. Which equipment* would you prefer on service and in camp?

* In the valise plan, to refer to the valise, three pouches, and the canteen; in the Carter, to the knapsack, black pouch, and canteen.

If 12 packs are sent to a regiment, then 24 men could be selected for the trials, 12 men wearing one plan, and 12 the other; at the end of two months to change.

The regimental tabular form might be as under, and printed.

_____ Regiment.
 Captain _____'s Company.

REPORT on the respective Merits of the Valise and Carter Equipments.

Questions.	Names of Men who have worn both the Valise and Carter Equipments two Months each, with their Opinions.							
	Name.							
1 to 20, as above, or above, or any other number that may be given.	Opinion.							

24 columns, to be ruled on half-sheet foolscap, lengthways.

COPIES of the REPORTS made by Major General Eyre's COMMITTEE ON INFANTRY EQUIPMENT to the Secretary of State for War; of the CORRESPONDENCE that has taken place between the Committee and Lieutenant Colonel Carter; and, of the CORRESPONDENCE at the Horse Guards and War Office, which refers to the Equipment proposed by Lieutenant Colonel Carter.

(Mr. Gourley.)

Ordered, by The House of Commons, to be Printed, 6 March 1871.

[Price 3s. 4d.]

A large, mostly empty table with multiple columns and rows, possibly a ledger or inventory list. The text within the table is faint and illegible. There is a vertical label on the left side of the table, possibly 'Particulars', and some faint text at the top of the table area.