

" FROM ENGLAND.

No.	Detail.	Probable Cost.	Remarks.	Stores and material from England.
350 miles.	No. 16 copper wire weighing about 60 lbs. per mile.	£ 1,000	Conductivity 85 per cent. of pure copper, must be ordered from Messrs. Bolton, Birmingham.	
500 lbs.	No. 8 iron wire for stays	10		
4,000	Insulators	500	2,000 of one pattern, 2,000 of another.	
50 miles.	Hooper's core 3 strand at 45 <i>l</i> . including drums, &c.	2,250	To be securely packed on drums, none to weigh more than 140 lbs., length to be marked thereon.	
8	Siemens and Halske's portable recording instruments with batteries and stores complete.	400	For semi-permanent line.	
12	Smaller instruments for flying lines complete.	300	Further details hereafter.	
	Portable tables, pigeon holes, stationery, camp stools, and other office requisites.	200	To be expended in communication with the Stores Department at the discretion of the officer preparing the equipment in England.	
	Tools, such as axes, saws, hammers, crowbars, rammers, rope, jointing, tools, &c.	100	Do. do.	
5	Small tents with fittings	100	For officers of flying lines to be procured in London.	
	Total probable amount of expenditure in England ..	£4,860		

" Stores and materials for Signal Corps according to Colonel Simmonds' recommendation :—

" Detail of the Number of Mules that will probably be required.

" For flying lines	50	
" For semi-permanent lines		
" Carriage of copper wire	70	
" Ditto insulators	13	
" Tools, instruments, batteries, &c.	7	
" Office tents, &c.	10	
" Total	150	Number of mules required.

" For carriage of 10,000 bamboos it is impossible to give the details here. Arrangements must be made on the spot to reduce the requisite carriage to a minimum. Much would depend on the state of the country, and I need only remark, that unless wood is everywhere to be found on the line of march, some supports *must* be provided, and nothing lighter than bamboos can possibly be devised. Carriage would also have to be provided for the flashing light apparatus, &c.; and I would beg most respectfully to remark that the employment of camels or bullocks, in lieu of mules, for any part of the Telegraph Train, would in my opinion go far to diminish the efficiency of the equipment.

" In conclusion I would observe that if my proposals meet with the approval of the Right Honourable the Secretary of State for India in Council, I would undertake, in

Lieutenant
St. John
recom-
mended to
proceed in
charge.

"communication with the Director-General of Stores, to arrange for the supply of all the material to be purchased in England within a month after receiving my orders. Great activity and constant attention will be required to effect this, and I would most earnestly beg that the services of Lieutenant St. John, R.E., now on leave in England, may be placed at my disposal until everything has been shipped. Lieutenant St. John's three months' privilege leave expires a week hence, but I have Colonel Goldsmid's permission to state that he could be spared from his duties in Persia for this important work. Lieutenant St. John has been constantly engaged, during the past four years, on the telegraph between Teheran and Bushire. He has shown himself to be an officer of the greatest zeal and capacity, and his practical knowledge of all the minutest details of such work as that now under consideration will be of the greatest help to me. I would further suggest that Lieutenant St. John be sent out from England in charge of the various stores, and I am sure that were he appointed for telegraph duty with the Force in Abyssinia, his recent experiences in a country not entirely dissimilar will prove very useful.

"With reference to the selection of officers and men from Chatham for service with the Field Telegraph Train, I would venture to urge that a letter be written without delay to the Horse Guards, desiring that steps should be taken to prepare Colonel Simmons for the probable call upon the resources of the Royal Engineer Establishment.

"The Government of Bombay will of course be informed of the measures decided on here, and will be prepared to carry out their part of whatever plan may be adopted."

10,000
bamboos
applied for
from Bom-
bay.

The Secretary of State for India informed the Governor of Bombay on September 10th, that the stores which were required from Bombay would be only 10,000 strong bamboos, 18 feet long, of the kind used for scaffolding, and that all other stores would be provided within a month from England.

Number
obtained.

Of the bamboos, 5,799 were received in Bombay by the 3rd February, 1868; of these, 4,920 were despatched to Abyssinia between the 25th December, 1867, and the 20th January, 1868, and the remainder, 879, were rejected as unfit for telegraph posts.

On the 18th of September, Major Champain submitted the following revised estimate of the stores required, with details of tools, &c. This provided for 50 miles of light homogeneous iron wire, for short lines, run up along the coast, or for reserve material for semi-permanent line.

Revised
Statement
of stores
required
for field
telegraph,
and their
probable
cost.

TABULAR Statement of Stores for the Equipment of the Field Telegraph Train.

Amount.	Specification.	From whom to be obtained.	Estimate of probable Cost.	Per	Probable Total Cost.
			£ s. d.		£ s. d.
50 miles.	Hooper's core, 20 in diameter, consisting of three strands of copper wire, of not less than 85 conductivity, covered with india-rubber, &c., including drums and packing.	Messrs. Hooper, 7, Pall Mall East.	45 0 0	mile.	2,250 0 0
	Add three per cent. on the above, payable to Mr. Latimer Clark for testing the said core.		..	..	67 10 0
350 miles, at 64 lbs. per mile = 22,400 lbs. 175	No. 16 W. G. copper wire of 18° standard, including joining in lengths of two miles and winding.	Messrs. Thomas Bolton & Sons, Broad Street, Birmingham.	0 1 2	lb.	1,306 13 4
	Drums for winding the same		1 0 0	each	175 0 0

Statement of Field Telegraph Stores—*continued.*

Amount. Number.	Specification.	From whom to be obtained.	Estimate of probable Cost.	Per	Probable Total Cost.
			£ s. d.		£ s. d.
4 cwt.	Iron wire, No. 8 gauge, in lengths of 30 feet, for stays.	Messrs. Siemens Brothers, Great George Street, West- minster.	2 0 0	cwt.	8 0 0
2,000	Insulators, each consisting of a cast-iron top, china insulator, and wrought-iron support, two hoop-iron bands, and 10 nails, packed in strong deal cases of 200 each, with compartment containing the following tools, viz., 2 hammers, 2 files, 2 pair cutting nippers, 2 gimblets, and 12 sheets emery paper.	" "	0 2 6	each	250 0 0
2,000	Insulators, each consisting of one wrought-iron spike, one china insulator, with hook above and below, packed as above with similar tools.	" "	0 2 6	"	250 0 0
8	Portable recording relay instruments, in cases complete.	" "	32 0 0	"	256 0 0
12	Portable recording field instruments, in cases complete.	" "	25 0 0	"	300 0 0
12	Cases, each containing 12 "Marie Davy's" elements for field instruments.	" "	0 15 0	cell	108 0 0
8	Cases each containing 24 ditto, ditto, for relay instruments.	" "	0 15 0	"	144 0 0
12	Portable cases, each containing one copper earth-plate, with connecting wires, on set of assorted repairing tools, 50 yards covered wire for connexions, six bottles of printing ink, 25 discs Morse paper.	" "	8 0 0	"	96 0 0
4	Cases, each containing one set of repairing instruments, one copper earth plate, 100 yards covered wire for connexions, 100 discs Morse paper, 12 bottles of printing ink.	" "	10 0 0	"	40 0 0
4	Magnetic field instruments, in cases complete.	Mr. Henley, 27, Leadenhall Street.	26 10 0	"	106 0 0
8	Cases, each containing eight large size "Marie Davy's" elements for local batteries.	Messrs. Siemens Brothers, Great George Street, West- minster.	3 0 0	case	24 0 0
2	Galvanometers, in portable cases, complete for testing purposes.	" "	8 0 0	each	16 0 0
100 lbs.	Pro-sulphate of mercury, packed in hermetically sealed tins of 5 lbs. each.	" "	0 4 0	lb.	20 0 0
500 discs	Morse paper, for relay instruments	" "	0 0 8½	each	17 14 2
500 disc	Morse paper, for field instruments	" "	0 0 8½	"	17 14 2
4	Lightning dischargers, with, each, two line plates	" "	1 15 0	"	7 0 0
100	Connecting screws	" "	0 0 10	"	4 3 4
72	Bottles of ink for instruments	" "	0 1 6	"	5 4 0
3 sets	Iron blocks and tackles, with 100 yards spare rope.	" "	1 10 0	"	4 10 0
50	Bill-hooks, in leather cases, for clearing thorns, &c.	" "	0 10 0	"	25 0 0
10	American axes, ditto, ditto	" "	0 10 0	"	5 0 0
20	Spare handles for the same.. ..	" "	0 1 0	"	1 0 0
6	Earth borers, 3¼ inches diameter	" "	0 12 6	"	3 15 0
12	Earth scoops	" "	0 2 6	"	1 10 0
12	Hooks for fixing wire insulators	" "	0 5 0	"	3 0 0
56	Whistles	" "	0 2 0	"	5 12 0
25	Clasp knives, with lanyards	" "	0 5 0	"	6 5 0
6	Turnscrews	" "	0 2 6	"	0 15 0
12	Despatch bags, with straps	" "	1 0 0	"	12 0 0
12	Two-wheeled barrows, for paying out and picking up wire, with tool box and grease pot attached.	" "	12 0 0	"	144 0 0

Statement of Field Telegraph Stores—*continued.*

Amount.	Specification.	From whom to be obtained.	Estimate of probable Cost.	Per	Probable Total Cost.
			£ s. d.		£ s. d.
100	Matheson's ebonite connectors	Silver & Co., 67, Cornhill ..	0 4 0	each	20 0 0
6	Portable bivouac tents	" "	6 0 0	"	36 0 0
6	Tables for the same	" "	2 0 0	"	12 0 0
12	Camp stools for the same	" "	0 12 6	"	7 10 0
6	India-rubber water bags	" "	1 0 0	"	6 0 0
20	Globe lamps, at 14s.	" "	27 0 0		
50	Pair stout hedger's gloves, at 1s. 4d.	" "	3 6 8		10 6 8
50 miles	Galvanized homogeneous iron wire, 16 B. W. G., in coils of 135 lbs. each, packed in sacking.	W. T. Henley, 27, Leadenhall Street.	1 10 0	mile	75 0 0
	Assortment of stationery and printed forms (packing included). Details sent to Store Department.	Waterlow & Sons, Parliament Street.	..	..	55 0 0
1	India-rubber portable boat, 10 feet long, packed.	Mathews & Son, 58, Charing Cross.	..	..	25 0 0
6	Pocket compasses	Elliott Brothers, 449, Strand.	0 5 0	each	1 10 0
4	Field glasses, in cases, complete	" "	3 3 0	"	12 12 0
6	Portable clocks	Benson, 60, Ludgate Hill ..	3 0 0	"	18 0 0
		Total probable cost ..	..	..	5960 4 8

Five hundred $\frac{1}{4}$ -lb. rockets, with sticks, and 50 portfires, packed in boxes, not exceeding 100 lbs. weight, were also provided to accompany the field telegraph and equipment.

The weights of the stores for the telegraph were settled by the following letter from Major Champain to the Under Secretary of State for India :—

Arrange-
ments for
weights of
packages.

" I have the honour to acknowledge the receipt of the letter of the 20th instant from the Military Secretary. It refers to the weight of packages of telegraph stores which are now being prepared for Abyssinia.

" In my letter of the 3rd instant, I suggested that the drums, &c., which are each to form half the load of a mule, should not exceed 140 lbs. in weight; and, when issuing orders to the manufacturers, I reduced this standard to 135 lbs.

" My reasons for naming this as the proper half load of a mule were derived from the experience of myself and of my officers during the past four or five years, while constructing the telegraph in Persia.

" Many thousand mule-loads of wire and insulators have been sent up the country from Bushire, and distributed along a distance of 1,200 miles, and in every case 300 lbs. was considered the fair burden for one animal.

" At least this weight, in addition to the pack-saddle, is regularly carried by a Persian mule, over passes probably as difficult as any in the world, at a rate of from 15 to 20 miles a day.

" To load a mule too lightly is undoubtedly a mistake. He is likely to give trouble on the march, and trots down steep inclines, thereby shaking and disarranging his burden. But a more serious objection is that, by diminishing the load, the number of baggage animals is increased, and in this particular instance the trouble and time

"requisite to join up lengths of wire would be exactly doubled by adopting 80 lbs. instead of 140 lbs. as the standard half load.*

"Although I am sure that with ordinary mules (carrying common pack-saddles) 280 lbs. would not be too heavy, yet I am so anxious that the trouble of re-arranging weights after landing the stores should not be risked, that I venture to propose that I may be authorized to communicate with the manufacturers of core and wire, and to request them to reduce the drums to 120 lbs.

"Other packages might at the same time be brought down to 100 lbs."

Before it was known in India that the telegraphic apparatus would be supplied from England, some preliminary preparations were made by the Director-General of Telegraphs. The following wire could have been supplied from Calcutta :—

Wire available from Calcutta.

7 miles, weighing 400 lbs. per mile,			
446	"	"	320 " "
618	"	"	160 " "

As the insulators in store were not suitable for military operations on account of their great weight, and the size of the collars of the brackets used for them, insulators were indented for on England.

As the telegraphic arrangements, however, were made in England, a very small establishment was required from India, and one Engineer officer and 12 signallers only were asked for from Bombay to make the line complete for a distance of 450 miles. As no Engineer officer was available, an Assistant-Superintendent of Telegraphs, Mr. Browne, was sent. Signallers were engaged and received a free outfit of warm clothes. They were supplied with office servants, and were to receive free rations and an allowance of 15 rupees a-month each, in addition to their ordinary pay and allowances; the outfit given to each was:—1 cap, 1 cloth coat, 1 serge ditto, 1 cloth pair of trousers, 1 serge ditto, 2 flannel shirts, 2 pair ammunition boots, 1 great coat, 2 blankets, and 1 waterproof sheet.

Assistant-Superintendent and 12 signallers sent from Bombay. Terms on which signallers were sent. Outfit.

Mr. Browne's pay was 400 rupees a-month, and according to the rules of the Department he was entitled to a travelling allowance of 5 rupees a-day in addition from the time he landed.

Assistant-Superintendent's pay.

As the line was extended in Abyssinia more signallers were required, and on the 1st February an additional Assistant-Superintendent, Mr. Hervey, and six signallers were sent on similar terms.

An additional Assistant-Superintendent and 6 signallers sent.

Besides these signallers, four European Sapper non-commissioned officers from the Engineering College at Roorkee, were ordered to Abyssinia, to aid in the construction and maintenance of the line. Although these men were applied for in September, yet owing to some complication between the Military and Foreign Departments, they did not arrive in Annesley till the 6th of February, the day on which the telegraph line was completed to Senafé. No working parties for the construction of the telegraph were sent from India. These were furnished in Abyssinia by detachments of troops.

* Taking 20 lbs. as the weight of the naked drum, in the former case 60 lbs. of wire would be carried, in the latter 120 lbs.

ARMY SIGNALS.

Army
signallers.

A requisition was sent from Bombay on the 3rd September, 1867, for a body of signallers to be sent to Abyssinia, trained to the new system of army signals, under a subaltern, with telescopes, codes, and signalling apparatus.

Signal
establish-
ment.

A Lieutenant of Royal Engineers, with one serjeant, and nine rank and file of the Royal Engineer Train were accordingly selected as army signallers, and put through a course of training at the Royal Engineer Establishment, at Chatham.

Signal
apparatus
and cost.

The following was the signal apparatus sent to Abyssinia with its cost, as supplied by Messrs. Nunn & Co., Saint George-street, London Docks:—

No. 1.—Ship and Shore.

	£	s.	d.
2 shutter apparatus 8-mile range, 36 feet area, complete with guys and pickets	54	10	6
4 cones, large size, complete, with halyards	29	10	0
2 30-inch telescopes, at 6 <i>l.</i> 6 <i>s.</i>	12	12	0
3 pairs field glasses, at 2 <i>l.</i> 2 <i>s.</i>	6	6	0
4 Chatham lights, at 10 <i>l.</i>	40	0	0
4 oil cases, at 12 <i>s.</i>	2	8	0
4 spirit cases, at 12 <i>s.</i>	2	8	0
4 Chatham powder flasks, at 13 <i>s.</i>	2	12	0
4 hand lamps, at 30 <i>s.</i>	6	0	0
4 cases matches, at 2 <i>s.</i> 6 <i>d.</i>	0	10	0
4 cases of wicks and scissors, at 8 <i>s.</i>	1	12	0
4 cases, packing, &c.	5	12	0

No. 2.—10 Chief Stations.

10 Chatham lights, 5 to 14, at 10 <i>l.</i>	100	0	0
10 foghorns and spare tongues, at 17 <i>s.</i> 6 <i>d.</i>	8	15	0
30 flags, at 10 <i>s.</i>	15	0	0
10 spirit cases, at 12 <i>s.</i>	6	0	0
10 oil cases, at 12 <i>s.</i>	6	0	0
10 Chatham powder flasks, at 13 <i>s.</i>	6	10	0
10 hand lamps, at 30 <i>s.</i>	15	0	0
10 pairs field glasses, at 2 <i>l.</i> 2 <i>s.</i>	21	0	0
10 portable offices, at 1 <i>l.</i> 13 <i>s.</i>	16	10	0
10 packs, with straps, yokes, and waist belts, complete, at 1 <i>l.</i> 12 <i>s.</i>	16	0	0
10 ditto ditto ditto ditto at 1 <i>l.</i> 13 <i>s.</i>	16	10	0
10 sets of poles, cases, and straps, complete, at 17 <i>s.</i>	8	10	0
10 cases of wicks and scissors, at 8 <i>s.</i>	4	0	0
10 cases of matches, at 2 <i>s.</i> 6 <i>d.</i>	1	5	0
10 tomahawks and leather cases for ditto, at 8 <i>s.</i>	4	0	0

No. 3.—10 Store Stations.

10 5-gallon spout cases, at 28 <i>s.</i>	14	0	0
10 Chatham powder cases, at 14 <i>s.</i>	7	0	0
10 cotton tents, at 47 <i>s.</i> 6 <i>d.</i>	23	15	0
10 water decks, at 35 <i>s.</i>	17	10	0
20 saddle bags, at 3 <i>s.</i> 6 <i>d.</i>	3	10	0
10 kitcheners, at 23 <i>s.</i>	11	10	0
10 stationery cases, at 10 <i>s.</i> 6 <i>d.</i>	5	5	0
60 spare tongues for foghorns, at 3 <i>s.</i> 6 <i>d.</i>	10	10	0
10 sets selected tinman's tools, at 3 <i>l.</i> 10 <i>s.</i>	35	0	0
10 2-gallon oil cases, at 8 <i>s.</i> 6 <i>d.</i>	4	5	0
10 pairs panniers, with handles, at 3 <i>l.</i>	30	0	0
8 cases packing, &c.	11	4	0

No. 4.—50 Small Equipments.

	£	s.	d.
50 hand lamps, at 30s.	75	0	0
50 foghorns, at 14s.	35	0	0
50 bandrols, with jointed staves, at 12s.	30	0	0
50 oil cans and wicks, at 3s. 6d.	8	15	0
1 case packing, &c.	1	8	0

No. 5.—Depôt Stores.

150 lbs. Chatham powder, at 30s.	225	0	0
100 gals. prepared spirits, at 8s.	40	0	0
100 „ oil, at 6s.	30	0	0
12 cypher wheels, at 20s.	12	0	0
1 set large tinman's tools	10	10	0
2 tomahawks and leather cases, at 8s.	0	16	0
1 box, wicks, and scissors	0	8	0
1 large case matches	2	0	0
„ cotton wick.	1	0	0
3 50-lb. Chatham powder magazines	7	16	0
50 message books, at 5s. 2d.	12	18	4
4 50-gal. casks, brass taps, and screws	13	0	0
3 cases, packing, &c.	4	4	0

Total cost. £1092 4 10

The above-mentioned signal apparatus included everything necessary for signalling between ships and shore, for fitting-up the signalling detachment, and for extending signals to brigades, regiments, and corps, with all material necessary for six months' work, excepting lamp oil, of which, however, a good supply was taken for immediate use.

On arrival in Abyssinia the Signal Equipments were divided into mule loads, as follows :

3 stations, depôt, 18 small stations, and stores for 6 weeks.	6 mules.	Signal equipments distributed in mule loads, as carried in Abyssinia.
3 stations (without spare stores), stores for 6 weeks	3 mules.	
3 stations, day signalling only	1 mule.	
3 stations, depôt, 18 small stations, and stores for 6 months	10 mules.	

The signal equipments for 3 complete stations and a depôt, with apparatus for 18 small stations for infantry for day and night signalling, could be carried on 6 mules, as follows—3 mules carried each the following articles :—

2 panniers, with lock and key.	1 gridiron.
1 5-gallon spirit case.	1 frying pan.
1 stationery case.	Set tinman's tools for repair of lamps, &c.
1 case for Chatham powder.	1 anvil.
6 spare tongues for fog-horn.	1 brass sheet.
1 2-gallon oil case.	1 chisel.
1 tent, small signal, with poles and pegs complete.	1 pair compasses.
1 bag for tent.	1 hammer.
1 water deck.	1 mallet.
1 set cooking utensils, belonging to equipment, but not proposed to be carried beyond Antalo, except the following articles :	1 pricker.
1 saucepan.	1 punch, half round.
	1 rasp.
	1 pair scissors.
	1 soldering iron.

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6 bars of solder.	1 yoke.
1 stove.	1 pair great-coat straps.
6 sheets of tin.	1 waist belt, with 2 studs and side straps.
1 can soldering liquid.	1 powder case.
24 rockets in cartouch.	1 fog horn and spare tongue.
1 large size pack, with straps complete.	3 flags.
1 yoke.	1 pair bellows.
1 pair great-coat straps.	1 pair field glasses.
1 waist belt, with 2 studs and side straps.	1 portable office.
1 Chatham lamp.	1 case matches.
1 hand lamp.	1 set of poles, &c., for flags and lamps.
1 spirit case.	1 set of slings and straps.
1 oil case.	1 memorandum book.
2 rockets.	2 packets matches (dozen).
1 case, with wick and scissors.	$\frac{1}{4}$ quire foolscap.
1 tomahawk and case.	3 Faber's leads ($\frac{1}{2}$ dozen).
2 rocket sticks.	30 parchment codes.
1 small size pack, with straps complete.	4 code books.

No. 4 Mule carried—

2 panniers, with locks and keys.	48 rockets.
1 5-gallon spirit case.	1 set poles for tents.
1 case Chatham powder.	2 water decks.
1 2-gallon oil case.	

No. 5 Mule carried—

1 set cooking utensils (spare).	2 tomahawks and case.
1 set tinman's tools (spare).	1 small size pack complete.
1 large size pack, complete.	1 powder case.
6 Chatham lamps.	1 fog horn.
2 hand lamps.	3 flags.
1 spirit case.	1 pair bellows.
1 oil case.	2 pair field glasses.
2 cases, with wick and scissors.	24 message books.
4 bags.	

No. 6 Mule carried—

18 sets of banderols and sticks.	2 files, square.
18 hand lamps.	1 pliers.
18 cases for oil.	1 quire blotting paper.
18 code books.	1 case matches, large.
36 parchment codes.	2 boxes nibs.
3 sets poles for flags and lamps.	1 dozen pencils.
1 lot brass solder.	100 envelopes.
4 bags.	3 satchels for messages.
14 cotton wick balls.	1 hand axe.
9 fog horns.	1 felling axe.
36 fog tongues.	1 pickaxe.
1 coil, brass wire.	1 shovel.

The equipment for 3 complete stations, without spare stores, but with means of repairing damages, were, as detailed above, for the first 3 mules.

The equipment for 3 complete stations for day signalling only, was carried on one mule as follows :—

3 sets of flag poles, large.	12 message books.
6 " " small.	3 portable offices.
12 large flags.	1 tent, small signal.
12 small flags.	1 set poles and pegs.
12 code books.	

The articles of equipment for 3 complete signal stations, with dépôt and stores for 18 small stations for six months' use, required 10 mules to carry them, distributed in the following manner :—

Carried by 6 mules.

12 panniers and locks.	3 waist-belts.
5 5-gallon spirit cases.	6 Chatham lamps.
3 cases Chatham powder.	15 hand lamps.
3 large camp kettles, with lids and straps.	3 spirit cases.
3 large saucepans.	3 oil cases.
3 small saucepans.	6 cases, with wick and scissors.
6 cups.	3 tomahawks and case.
6 metal plates.	3 small size packs, with straps complete.
6 enamel plates.	3 yokes.
3 kettles.	3 pairs great-coat straps.
3 ladles.	3 waist belts.
3 gridirons.	3 powder cases.
3 frying-pans.	15 fog horns.
6 spoons.	9 flags, large.
2 knives.	3 pairs bellows.
6 forks.	6 pairs field glasses.
5 2-gallon oil cases.	3 portable offices.
3 tents.	3 cases matches.
3 poles and pegs for tents.	6 sets poles for lamps and flags.
3 bags for tents.	6 sets of slings and straps.
6 water-decks.	90 parchment codes.
3 anvils.	20 code books.
3 brass sheets.	24 message books.
3 chisels.	12 bags.
3 pairs compasses.	18 cotton-wick balls.
3 hammers.	36 spare fog horns' tongues.
3 mallets.	24 small flags.
3 prickers.	24 small poles for flags.
3 punches.	3 satchels.
3 rasps.	12 cases matches.
3 pairs scissors.	3 memorandum books.
3 soldering irons.	6 dozen match-boxes.
18 bars solder.	$\frac{3}{4}$ quire foolscap.
3 stoves.	9 faten leads ($\frac{1}{4}$ dozen).
24 sheets tins.	3 pickaxes.
3 cans soldering liquid.	3 shovels.
144 rockets in cartouch.	3 hand axes.
3 large-size packs and straps complete.	3 felling axes.
3 yokes.	3 hand saws.
3 pairs great-coat straps.	

The depôt stores were carried by 4 mules, as follows:—

6 panniers with locks and keys.	1 Chatham lamp.
1 5-gallon spirit case.	4 hand lamps.
1 stationery case.	2 pairs field glasses.
1 case Chatham powder.	100 parchment codes.
1 set cooking utensils complete.	36 code books.
1 2-gallon oil case.	36 message books.
1 tent, pole and pegs, &c., complete.	1 bench vice.
2 water-decks.	2 files, square.
1 set tinman's tools.	8 oil cases for small lamps.
1 large stove.	1 clock.
144 rockets.	1 set entrenching tools.
1 large size knapsack and stores complete.	1 set collar maker's tools.
1 small do. do.	

The chief weight of the signal equipment was owing to the Chatham lamps, and the stores required for them. The small hand lamps were effective up to three-quarters of a mile in clear weather. The stores carried on No. 6 mule were principally for the use of infantry regiments and their outposts.

Under the arrangements as above detailed, the mule loads were distributed and signalling stores carried with the army to the extent required.

Code of
signals.

A code of signals, for the Signal Detachment, was prepared under the direction of Colonel Simmons, at Chatham, by Commander Colomb, R.N., and Captain Bolton, 12th Regiment. The object of this confidential code was to enable communication to be made between ships and troops acting on shore. It contained also a Boat Signal Book, and comprised a code of signals for the use of the Forces on shore. Orders were issued that every possible precaution was to be taken to prevent this confidential code falling into the hands of any person for whose use it was not intended.

Otago
saddles.

Otago saddles were supplied for the carriage of the army signal apparatus, and did excellent service in that regard.

The telegraph stores and signalling apparatus, except such of the latter as was taken by the army signallers themselves, were delivered into and packed at the India store depôt. The telegraphic stores weighed about 25 tons, but in bulk exceeded 40 tons, at the rate of 40 feet to the ton.

Formation
and organi-
zation of
the 10th
Company,
R.E.

The telegraphers sent from England, together with the photographers, army signallers, and well sinkers, were amalgamated into the 10th Company Royal Engineers, at the recommendation of the Field-Marshal Commanding-in-Chief, who was of opinion that it would be better for the interests of the public service, and the maintenance of discipline, that the detachments of Royal Engineers under orders for the duties referred to should be amalgamated into a company of reduced strength, under the command of a Captain of the corps (well acquainted with its financial system and interior economy), and two Lieutenants, instead of proceeding, as intended, in a series of unconnected detachments, each commanded by a subaltern.

The additional men required to complete this arrangement provided a reserve to meet casualties in the special detachments, and a small number of skilled artisans and miners, available for extra duties and fatigues, or for the construction of mechanical appliances, and mining or blasting operations.

Under this arrangement the company was formed, placed under a Captain and 2 Lieutenants, and consisted of the following establishment:—

	Colour Sergeants.	Sergeants.	Corporals.	2nd Corporals.	Lance Corporals.	Buglers	Sappers.	Total.
Photographers ..	..	1	1	1	2	..	2	7
Telegraphists ..	..	1	3	9	4	..	8	25
Signallers ..	..	1	1	1	1	..	6	10
Officers' servants ..	..	..	..	..	..	..	3	3
Well-sinkers ..	..	1	2	2	..	..	16	21
Artisans, miners, &c. .	1	1	..	..	..	2	13	17
Total ..	1	5	7	13	7	2	48	83

On arrival in Africa the 10th Company Royal Engineers were placed in all regimental details under the Commanding Engineer. In the construction of wells and lines of telegraph, they were to apply for all professional assistance to the Chief or Senior Engineer Officer. The lines on which telegraphic communication was to be established were decided on in the Quartermaster-General's Department, with which Department also rested the direction of the telegraph. The photographers and signallers also were placed under the orders of the Quartermaster-General's Department.

Departments under which the 10th Company, R.E. worked in Africa.

Three sets of apparatus for using Prosser's lime-light were supplied, at a cost of 350*l.* each. These the Army had never any occasion to use.

Prosser's lime light.

This apparatus consisted of a large vertical lens, opposite the focus of which was an ordinary lime-light, the permanence of which is secured by an arrangement of clock-work. It was very easily adjusted, and with all appurtenances did not exceed a mule load.

It seemed likely to be useful in warfare, particularly in a hilly country, for it was stated that, erected on any commanding position in the camp, it would enable an officer to inspect almost as clearly as if on the spot any part of his ground within a mile and a half radius. In case of a night attack, its light could be thrown instantly on any point from which suspicious noises might proceed, and would not only enable guns or rockets to be laid on any point as easily as in the daytime, but would show at once the effect of their fire. In fact it would be to a commanding officer much what his bull's-eye lantern is to a policeman.

Lieutenant St. John, with the telegraph, signalling, and photographic material, and 2 officers and 65 non-commissioned officers and men of the Engineers, sailed in the "Mendoza" on the 4th November, and reached Alexandria on the 21st. The remainder went by the Southampton packet, and reached Alexandria on the 24th November. All were immediately passed through to Suez, and embarked at the beginning of December for Annesley Bay. From Lieutenant St. John's Report, it appears that as originally organized in England, the Field Telegraph arrived at Zula divided into three branches:—

Organization of Telegraph Department.

(1) An ordinary aerial telegraph, for use on the main line of communications, to be worked by civilians from India.

(2) A flying superterranean line, for employment on the line of march, or in action.

(3) An equipment for night and day signalling; the two last being worked and superintended by officers and men of the Royal Engineers. Circumstances led to the partial amalgamation of the first two branches, and the complete separation from them of the third.

Want of carriage for the transport of the heavy material of the flying line prevented its accompanying the advance of the Army; and as the permanent line was pushed towards the front, the services of the telegraphers of the Royal Engineers became

indispensable to its construction and maintenance. These required the constant supervision of Lieutenant St. John, and thus the Signal Department remained almost from the first under the sole charge of Lieutenant Morgan, R.E., whose premature death deprived us of the valuable fruits of his experience.

Landing in
the country,
and ob-
stacles to
the com-
mencement
of work.

On the 12th December, Lieutenant St. John landed at Zula, having with him the complete establishment and equipment for the flying telegraph and army signals, and all material, except posts, for the semi-permanent aerial line. For the construction of the latter, orders had been sent by the Secretary of State for India to Bombay for the supply of 10,000 bamboos.

An establishment of an Assistant-Superintendent, four Public Works Overseers, and twelve Signallers, had been also ordered from Bombay. When the telegraphic material reached Zula, neither establishment nor bamboos had arrived. A day or two afterwards, however, the Assistant-Superintendent of the Indian Telegraph Department, with twelve signallers, landed in Annesley Bay, and an establishment was thus furnished for working the line before men or material to construct it had arrived. On the 6th February, the day the line was completed to Senafè, the four overseers applied for in September landed in Zula from Calcutta. It was suggested to use the telegraphers and signallers of the Royal Engineers as a working party for the construction of the line, but they suffered so severely from the climate that this was not done, and they, with a portion of their material, were sent on to the Advanced Force, then at Senafè. In the meanwhile, the telegraph had to be pushed to the front without delay, and a small working party of Madras Sappers was employed in erecting a line towards Kumayli, on teak poles, furnished by the Commanding Engineer at Zula. After these were put up, the line to Antalo was stretched on supports, cut or purchased on the road, with the exception of 700 bamboos, which were brought up by native carriage, a costly mode of conveyance.

Progress of
construc-
tion.

On the 24th December, Lieutenant St. John commenced erecting the line from Zula, with a small working party of Madras Sappers. On the 7th January, communication was completed to Kumayli. On the same day, the services of a company of the 23rd Punjab Pioneers were placed at his disposal, in lieu of the Madras Sappers. By them the line was completed to Suru on the 26th January, to Undul on the 2nd February, and to a point three miles north of Rahagedi on the 6th. To this point, in the meantime, Lieutenants Morgan and Puzey, with the telegraphers and signallers of the Royal Engineers, had completed the line from Senafè. On the 12th work recommenced towards Adigrat with the Pioneers, Lieutenant Puzey being sent with his party of telegraphers to that place to work back towards Senafè. On the 1st March, the line was completed to Adigrat, and for eight miles further on the Antalo road. At Adigrat, the Pioneers were replaced by a party of Lascars from various Departments; with them the line was completed to Antalo on the 2nd of April.

Completion
of line.

Description
of line.

For six miles from Zula the line passed through tolerably open country on teak poles brought from Bombay.

Zula to
Senafè.

From this point to Senafè it was supported on rough posts cut from the surrounding mimosa jungle. In many places, the wire was supported on insulators fixed to trees along the road, and in the Suru defile to the sides of the rocks. The natural difficulties of the country from Zula to Senafè, which presented little but a succession of thorny jungle, rocky precipices, and torrent beds, rendered the construction of this line tedious, and the maintenance of communication on it precarious.

Senafè to
Antalo.

From Senafè to Antalo the country was generally favourable, and a rate of construction of from four to five miles a day was easily attained.

The difficulty of procuring timber for supports was the sole obstacle to more rapid progress. Poles which would, under ordinary circumstances, have been considered fit for telegraph purposes, were nowhere obtainable; and it was occasionally necessary to use mere sticks, purchased by the Advanced Force, of which a tripod was requisite to bear the strain of the light copper wire. The officer in charge was fortunately able to procure native carriage for about 700 bamboos from Zula, without which it would have been impossible to have brought the line up to Antalo.

Difficulty
in obtaining
poles.

In addition to the main line from Zula to Antalo, 197 miles in length, a telegraph was constructed along the railway to Kumayli, and a second wire erected through the pass from Kumayli to Undul, raising the total length of wire put up to 234 miles.

Railway
telegraph.

Great as were the difficulties experienced in the erection of the line, they were trifling in comparison with the labour of maintaining it. For reasons already noticed the line was exceptionally slight, and was from first to last exposed to injury. Carts and camels, elephants and camp followers, apes and Abyssinians, all contributed in varying proportions to the interruptions. The pilfering propensities of the natives caused the largest number, and the most difficult to repair, as, according to the reports from Lieutenant St. John, they not unfrequently stole the wire by a thousand yards or more at a time. To secure the prompt re-establishment of communication, the line was divided into twelve sections corresponding to the telegraph stations, and placed in charge of non-commissioned officers of Sappers or Engineers as inspectors, with parties of Lascars with mules, to start out at once on the occurrence of a break. By this means communication was fairly preserved, though the wire was said to have been broken in one or other of the sections three or four times a-day, and never remained unbroken throughout for more than twenty-four hours together. Thus the labour of the inspectors in charge of the various sections was constant and severe.

Main-
tenance.

The traffic on the line was at first small, but by the time communication was completed to Adigrat, it increased to such an extent that it became necessary to limit the power of sending despatches by telegraph. This produced a considerable reduction in the number of messages between intermediate stations with beneficial effect on the through traffic.

Traffic.

Owing to the frequent interruptions, the number of messages that were repeated at intermediate stations was large. The longest message sent was of 1,160 words; the shortest, of one word. The news of the fall of Magdala was known in Zula a few minutes after the arrival of the messenger with the tidings in the Camp at Antalo.

Messages
sent.

The services of a naval officer were placed at the disposal of the Telegraphic Department, to superintend the landing of stores. That work being finished, he was employed in erecting a second line from Kumayli to Undul Wells and in repairing the original wire.

Hitherto all telegraph lines erected in war have been short branches, grafted on existing systems, the working and organization of which had thus simply to be extended for a few miles to maintain the ordinary standard of efficiency. Running, as a rule, along lines of railway or frequented roads, they would be no more liable to accident or interruption during war than at other times, and the means for repair would be ready and at hand.

Former
telegraph
lines.

In Abyssinia neither roads nor telegraphs existed before the Expedition; the conditions of erection were entirely unknown; the weight of all material was necessarily reduced to a point lower than had been previously reached; the line was constructed and worked through a physically difficult country, with a small proportion only of this material, and, without guardianship of any sort, was exposed to the vicissitudes a line always experiences in a barbarous country. The weakest point in its construction was

Difficulties
in Abyssinia.

undoubtedly the size of the poles bought in the country, which it was necessary to accept for supports. After the natives were deterred by the threats of the Governor of Antalo from stealing the wire, no interruptions took place on the line between Dolo and Antalo until the evacuation of the latter place, a period of about six weeks. This part of the line was erected almost entirely on the bamboos, which, had carriage been available, would have formed the supports throughout. This is sufficient to show that the original material was in no way to blame for the frequent interruptions which the line suffered.

Experience
gained.

The experience gained in the Expedition may be summed up in the few words that a military line, instead of being exceptionally slight, should be as solid and strong as it can be made, as it is exposed to more dangers than an ordinary telegraph. The fact of its being carried by the road forming the main line of communication, is a weakness, not a strength.

Disposal of
wire.

All the wire stretched in Abyssinian territory was taken down and brought to the sea. The rapid marches through the Pass alone prevented our bringing away the line from the Egypto-Abyssinian frontier.

Army
signallers.

During the month of January the signallers were posted at Senafè, and regularly practised in signalling. In February, 10 non-commissioned officers and men of the 33rd Regiment were attached to the 10th Company Royal Engineers, and instructed in the use of flags for the purpose of signalling by day. The Engineer signallers were practised occasionally with the night signals. In March, the signallers proved useful on several occasions in communicating and passing orders from the first to the second brigade, when one march distant from each other. They were also useful during the operations before Magdāla, where they passed signals between the different portions of the force. On the return march little opportunity offered for their employment.

The telegraphers and Army signallers being under the control of the Quartermaster-General's Department throughout the campaign, their proceedings will be found recorded in the fortnightly Reports submitted by Captain Holland, Assistant-Quartermaster-General, to the Quartermaster-General, Horse Guards, and noted in the preceding chapters.*

The following were the working rules of the field telegraph in Abyssinia :—

Working
rules of
field
telegraph.

Messages were divided into two classes :—1st. Special precedence messages emanating from the Commander-in-Chief, through his personal staff or heads of departments with him, from Generals of Divisions, Brigadiers, Officers Commanding columns or posts. The prefix for these was S.P. When a message bearing this prefix was offered, all other work ceased and remained suspended until the S.P. message was transmitted. In the case of two S.P. messages, they were sent according to priority; and 2nd, P.D. ordinary messages, which were transmitted according to priority.

For signal messages the station required was called by giving its code (the first three letters of its name), then the letter V, followed by the code or first three letters of the name of the station calling. The station called replying by giving its code, followed by the word 'Here.' The station calling then gave the prefix of its message, its date and time. If the station called had none of earlier date or time, it gave the signal 'Go on.' But if the station called had a message of prior claims, it sent it, and so on.

* See pages 5, 20, 73, and 108.

Each message was signalled in the following manner :—Prefix - - - - ; No. of message - - - - ; No. of words - - - - ; Date, hour, and minute tendered for transmission - - - - ; Name and address of sender - - - - ; Name and address of receiver - - - - ; Body of message - - - - .

Immediately a message was finished, the person who received it counted the number of words it contained, and compared it with the number signalled. If they did not agree, he said the number he had, and the sending station repeated the first letter of each word until the error was corrected. If the message was right, the signaller who had received it telegraphed back its number, name of its receiver, and any doubtful or difficult word, followed by the signal "Understand." All messages were registered in the record book."

No messages were received for transmission unless signed or countersigned by the Officer Commanding a division or station, or by an officer of the Quartermaster-General's Department, the Controller of Supply and Transport, the Deputy Commissary-General, the Commanding Engineer, or the Military Secretary to the Commander-in-Chief.

Officers
authorised
to sign
telegrams.

Telegraph offices at Zula and Senafè were open day and night; other stations were open from 6 to 7 A.M., and from 10 A.M. to 6 P.M., unless messages were marked emergent, when they were received at any hour.

The telegraph line was, as stated, completed to Antalo on the 2nd April, 1868. By the time the report of its progress so far reached head-quarters, the Force was so near Magdāla that it was deemed inadvisable to carry it further; and the whole energy of the Telegraphic Department was devoted to keeping the line between Zula and Magdāla in good working order.

In regard to the disposal of the telegraph stores, the telegraph wire (copper), the homogeneous iron wire, 50 miles of covered wire (Hooper's core), and the whole of the instruments, batteries, and small stores, were sent to Bombay, where they could be utilized in the Indian and Anglo-Indian Offices. The army signal apparatus was returned to England, to be re-transferred to the War Department.

Disposal of
telegraph
stores.

The following Report by Lieutenant O. St. John, R.E., was made on the telegraphic material used :—

"To illustrate more clearly the points in which the material and apparatus were successful or deficient, I will first give a brief description of the telegraph, as erected along the road from Annesley Bay to Antalo, a distance of about 200 miles.

Lieutenant
St. John's
Report
on the
telegraph
arrange-
ments.

"This line presented three well marked divisions: first, the belt of low land, 12 miles in breadth, between the sea and the hills; secondly, the tortuous defile, 50 miles long, leading to the highlands; and, lastly, the great plateau of Abyssinia. Of these, the second alone presented any extraordinary natural difficulties. From Annesley Bay to Kumayli, at the entrance of the Pass, the line was carried along the proposed course of the railway, for the first six miles on teak supports 20 feet in length, and afterwards on mimosa poles cut from the surrounding jungle, averaging not more than 12 feet. These were subsequently replaced by teak posts. From Kumayli to the end of the Pass, the line was necessarily carried close to the road, except where the spurs of the hills on opposite sides were close enough for the wire to be thrown in long spans from one to another. It was generally supported on mimosa posts, varying in different parts from 10 to 20 feet. Cut from the jungle as the line progressed, they were of course green, and,

General
description
of the line.

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U

“ though sufficiently stout, warped excessively in drying. In a few places insulators were
 “ fixed to trees, and sometimes, as in the Suru Pass, to the face of the cliff. By the time
 “ the telegraph was completed to Senafè, the first station in the highlands, the bamboo
 “ supports ordered from Bombay had reached Zula, but such was the scarcity of carriage
 “ that none could be spared to bring them up to the front. Subsequently, I had about 700
 “ brought up by native carriage for use in parts of the country where no timber of any
 “ sort was obtainable. For the remainder of the line from Senafè to Antalo, a distance of
 “ 130 miles, I was dependent on supports cut or purchased in the country. These were
 “ generally saplings of the juniper pine, from 10 to 15 feet in length, rarely exceeding
 “ three inches diameter at the base, and one at the top, and elastic as a fishing-rod. They
 “ were brought by the natives from considerable distances, and sold at prices varying from
 “ one to ten for a dollar. No insulators were used on this part of the line, the wire being
 “ simply passed through a notch in the top of the intermediate poles, and secured by three
 “ or four turns round the stretchers. Where the poles were exceptionally slight a tripod
 “ of three was formed to give stiffness enough to stretch to. The supports obtained in the
 “ country were placed from 40 to 60 yards apart, the bamboos from 80 to 100. On the
 “ latter the wire was generally inserted in a nick cut with a saw in the side of the bamboo,
 “ about a foot from the top. Stays or struts were seldom used, being unnecessary, except
 “ at very sharp angles, from the lightness of the wire.

“ It is evident that a line so slenderly constructed would be more than ordinarily
 “ exposed to damage ; except at road crossings, the wire was rarely high enough to allow
 “ a loaded camel to pass below it, and was almost everywhere within reach of a mounted
 “ man.

Interrup-
tions.

“ Interruptions were thus very frequent, and the most constant vigilance and labour
 “ were necessary to keep open communication. The most fertile source of damage was
 “ undoubtedly the thieving propensities of the natives, which threats and remonstrances to
 “ the Chiefs proved of little avail to check. Next to this were the interruptions caused by
 “ our own baggage animals, which, when relieved of their loads, rubbed themselves against
 “ the poles, and often tore down furlongs of line in the vicinity of the halting-places.

Railway
line.

“ Besides the main line of telegraph from Zula to Antalo, a line, 10 miles in
 “ length, was erected for the use of the railway, and a supplementary wire was stretched
 “ through the pass between Kumayli and Undul, a distance of 25 miles.

“ The foregoing brief description will illustrate the following detail of the merits
 “ and defects of the various items of material and apparatus.

Copper wire.

“ For the main line, 350 miles of No. 16 W. G. copper wire were supplied by
 “ Messrs. Bolton and Sons, of Manchester. It was wound on wooden drums, in lengths of
 “ from 1 mile 1,000 yards to 1 mile 700 yards, the average length being 2,700 yards, and
 “ weight, including drum, 120 lbs.

“ The main line from Zula to Antalo, and also the railway line, were entirely con-
 “ structed with this wire. For 60 miles from the coast only, insulators were used, but
 “ nothing could have been better than the working over the remaining 140 miles, where
 “ not only was there no insulation, but where the poles were mostly green. Even in heavy
 “ rain, no difficulty was found in working. Spans of 400 yards or more were stretched in
 “ many places, and stood perfectly well. For facility of stretching and jointing, conduc-
 “ tivity and portability, nothing could have been more satisfactory than this wire. An
 “ iron wire of even half the electrical advantage of the 16-copper wire would have been
 “ three times the weight, and, apart from the larger amount of carriage it would have
 “ required, could not have been supported on poles of such tenuity as those necessarily
 “ used. Inspectors on repairing duty, again, were able to carry with them several hundred

“ yards of wire to replace possible thefts by natives ; with heavier iron wire this, of course, could not have been done.

“ Altogether, the selection of this copper wire was most fortunate, but it is not without its defects. First of these is, its liability to stretch during the operation of straining. No great force is necessary to decrease the sectional area of the weakest part of the wire by one-half, with a corresponding diminution of strength and conductivity. This defect can only, of course, be obviated by constant care, and by straining in short lengths.

“ The second demerit of copper wire is similar, but less obvious. I was puzzled for some time to account for the way in which many stretches of wire, originally strained with a dip of a couple of feet between each pair of poles, gradually increased this dip, while, perhaps, stretches close by and under similar conditions remained *in statu quo*. After some time, I found that, as long as the poles were left untouched, and exposed only to the force of the wind, the wire on them remains unhurt ; but if the posts were shaken violently, by cattle rubbing against them or other such cause, the vibration communicated to the wire tended to elongate it, till it hung in festoons, several feet below the original position. This peculiarity necessitated frequent re-stretching in places where the supports were weak and exposed.

“ In the plain near Zula approach to the poles was successfully prevented by piling brushwood round their bases.

“ Wherever the wire was carefully paid out from the drum, so as to prevent any kinking, I do not believe that there was a single accidental break, except possibly at a maker's joint, which are always weaker, I imagine, from over-heating whilst soldering, than joints made in the field.

“ The joint used was the ordinary German or twisted joint ; eight or ten turns being Joint. taken on each side. The ends were occasionally brought over, and twisted together, to prevent the possibility of the joint drawing out. No solder was used. The wire was stretched by hand, on the ground wherever sufficiently level. Hedger's gloves were worn by the men stretching, as the thin wire often cut through the skin and caused painful sores. Where insulators were used, the wire was bound at every one. Much trouble arose from the insufficient strength of the drums on which the copper wire was wound to stand the terrible wear and tear of mule carriage. The great heat shrunk the wood, and loosened the screws binding the heads of the drum to the spindle. Careless muleteers will not take the trouble to lift loads from their mules, but let them fall on the ground. The drum-heads thus constantly came off, and the wire became kinked and entangled, causing much trouble and delay in paying out. The drums on which the Hooper's core and homogeneous wire were wound suffered less, but were not altogether satisfactory. Cart carriage being unobtainable, drums for wire or core might, I think, be made of wrought-iron, without being much heavier, although, of course, more expensive than those of wood. If time, expense, or other reasons, prevent the use of wrought iron, a spindle of that metal should be supplied with each drum. This, by means of a screw and nut at one end, would bind the drum firmly together, and the two projecting extremities would be useful in packing the wire on the mule saddles.

“ Fifty miles of No. 15 galvanized homogeneous iron wire was supplied for use on short lines near the coast, should such be required. From trials made in London on samples of this wire, it appeared far tougher and stronger, in fact more adapted in every way but conductivity, for telegraphic purposes than the copper wire. In actual use, however, it proved far inferior. It was stretched only for the second line through the pass from Kumayli to Undul, a distance of 25 miles, and proved unequal in quality, difficult to stretch, even in short spans of 80 to 100 yards, and often was so brittle as to

“preclude the use of the German joint. I believe that this unsatisfactory result arose from over galvanization. Where the tin coating was smooth and even, the wire was fairly tough and difficult to break by kinking, but in many places, where the galvanizing was unequal and ridged, a second twist was hardly necessary to snap it.

Insulators.

“In reporting on the material required for a field telegraph in Abyssinia, Major Champain recommended that a small proportion of insulators should be supplied for use in forest country, and to provide for the possible necessity of carrying the line through swampy regions. Under ordinary circumstances, a copper wire on bamboo supports would not require insulation. Two thousand bracket, and the same number of spike, insulators were accordingly obtained from Messrs. Siemens. These insulators were used only on the teak and mimosa supports between Zula and Senafè. Except for securing the wire to trees and rocks, they were of no great utility, and sometimes worse than useless, as the rough edge of the galvanized covering often cut the soft copper wire. This was particularly the case with the spike insulators, which, though intended for trees, proved useful only for rocks, the bracket insulator being better adapted for the former.

“At first the wire was secured to every fourth insulator only, but it was afterwards found necessary to secure it to every one. The notch in the top of the insulator is thus useless.

“For a single light copper wire, such as that used in Abyssinia, insulators are quite unnecessary, except for carrying the line through forest or along the face of a cliff, the latter being a necessity which would rarely arise. For forests the bracket form is undoubtedly superior to the hook and spike. The trees selected as supports are of course rarely, if ever, in a straight line, and thus the hook is pulled either inwards or outwards, so that the wire has not free play through it, and any advantage of a hook is lost. For tree work, therefore, I do not think that anything could be better adapted than the bracket insulator supplied for Abyssinia, substituting only a solid for the cleft head of that pattern. The method of fixing to the supports by means of straps answered admirably, but 50 per cent. extra nails, and 20 per cent. straps, should be supplied, the waste of both being considerable. For fastening wire to rocks, the spike insulator answered fairly, but the spikes were too short and of too soft iron. Steel spikes, two feet long, would have been of the greatest service. Wherever a shrub could be found growing out of the rock, the wire was attached to it instead of to an insulator, insulation being obtained by binding one or more folds of sheet india-rubber round the stem.

“The method in which the insulators were packed was admirable. One hundred, with straps and nails, or spikes complete, were held in a stout wooden box, two of which formed a mule load. Each contained a complete set of tools and materials for fixing the insulators and stretching the wire, consisting of hammers, gimlets, files, cutting pliers, scissors, fine wire, twine, and emery paper, besides a couple of pieces of sheet india-rubber. Of these, however, the wire and files were not used. The empty boxes proved most useful for containing small stores, records, &c.

Hooper's core.

“Fifty miles of Hooper's core were supplied for flying lines, to be laid upon the ground for communication in action or with outposts. This core consisted of a copper conductor of three strands, tinned over, and covered with several coats of india-rubber, prepared according to Hooper's patent. It was wound on wooden drums, in lengths of 700 to 880 yards, each weighing from 110 to 140 lbs. To have carried a portion only of this material, with its equipment complete, would have necessitated a train of at least 100 mules, a number which could not have been spared from the more urgent requirements of the Ordnance and Commissariat.

“ The greater part of the Hooper’s core was left, therefore, at Zula, the instruments intended for the flying lines being, moreover, required for the intermediate offices on the main line, which were required in far greater numbers than had been foreseen. A few drums of core had, however, been sent up to Senafè when first landed, and with these a line of about two miles was laid to the head of the Pass. As far as insulation went it answered perfectly, but lying, as it did, day after day, along the high road, it proved an irresistible temptation to the natives, who managed to steal many yards daily without detection. It was, therefore, replaced as soon as practicable by an aëriel line.

“ I have thus hardly had a fair opportunity of judging of the Hooper’s core as a material for flying lines. All I can say is, that neither the heat nor damp of Zula appeared to have in any way affected it. Its only fault seemed to be want of strength in the conducting wire. Five strands of similar dimensions to those used would have been preferable to three.

“ One pattern of carriage for paying out and picking up was used both for the large drums of core and the smaller of iron and copper wire. Twelve were taken out, seven or eight of which were used, and, with the exception of some of the minor fittings and of the woodwork of the wheels, were as perfect at the end of the Expedition as when they left England. They were made at Messrs. Siemens’ factory at Charlton, under Major Champain’s superintendence, and answered the purpose for which they were intended perfectly. A model was sent to the Royal Engineer Museum at Chatham. On these carriages I can suggest no improvement, except that spare wheels and handles, in the proportion of a pair of the former and three of the latter, should be sent with each carriage.

Paying out
carriages.

“ Three descriptions of signalling and receiving apparatus were sent to Abyssinia. For the main or semi-permanent line, eight relay instruments (with writers) were supplied by Messrs. Siemens. The same firm supplied twelve smaller recording instruments for the flying lines on similar principles to the first, but without relays. Four magnetic instruments, obtained from Messrs. Henley, were also taken out. The last were only used on the short line of railway telegraph, where they did good work. Of their suitability for transmission of signals through long lengths of wire I am thus unable to speak, but they deserve a fuller trial, and their defect of non-recording is, I think, almost, if not fully, compensated for by their requiring no batteries. For aërial lines it might possibly be difficult to protect them from lightning, but for ground or buried lines I believe that magnetic instruments would, with complete signallers, prove preferable to all others.

Instruments
and bat-
teries.

“ To return to the signalling apparatus used on the main line. The larger instrument consists of a signalling key, ordinary relay and printing apparatus, and two vertical galvanometers, without transitive connexions. Owing to the inability of the signallers sent from India to signal so as to print intelligibly, an inability caused by the fact of non-recording instruments being used in India, the printing part of the apparatus was not used in Abyssinia. Of the remainder, the relays, connections, keys, and fittings generally were admirable, but the galvanometers were very defective. Their resistance was so great that from the first it was found necessary to cut them out of circuit for rapid working, and a very short time rendered them useless even as detectors. The smaller instruments were similar in construction, but had no relays, and simple horizontal galvanometers. These were infinitely better than the more elaborate detectors attached to the larger instruments, and I was compelled sometimes to detach them for use with the latter. Both, however, had the fatal defect of being very liable to injury during transport.

"For all rough work, not only campaigning, but wherever instruments have to be carried on pack-saddles, or even on carts, over rough ground, galvanometers should be invariably detached, and several spare ones supplied. The experience of Abyssinia only bears out what I had previously remarked in Persia, where the attached galvanometers gave constant trouble, and had often to be replaced by extemporized indicators.

"As regards the working of the instruments, large and small, apart from the galvanometers, nothing could have been more satisfactory. Even the small field instrument, without relay, worked by a twelve-cell battery, sent and received satisfactorily through 120 miles of insulated wire. Translating connections would, however, have been most useful on the larger instrument.

Batteries.

"The batteries used were all known as "Marie Davy's carbon and zinc," the acid employed being protosulphate of mercury. They were obtained from the same makers as the instruments. Each element consists of a carbon cell, covered with vulcanized india-rubber. This contains the protosulphate of mercury, reduced to a paste with water. In it is the zinc part, hollowed out to contain water, and prevented from touching the carbon by small wooden plugs. These elements were in sets of twelve and twenty-four for the lesser and greater instruments respectively, enclosed in teak boxes, the lids of which held india-rubber washers, to prevent leakage when closed during carriage. Each box held besides a syringe for charging with water and a tin of spare acid. For the relays of the large instruments, sets of six elements on the same principle, but square in shape and more powerful, were provided. All were sent out ready charged, but while the small round elements were found in perfect order on unpacking, the relay batteries were much deteriorated. Action to such an extent had set up in them that the zinc was already half eaten away, and, in fact, after working a few weeks, they became quite useless. The other batteries, though hardly coming up to the expectations formed of them, either as regards lasting powers or convenience, did very well, and, electrically speaking, left nothing to be desired. Their defects were, the necessity for recharging with water two or three times a day; the great care and time this operation required, a care which it was difficult to get signallers to take; and the rapid deterioration of the copper straps, caused by leakage while travelling, and the unavoidable spilling of water during recharging. It was supposed that the carbon parts would require renewal sooner than the zinc, and spare parts of the former only were taken out, but the contrary proved to be the case, as, towards the end of the campaign, many zincs had nearly corroded away, while the carbon parts remained almost unimpaired. Fresh protosulphate of mercury was required about every two months, more from wasting than from deterioration. Taking them altogether, I think they are the best batteries I have seen for field purposes. Had the elements been a little larger, it would have been an improvement; spare zincs and straps are also required, and the action of the acid on the pewter syringes is such as to make it unadvisable to carry the latter in the box with the elements.

"A small chest, containing a box of repairing-tools for instruments, covered wire, earth-plate, Morse paper, and ink, accompanied each instrument. The addition of magnets only was wanted to make them complete.

Office stores.

"For the offices on the main line, tents complete were ordered from India, but were sent without floor-cloths, or furniture, so these had to be improvised. Latterly, I used the tables and stools provided for the flying offices on the main line.

Stools and tables.

"The stools were ordinary camp stools, of extra strong construction; the tables were simple planks of mahogany, the legs screwing into battens underneath. Not one of either was broken or needed repair, after six months' work and some hundred miles of mule carriage.

" Six india-rubber water-bags were taken out to carry water for the earth-wires of temporary offices. Although not much used for this purpose, they were most useful in taking out water to working parties. I was astonished at the amount of rough usage these bags stood without injury, even the terrible mimosa thorns seemed unable to damage them. India-rubber water-bags.

" The globe lamps for burning oil were strong and useful, but a candle lamp would have been preferable. Globe lamps.

" Strong silver watches would also have been better than the portable clocks provided. Clocks.

" The small bivouac tents for the temporary offices on the flying lines were hardly used, but seemed well adapted for the purpose for which they were intended. Tents.

" Crowbars were principally used for digging holes for supports. Twenty-four were taken out, but proved insufficient, and I had to obtain others from the Engineer park. A portable forge for repairing these and other tools, and grindstones for sharpening axes, were often much required. The ten American axes provided were invaluable, but insufficient in number. Of bill-hooks I had fifty, and most useful they were. The remainder of the line stores do not call for much remark, except the india-rubber boat, which, though never required for telegraphic purposes, the line of country traversed crossing no river, proved useful in surveying and sounding Lake Ashangi. Line stores.

" The stationery supplied only lasted out the campaign with great economy, with the exception of record books and message forms, of which ample remained. All was admirable in quality. Stationery.

" Early in January, when the difficulties of keeping open the first section of the line from Zula to Suru appeared insurmountable, owing to the damage done by the numbers of sick camels grazing in the jungles, his Excellency the Commander-in-Chief, at my recommendation, telegraphed to England for 200 iron standards, with twenty miles of iron wire and stores complete. By the time they arrived the final march from Antalo on Magdāla had commenced, and it was more than probable that the campaign would be brought to a speedy close. Moreover, the measures taken to guard and improve the line had had such effect, that no interruption had taken place on the section in question for nearly a month. Again, all available labour was required for other purposes, and I therefore did not disembark the stores in question, which were sent on to Bombay. I am therefore unable to report on them. Stores for twenty miles of line on iron standards.

" No letter informing me of the despatch of the lime light apparatus reached me, and I only accidentally discovered its arrival, and then too late to get it up to the front in time for the operations before Magdāla, where it might have been useful. On the return march, however, during a short halt at Senafè, I experimented with it, but from a defect in the apparatus, which there was not time to remedy, was unable to make sufficient hydrogen gas for a satisfactory trial. The system of obtaining this, viz., by passing steam through red hot iron filings, differed from that I had formerly seen (by acid), and, in spite of the difficulty of carrying acid, is, I think, inferior to that method for use on a campaign. Lime light apparatus.

" The only other stores which were at any time under my charge were the photographic and army signal stores. The former I, by direction of Major-General Sir Charles Staveley, then commanding in Abyssinia, gave over to Major Pritchard, R.E., a few days after landing. Photographic stores.

" Within a fortnight of arriving at Zula, I sent Lieutenant Morgan, R.E., who had charge of the signalling party to Senafè, then the advanced post. My own more urgent duties in connexion with the telegraph did not permit me to join the head-quarters of the Signallers.

- “ Army, with which the signalling party remained throughout the advance on Magdāla, where they did good service, and I am, therefore, unable to say regarding the stores. Lieutenant Morgan’s melancholy death on the return march, from fatigue and exposure, deprives us of the interesting fruits of his experience ; but the non-commissioned officers of the signal party, which has returned to Chatham, where the apparatus was prepared, will, I have no doubt, have much valuable information to communicate. I will only remark, that the apparatus for signalling between ship and shore was not found necessary, owing to the short distance separating the anchorage from the beach.
- Bamboos. “ Owing to the uncertainty as to whether timber for supports would be found in the country, Major Champain recommended that 10,000 bamboos should be supplied from India. I have already explained why so little use was made of these.
- Teak poles. “ Teak poles of very good quality were substituted for a part of the bamboos, and most of the remainder were cut in half and jointed in Bombay to facilitate transport on pack animals. These jointed bamboos were a failure. The few that were taken up country were carried by natives at a higher rate than those left entire, and the difficulty of fitting the tops and bottoms together was great. As simple supports they answered passably, but it was impossible to stretch on them. Had camel or mule carriage been available the jointed bamboos would doubtless have been easier of transport than those left whole ; other advantage they had none. Almost all were of excellent quality.
- Disposal of materials at the close of the campaign. “ From Antalo to the Egypto-Abyssinian frontier, a distance of 140 miles, the wire was taken down and brought to the coast, the telegraph office at each halting-place remaining open till the night before the march of the rear-guard. From the head of the Senafè Pass to Zula the wire had been secured to each insulator, and, therefore, from the great rapidity of the march down, I was unable to bring away the line in the Pass.
- “ At my recommendation his Excellency the Commander-in-Chief directed that the army signal and lime-light stores should be returned to England, and the telegraphic material sent to Bombay, with the exception of the 20 miles permanent line, which was required for use at Aden. But this had not been discharged from the ship which brought it, and as there was a large quantity of other material lying over it in the hold which would have taken much valuable time to remove, I acquiesced in the proposal of the Senior Commissariat Officer, that it should be sent to Bombay. At this time also there was no means of sending the lime-light apparatus to England, except *via* Suez, and I, therefore, requested that it might be taken to Bombay for transhipment. The signalling stores, which had been provided for by the War Department, remained in charge of the 10th Company Royal Engineers, and were brought by them to England with their regimental baggage.
- “ The telegraphic material was handed over to the Commissariat for shipment, and I directed Mr. F. Hervey, one of the Assistants sent me from India, to take charge of duplicate packing lists for communication to the authorities at Bombay.
- Remarks on military telegraphy. “ I now beg leave to submit a few remarks on the subject of telegraphs in warfare, suggested by the experience I have had the opportunity of gaining in Abyssinia.
- “ A British army may possibly be again called upon to wage war in a barbarous country, at a distance from its base of operations. To an officer called upon to superintend telegraphic communication on such an Expedition, I believe that the record of my experience would be of much use ; and even to a campaign in more civilized lands, wholly or partially provided with a system of telegraphs, many of my remarks will be applicable.
- “ The subject naturally divides itself into two sections, construction and organization.

" It may, I think, be taken as an axiom, that to supply the telegraph wants of an army advancing on a line of communication more than 100 miles in length (*i.e.*, that distance separating the advance column from the base), a double wire is absolutely necessary; for more than 200 miles a third wire, and so on. For an Army wholly dependent on its base for supplies, as was the Army in Abyssinia, I would add a second wire after the first 50 miles. One wire would be set aside for through traffic between base and headquarters, with translating stations at the principal depôts; the other wire or wires would serve as means of communication between the minor stations, one of which should be at each halting-place. A reference to the following Table of the traffic on the telegraph in Abyssinia will show the difficulty of carrying on the work of an Army with a single wire, and the large share of traffic contributed by the minor halting-places.

Construction
of a military
telegraph.

" It may be here mentioned that messages were rarely sent to the officers for transmission but between 10 A.M. and 10 P.M. I began by keeping the principal offices open at night, but soon found the uselessness of so doing, except when important messages for England were expected from the front.

" The last month only (May) gives an adequate idea of the work which would have devolved on the telegraph, had circumstances permitted its advance with the headquarters.

Work per-
formed by
field
telegraph

From.	January.	February.	March.	April.	May.	Total.
Zula	165	333	399	324	518	1,739
Kumayli	175	309	302	200	446	1,432
Suru	..	108	187	119	240	654
Undul	..	127	218	134	327	806
Rahagedi	..	96	200	137	413	846
Sensafè	..	146	370	250	507	1,273
Focadā	..	..	..	16	52	68
Adigrat	..	..	245	175	171	591
Adabaga	} No records kept.			..	..	..
Dolo				..	..	..
Head-quarters..	..	..	18	170	251	439
Totals	340	1,119	1,939	1,525	2,925	7,848

" Any one conversant with the details of traffic on a line of telegraph will see that a single wire, much subject to interruptions, would be quite inadequate to the transmission of so large a number of messages, averaging nearly 40 words each, exclusive of addresses and official instructions. The number would have been much larger, had not restrictions been placed on the power of officers to use the telegraph. This was at first practically unlimited, but the privilege of signing messages for transmission was afterwards restricted to Commanding Officers and Officers of the Quartermaster-General's Department. This limitation produced a marked diminution in the traffic (*vide* Return, months March and April).

" The next question for discussion is the description of line to be erected. This must, of course, vary to a certain extent with circumstances, but the line, if likely to be required for more than a few days, should be as strong as if intended to be permanent.

Description
of line
preferred.

" A telegraph on a line of communications is subject to more chances of injury than one through a similar country unoccupied by a military force. Camp followers are more mischievous and careless than ordinary travellers, and, apart from any hostile demonstrations, all the worst classes of natives may be expected to hang about the march of an Army. The constant passage of troops does little to protect the telegraph, which should thus be constructed to stand as much rough usage as possible. Economy of carriage, if not of money, would, as a rule, prevent the use of iron standards and heavy wire, but, except under the circumstances of total absence of wheel carriage, lighter material than No. 12 iron wire, on strong bell insulators, should not be used. For two or three wires, I would not place the poles further apart than 70 yards, or 25 to the mile, with ordinary 18-foot poles. If the base of operations be on the sea coast, iron standards might be used with advantage for the first 50 or 100 miles.

Best position.

" About 20 to 50 yards from the road is the best distance for the line. Road crossings should be of course avoided as much as possible, and struts used instead of wire stays. If the march of the Army to the front be so rapid as to prevent the erection of a substantial line to accompany it, a single flying line without insulators might be erected at the rate of 10 miles a-day. A second working party, working at half that rate, would follow, insulating the first, putting up a second wire, and generally finishing the line.

Rate at which a flying line could be erected.

" When the telegraph material was prepared for Abyssinia our knowledge of the country to be passed through was insufficient, and all that could be done was to take out material adapted, as far as possible, to any circumstances; and for the erection of a line from Senafè onwards over the table land of Abyssinia, nothing could have been more suitable than the copper wire and bamboos supplied. But for communication between Senafè and the sea, I would have provided a double line of 60 miles, supported on iron standards. Operations should have commenced at both places, from Senafè with the light line to accompany the march of the Army, and from Zula with the permanent line to connect Senafè, the base of operations in the highlands, with the sea.

Working parties.

" Working parties must, of course, vary with the nature of the troops employed and the country. A company of native troops, properly supervised, can put up five miles a-day of line over ordinary ground. To accompany the march of an army two companies working independently would be required.

Organization of a military telegraph.

" With regard to the organization of a military telegraph, the first question that suggests itself is, under what Department of the Army should the telegraph be placed?

Department under whose control a field telegraph should be placed.

" It may be expected that the *personnel*, at all events of the higher ranks of the telegraph, will, as a rule, be furnished by the Royal Engineers, and the control of their operations would thus naturally fall to the Commanding Engineer. But the construction and maintenance of the lines are only the engineering part of the duties of a telegraph officer. The direction of lines, the organization and control of officers and traffic, are equally important, and have been more in connection with the Quartermaster-General's or Intelligence, than the Engineer Department. In Abyssinia, the control of the construction of the line was subordinated to the latter, but its direction, management, and traffic to the Quartermaster-General. This arrangement, though no inconvenience arose from it in Abyssinia, would not, I think, work well in operations on a more extended scale.

" It is now, I believe, proposed to place the control of the system of telegraphs in England under the Post-Office, or rather to unite the Telegraph Department to be created with the Postal. This system is, I venture to suggest, admirably calculated to promote the efficiency of both telegraphic and postal arrangements on a campaign.

“ The advantages of such an arrangement are many. In small stations, the necessity for double staff would be obviated; the postal duties, ordinarily entrusted to some officer who seldom willingly undertakes them, and is liable to be removed at any time, could be easily and efficiently discharged by a telegraph clerk, accustomed to the ordinary business routine of a telegraph office. In larger camps, the civilian post-master would better perform his work, under the supervision of the commissioned telegraph officer, who would supplement and arrange much of his traffic through the post during interruption, and would inspect both Departments on his tours. Finally, both should be represented at head-quarters by a single chief, as director of communications, who should receive orders through the chief of the Staff.

“ The flying telegraph for use in action, and the Army Signal Department, should be entirely separate, and subordinate to the Quartermaster-General's Department. Flying telegraph.

“ The staff for an army telegraph I would, therefore, organize as follows :—

“ A Director to remain at head-quarters, having control of postal arrangements, in addition to his telegraphic duties. Two, three, or four assistants, according to the length of line likely to be erected, in the proportion of one to every 100 miles. They should be military officers, if possible. The disadvantages of employing on a campaign civilians in positions necessitating constant official communication with officers of all ranks and departments are great and obvious, and I would prefer as an assistant a hard-riding Subaltern of Engineers, though previously unacquainted with telegraph work, to a civilian, however well acquainted with his duties. It would, however, be desirable to have a civilian traffic-manager at the base of operations, or with the head-quarters. Staff recommended.

“ For the subordinate staff, if soldiers thoroughly qualified in the duties of telegraph clerks could be found they would be preferable to civilians, but the training in the telegraph school at Chatham, though an admirable groundwork, does not qualify men for more than the manipulation and management of instruments. With the exception of two or three, who had been employed as telegraph clerks before enlistment, none of the forty or more men of the Royal Engineers who have served under me in telegraph duty during the last four years were fit for the charge of offices on leaving Chatham, although a few months' experience thoroughly qualified most of them for independent charges. Better material could not be had, practice only was wanting, and this they have no opportunity of obtaining. If it should be desired to have a thoroughly trained body of military telegraphers, fit to take charge of and work lines in a foreign country at a day's notice, some one or more of the public lines in England should be entirely managed and worked by the Royal Engineers. This would give a trained staff, which could be transferred, complete in organization and material, to a seat of war. Failing such, I should prefer civilian clerks, entrusting the conservancy of the line to trained Sappers. These should be mounted, and armed with a sword in a frog belt, and a revolver carried at the waist. The regulation equipment of the telegraphers of the Royal Engineers in Abyssinia was a source of constant annoyance to the men, and of delay in the service. Even during construction the heavy rifle and ammunition was much in the way, and on interruption and inspection duty was so irksome that the rifles were sometimes left behind, though against orders, and the men went out unarmed. This resulted in a corporal receiving three severe wounds, and losing his mules and baggage, on being attacked by natives. Subordinate staff.

“ A man cannot comfortably carry his rifle and ammunition when mounted; and to send men on foot to inspect and repair a long section of line is to expect impossibilities.

Lieutenant
St. John's
recommen-
dation for
establish-
ments.

" In conclusion, I beg to submit a list of the total establishment I should think
" necessary for the construction and maintenance of a line of military telegraph, 200 miles
" in length, half of which a double line, with two terminal, three intermediate translating,
" and 12 minor and observation stations.

" GENERAL STAFF.

" 1 Director.

" 2 Military Assistants, one at head-quarters, and one at the central station.

" 1 Civilian Assistant, as Traffic Manager.

	Head Clerks in charge of large Offices.	Signallers.	Principal Inspectors. (Sergeants, R.E.)	Line Inspectors.	Instruments, translating.	Instruments, ordinary.
2 terminal stations ..	2	8	2	4	2	2
3 intermediate ditto..	3	12	3	6	6	6
12 minor ditto ..	..	12	..	12	..	12
	5	32	5	22	8	20

" An equal number of spare instruments should be provided with commutators and
" lightning dischargers for all stations.

" The stores for each station, including stationery, should be packed separately."

CHAPTER XXIII.

POSTAL ARRANGEMENTS.

ARRANGEMENTS were made for the postal communication between Abyssinia and England and Bombay by the Commodore commanding the East Indian Station at Bombay. It was at first arranged that despatch-steamers from Annesley Bay should intercept the mail-steamers of the Peninsular and Oriental Company off the island of Jebel Tir, in the Red Sea, the despatch-steamer hoisting her ensign at the main by day, or exhibiting three vertical lights at night, and burning a blue light at intervals of 20 or 30 minutes to signal the packet. This arrangement was carried out for some time, but it was found that the despatch-steamers often missed the mails, and sometimes, in consequence of bad weather, could not put their bags on board the mail-steamers, or receive those made up in London or Bombay for the Force. The bags were ordered, if not intercepted, to be taken on, and deposited at Aden, whence they were brought back by the returning mail-steamer to Jebel Tir.

Sea postal
arrange-
ments.

Jebel Tir.

It was found that this arrangement did not answer, and accordingly, in the beginning of February, arrangements were made to run the mails direct from Annesley Bay on the one hand to Suez, on the other to Bombay.

Arrange-
ments for
steamers
direct to
Suez and
Bombay.

As every vessel brought cargo, no special expense was incurred; indeed that of the Jebel Tir steamers was saved.

Mails were sent from Zula every Saturday for Suez, and on every Tuesday for Bombay.

Dates of
departure
of mails.

Arrangements were also made for mails to leave Egypt every Sunday for Zula.

A steamer was despatched after the beginning of December, from Bombay, on the 3rd and 19th of each month, to Annesley Bay, calling at Aden to meet the homeward mail from Calcutta. These steamers returned from Annesley Bay to Bombay on the 23rd and 8th of the month, meeting the outward mail for Calcutta at Aden.

It was proposed by the Director of Transport Services to reduce the rate of postage to men of the Army and Navy employed with the Force. This was, however, refused by the Postmaster-General in the following letter to the Treasury, dated the 29th January, 1868 :—

“ I return herewith the letter from the India Office, which was referred to me by your Lordships on the 22nd instant, relative to a suggestion which has been made by the Director of Transport Services, for allowing the transmission, at reduced rates of

Proposal to
reduce rate
of postage
negatived.

"postage, of letters to and from officers and men of the Army and Navy employed in connection with the Abyssinian Expedition, as was done during the Crimean War.

"In making this suggestion, the Director of Transport Services can hardly have been aware of the fact that the men of both Services already enjoy the privilege of sending and receiving letters at a reduced charge of 1*d.* when sent under the usual regulation, and that the charge on officer's letters is only 6*d.* per half-ounce.

"During the Crimean War, letters addressed, as well to officers as to soldiers and seamen, were subject to a reduced charge of 3*d.* per quarter-ounce, and 6*d.* per half-ounce, so that in effect, as most letters exceed a quarter of an ounce in weight, the present arrangements in regard to postage give to the officers engaged in the Abyssinian Expedition privileges as great as, and to the soldiers and seamen privileges greater, than those enjoyed during the Crimean War; and I presume that your Lordships will not be disposed to grant any reduction of postage beyond that afforded by the existing regulations."

Fine on
unpaid
letters
remitted.

All underpaid and registered letters were sent direct to the Postmaster at Zula; and postage stamps not being procurable in Abyssinia, the fine on unpaid letters was remitted, but the attention of the authorities at Bombay was called to supply stamps.

Money-
order sys-
tem not
required.

It was considered unnecessary to establish the money-order system between England and the Army Post Office in Abyssinia, as commissioned and non-commissioned officers and soldiers were allowed to make, through the India Office, remittances to their families in England.

The Army Postal Establishment was arranged in the following manner:—

A Post Office establishment of the following strength was attached to the Force, and an officer of the Quartermaster-General's Department was nominated ex-officio Postmaster-General, to whom the Postmaster, appointed by the Bombay Government, was to apply, and whose orders he was to receive, in cases of difficulty or necessity.

Organiza-
tion and
establish-
ment of
post office.

The Postmaster was considered as, and received the privileges of, a commissioned officer in respect of messing, tentage, transport arrangements, &c. The remaining five Post Office clerks were considered and entitled to the privileges of warrant officers:—

	Salary, Rs. per mensem			
One Postmaster (civilian)	..	..	420	"
Two clerks, Rs. 100 each (ditto)	..	..	208	"
Three clerks, Rs. 75 each (ditto)	..	..	225	"
Six peons on Rs. 20 each	..	..	120	"
Contingencies	..	..	20	"
Total	..	..	Rs. 990	"

On arrival in Abyssinia, the Postal Establishment was placed under the general control of the Quartermaster-General's Department, and consequently reference to its working throughout the campaign will be found in the preceding chapters in the fortnightly Reports sent to the Horse Guards by Captain Holland, Assistant-Quartermaster-General.*

* See pages 5, 8, 20, 73, 89 and 109.

The main post-office was established near the pier at Zula, in a temporary hut. On the entrance of the mail-steamer into Annesley Bay, a gun was fired from the flag-ship, and the red or blue ensign hoisted at the main, according as the mail came from England or India. The same signal was hoisted at a flagstaff in the naval yard adjoining the post-office, and orderlies were immediately despatched from the different quarters of the Camp to the post-office to receive regimental and departmental letters. Till the arrival of the vanguard at Senafè, the inland post was regularly carried by two mounted troopers of the 3rd Bombay Cavalry, who were relieved at each station in the Pass. A postal detachment of 1 havildar and 12 men was placed at each station.

Main post-office.

General inland postal arrangements.

On the occupation of Senafè, an attempt was made to carry the packets by paid Shoho runners. It was soon found, however, that instead of delivering they often destroyed the letters.

On the 16th January orders were issued that the packets in future should be carried by troopers of the 3rd Light Cavalry, whose horses had died or were sick, and who were mounted for the duty on mules of the Land Transport Train especially selected for the service. This arrangement was carried on between Senafè and Zula until the remounts for the 3rd Cavalry arrived. Afterwards, to the conclusion of the campaign, the post between Senafè and Zula was carried between each station in the Pass by two troopers of the 10th Bengal Cavalry, and detachments of this regiment were placed at each station for this duty.

As the army advanced parties of a non-commissioned officer and 12 troopers of one of the Native Cavalry regiments were left at each station on the line of communication, for postal duties. There were 32 stations between Magdāla and the railway terminus, so that this duty required a considerable number of men; in fact, almost the complete strength of a regiment of Cavalry. The distance between stations averaged from ten to fifteen miles. The 10th Bengal Cavalry carried post packets from Zula to Adigrat, the 12th Bengal Cavalry from Adigrat to Ashangi, and the 3rd Bombay Cavalry from Ashangi to the front. All the available riding ponies of the Transport Train were distributed along the postal stations for the purpose of carrying bags heavier than the letter bags, containing newspapers and parcels. The troopers travelled day and night while carrying the letters, but were often delayed by convoys or troops moving along the road or footpaths across the hills, which were so narrow that it was often impossible or dangerous for two animals to pass each other. The post took about eleven days in transit from the sea-coast to Magdāla.

On the return of the force the different postal detachments were picked up, and joined their respective regiments.

Arrangements having thus been made for the carrying of letters entirely by enlisted men, orders were issued on the 4th March that no inland postage should be charged.

Inland postage.

Post-offices were established at Zula, Kumayli, Senafè, Adigrat, Antalo, at the Head-Quarters of the Force, and of each Brigade when on the move. The Postmaster sent from Bombay was left at Zula with the greater portion of his establishment; one of his assistants was attached to Army Head-Quarters as Postmaster, but was afterwards removed, and an officer placed in charge. At the station post-offices, with the exception of Antalo, the duties of Postmaster were performed by officers, and it was found in the Postal Department, as in every other department of the Force, that the civil element was replaced with great advantage by the military, for when an Army is in the field a civilian has little control over his subordinates, who cannot be punished except in very grave cases, and are inclined to become insubordinate and troublesome.

Post Offices.

A Cavalry officer inspected every postal station once in every ten days. No one was allowed, under any pretence whatever, to stop the orderlies, or to open the bags. Separate packets of letters were made up for each station, and enclosed in linen or paper, and distinctly addressed to the officer in charge of the post-office at the station, who alone was allowed to open it. At each station troopers were kept ready, with their horses saddled, day and night, to carry on the bags immediately they arrived.

Recommendation that the postal department should be an organized military department.

"In future campaigns it would be of great advantage that the Postal Department should be an organized military department, managed by officers and non-commissioned officers. All men carrying posts should be armed, and should never travel singly, or carry bags so heavy or bulky as to prevent the free use of their arms in case of attack. In Abyssinia it was found that a letter-bag of 30 lb. weight was the maximum which a trooper could conveniently carry. On two occasions the postal orderlies were attacked by the natives, and their bags lost in the scuffle."*

* Report by Captain Holland, Assistant Quarter-Master-General.

CHAPTER XXIV.

COMMISSARIAT DEPARTMENT.

THE Commissariat Department for the Force was organized at Bombay under Indian regulations, and was, on embarkation, composed of a Deputy Commissary-General, 5 Assistant Commissaries-General, 5 Deputy Assistant Commissaries-General, and 4 Sub-Assistant Commissaries-General, with a subordinate establishment according to Indian regulations. Seven of these officers were taken from the Bombay Commissariat Department, three from Bengal, and five from Madras.

Establishment on embarkation.

This department with that of the Land Transport on starting from Bombay was placed under the direction of the Controller of Supply and Transport.

At the period the Expedition was organized the Commissariat establishment in India had been reduced to the lowest limit at which it was possible to carry on work in time of peace. The sudden pressure to collect and ship off the supplies required for 12,000 fighting men, 30,000 followers, and some 30,000 animals, compelled the Commissary-General at Bombay to weaken all Commissariat out-station offices to strengthen the Presidency office. Hence, with the exception of commissioned officers and some few of the warrant and non-commissioned grades, the Field Establishment had to be formed from new and untried materials, which necessarily added greatly to the labour and responsibility of the officers.

The first portion of the Establishment left Bombay with the Reconnoitring Party on the 16th of September, and landed at Zula on the 4th of October, 1867.

Major F. P. Mignon was the Commissariat Officer with this party, and a few days after landing (on the 9th October) he submitted the following Report connected with his department:—

“First, as regards the requirement of troops on the seaboard.

“The place selected for the port of debarkation is opposite to and distant three miles from the village of Zula, in Annesley Bay.

“*Port and Landing.*—The approach to the shore is not favourable, for about 400 yards the water is very shallow; ships’ boats even cannot approach within 150 yards, for which distance it is necessary to wade. There is, however, good anchorage for any number of vessels of any tonnage at about 700 yards from the beach, so that all that is requisite to facilitate landing are piers, the erection of which is, I understand, to be commenced at once.

“*Bullocks and Sheep.*—I learn from inquiry from M. Münzinger that large numbers of cows and sheep for slaughter can be purchased in this neighbourhood at 7 to 8 dollars for the former, and from $\frac{1}{2}$ to $1\frac{1}{4}$ dollars for the latter. The animals are small, but as no purchases have been made, I am unable to report the probable out-turn.

“*Rations for Europeans.*—With the exception of meat and wood, no articles of rations for European troops are procurable, and it would appear that all must be imported either from India or Egypt.

Major Mignon’s Report on the requirements, &c.

“ *Rations for Natives.*—The above remarks also apply here. There is nothing to be had until the highlands of Abyssinia are reached.

“ *Forage and Grain for Horses and Cattle.*—Neither forage or any description of grain can be obtained; camels can graze; on the seaboard vast quantities of low jungle, principally of the soda plant, abound, affording suitable grazing for almost any number of camels, and I learn a sufficiency of grazing is to be found also for the onward march, but no grass or grain; and it will be necessary to store both of these articles at the several halting-grounds until Takoonda on the highlands is reached. A sufficient supply should, therefore, be sent as early as possible, as much time will necessarily be required ere such bulky articles can be conveyed and stored long distances inland.

“ *Wood.*—Large quantity of drift wood is to be found on the sea coast, and also dry jungle wood close to camp, the supply is considerable. Quantities of dry cow-dung cover the ground, very suitable for the use of followers. It does not appear at all necessary to send wood for the troops.

“ *Water.*—The water is close to the camp, about a mile from the seashore. Although muddy it is sweet and fit for use. Some alum might be sent up to quicken the deposit. With reference to its quantity and sufficiency for the Army and Transport Corps animals, doubtless a report will be forwarded by the superior officers of the reconnoitring party.

“ *Piers and Cranes.*—It will be essentially necessary that the Commissariat Department possess its own pier, with two travelling cranes. It will be impossible to land by manual labour the vast masses of stores required for the force. A tramway to the dépôt sheds would also be invaluable, and save any unnecessary employment of transport animals, and the labour and confusion of loading and unloading animals for the short distance of a mile, where the dépôt sheds will probably be erected.

“ *Baggage Animals and Equipments.*—I learn a large number, from 4,000 to 5,000 camels, and possibly 2,000 mules, could be purchased in this neighbourhood, and near Massowah and its vicinity. It will be necessary, however, to send all equipments from India.

“ *Leeches.*—I was informed by Surgeon Turner, at Aden, that the breeding season has passed, and that it is too late now to make arrangements for such a supply at his station. He could, however, spare perhaps 100 to 200 leeches a-month.

“ *Fowls.*—Can be purchased in fair numbers at Massowah, also from Lohea and Hodeida, from whence they are principally brought; doubtless our requirements would be met on information being sent to those parts.

“ *Limes and Plantain Leaves.*—Occasionally a few limes are to be had at Mussowah, but no plantain leaves.

“ *Rice and Jowaree for Camel Drivers.*—Quantities could be got from Lohea and Hodeida, but the rates are high. Rice is imported from India, and it would, therefore, be cheaper to get the articles direct. The rate of jowaree at Mussowah is about 16 lbs. for the rupee. It would be cheaper at the export ports, and still cheaper, I think, in Bombay. If jowaree could be got much cheaper than rice, a saving would be effected, as it might be issued to camel drivers, whose staple food it is.

“ Secondly, as regards our requirements after reaching the highlands of Abyssinia. I am informed by M. Münzinger that forage, also grain, consisting of wheat, gram, barley, peas and beans; also cows and sheep are procurable. I conclude a certain number of month's stock will accompany the Army, allowing of time to make purchases from local sources, and it is possible that the country will afford all our wants of grain, meat, forage, &c. Ghee is also to be had in large quantities in Abyssinia.

“ *Dépôt.*—It is of the utmost importance that the dépôt on the seaboard be set to

“ work at once. An establishment of 2 officers with clerks, 2 conductors and 4 sergeants, with 2 overseers, and some 6 or 8 inspectors, also weighing men, will be required to discharge cargo, to receive the stores, and to arrange for their onward dispatch. The sooner these arrangements can be completed the sooner we shall be in a position to meet the demands which will ere long be preferred on us. No reliable or efficient labour can be secured here. It is a very great want; it is of the first consequence that the depôts be provided with a sufficiency of Hamals regularly organized and trained to work. I would suggest that a company of 500 men be sent complete with muccadums.* These could perform the work of the depôt here and the four or five intermediate depôts that may have to be formed in the lowlands. I have no hesitation in saying that, in the absence of such a company, the stores cannot be landed, housed, or dispatched. The Arab, or Sahoo drivers, cannot be depended upon for such work.

“ *Depôt Boats.*—There are no boats on this coast, a want that cripples all action. Colonel Merewether informs me that he has ordered a number to be sent from Aden, and has also directed me to write to Major Clements to send some for the Commissariat. I shall apply for ten at present, to be hired by the month.

“ *Commissariat Water Supply.*—A certain number of bheesties will be required to supply water to the Commissariat followers, hamals, employed at the landing-place. There is no water within a mile of the seashore. A number of small hand mussucks and galvanized iron buckets, with 20 feet of rope each, would also be very valuable, but a proportion of bheesties for each Division, Brigade, and Depôt Commissariat, and for the working hands at the port, is essentially necessary.

“ *Tools for Commissariat Followers.*—Bill-hooks and hatchets are required to cut wood, and also shovels to level ground and dig trenches and water ways. The iron hoes shipped as dead stock are only suitable for ship's use. The powrahs or shovels should be light, but strong.

“ *Carriage and Tents for Commissariat Followers.*—A proportion of rowtees or other tents will be required for Commissariat, Warrant, and non-commissioned officers and clerks, inspectors, and overseers, according to their standing, and a certain weight of baggage will have to be carried for them at the public expense. It is necessary to fix the allowance for each for warrant officers, sergeants, overseers, weighing men, muccadums, and drivers. The line gear and cattle medicine must also be carried. To allow the drivers to place their bedding, cooking pots, &c., each on his own animal is objectionable when the weight of the public stores amounts to nett 200 lbs. for a mule, and a hilly country to be traversed. That some allowance is necessary will, I am sure, be admitted; the men must have bedding and clothing; that they keep their health and working condition is a matter of importance to us.

“ *Rates of Recovery for Grain and Forage.*—This information is required for issues of grain and forage to Native Cavalry and officers' horses. A fixed daily rate would be the most simple.

“ *Sickles.*—I would suggest that every muleteer leaving India be supplied with a good saw-edged cutting sickle. The handle to be rivetted to the sickle, and not merely thrust into it as is usual.

“ *Paulins.*—A large number of paulins of different sizes will be required to protect the stores on the line of route. We have heavy rain here, and it is continuous from December to March. Those articles are of the very greatest importance.

* 500 men for depôts.

" *Medicine, Cattle.*—The mules sent from Poona have no medicines. I would suggest that a number of boxes, fitted with tin canisters and bottles, be made up to contain the following for each division of 1,000 mules:—10 lbs. powdered ginger, 6 lbs. sulphate of antimony, 10 lbs. saltpetre, 4 lbs. resin, 3 lbs. camphor, 2 lbs. Venice turpentine, 4 lbs. alum, 2 lbs. sulphate of zinc, 4 lbs. blistering ointment, 4 lbs. dickamalee oil, 2 gallons turpentine, 2 gallons oil (sweet), 3 syringes, 2 ounce, 1 patent clyster pipe, 6 scalpels, pestle and mortar wedgewood ware, weights and scales, small, 2 oz. to $\frac{1}{2}$ dr.

" *Cattle Equipment.*—A number of the head-stalls, &c., of the Poona mules are already unserviceable. I suggest that only new articles be sent up from India, and that a number of spare sets, with a few hides, wax, twine, gunnypaut and numdah for repairs, be forwarded at once. The equipments of the Poona mules will not last long. I learn that 5,000 camels expected from Aden, although they will have saddles, will require both sulleetahs and ropes. The 5,000 camels to be hired in this neighbourhood, as also mules, probably 2,000, will also require a complete set of equipments each. The subject of equipments, however, has doubtless been duly considered and provided for. I merely note that none are to be had here.

" *Sheds for Stores at Dépôt.*—I would submit that all sheds sent up to be furnished with either galvanized iron or plank sides, for without, a sufficient protection would not be afforded to the stores from the very heavy rains on this coast.

" *Mule Attendants.*—I believe a large number of mules are shortly expected from Europe and Egypt. A transport establishment of inspectors, weighing-men, and muccadums and drivers, will be required. The men engaged in Egypt might serve as drivers, but it is more than probable that the men from the Levant would not answer our purpose. I would suggest for consideration whether it would not be better to send up in the transports from Bombay, drivers, say one man to three or four mules, to tend the animals during the voyage, and the rest with officers, inspectors, muccadums, &c., here to be ready to receive the mules as they arrive.

" *Transport Corps.*—I would respectfully request that the officers, clerks, and other establishments, with all equipments that are ready, be sent up at once. I have no men to receive charge even of the camels or mules now very shortly expected, much less of those that may arrive from Suez ere long. Issues having had to be made on board both ships, as also on shore, and the stores received and discharged, has left me without a single man available for any other work.

" *Transport Corps Followers.*—I have already demi-officially suggested the necessity of some simple system for the registration and payment of the followers of the Transport Corps. I fear our system of nominal Rolls will be found out of the question, and quite impracticable with such a mass of men of different races, as also with men of the same race, such as Arabs, &c., very many of whom have the same name. Perhaps a system of tallies might be introduced with the plates of different shapes for the different branches, such as camels, mules, and bullocks, consecutively numbered, to be worn round the neck. A large number of these might be stamped, or, better still, cut out of tin, packed in boxes of 50 or 100, and marked and numbered externally to prevent confusion. I merely offer the suggestion for your consideration; it can doubtless be improved.

" *Family Remittances of Commissariat Followers.*—I would submit the advisability of discouraging as much as possible the system of family remittances. It necessitates the keeping of several documents to be copied and transferred from place to place, division to division, &c., &c., as the exigencies of the Service may require, and from similarities of names and other causes such as sickness, deaths, transfers, &c., &c., very

“ liable to lead to mistakes, loss of money, and endless confusion in the accounts. On mentioning this subject to Colonel Merewether, he informs me he will recommend a system of remittances through the General Paymaster, that followers will be able to obtain from him an order for India, which will render departmental remittances unnecessary.

“ *Payment of Dhooly Bearers and other Regimental Establishments.*—I conclude the system observed in India will apply in regard to the payment of each follower by the Regimental Paymasters. That although the establishment of bheesties, bearers, and hospital followers have been provided by the Commissariat, the Department will not be called upon to pay them.

“ *Issues to Canteen.*—I also conclude that the Indian system will be observed—that no money payment will be made to the Department by Regimental Paymasters.

“ *Lamps for Tents.*—If this is to be a Commissariat supply, I would recommend the strong cabin lamp, protected by wire of English manufacture, or the Tucker’s lamp. The bazaar-made Indian tent lamps are next to useless, and are unserviceable after a week’s use.

“ *Regimental Victualling Establishment.*—I would also respectfully suggest each regiment, Native or European, and each battery of Artillery, &c., &c., be sent up complete in itself, with its Field Commissariat Victualling Establishments, such as inspectors weighing-men, peons and biggaries, and tinmen, that these men be permanently attached, and thus allow the regiment or detachment to march complete in itself. That the Executive Commissariat Officers being with them be distinct to replace casualties in the above, and to make issues from their stores, whether from the depôt, division, or brigade, as the case may be.

“ *Establishment for Repair of Equipments.*—It is essentially necessary that each hundred mules be provided with two nalbunds and two mooches, to shoe the animals and to repair the equipments. I have at present only one nalbund and one moochee for the mules sent from Poona, and even these were sent in the first instance without these necessary men. The wear and tear of equipments will be very great, and, therefore, the peace establishment of India would not suffice either in men or materials for the work to be performed. Materials in leather, wax, twine, and gunnypaut, numdahs, and dungaree, will be very necessary.

“ *Depôt and other Store Establishments.*—In the list framed by me at Poona I only mentioned a few biggaries necessary for store purposes. I conceived they might form a nucleus of labour, but it will be necessary to double if not treble the numbers, owing to the want of suitable labour in this country. I would most respectfully submit that very large establishments in every grade of the Department should be sent up, and that the preconceived ideas of what is necessary in Indian campaigns, and found necessary in Persia, be not allowed to form the basis of the calculation for this expedition. We shall require large extra establishments in excess of those I thought necessary in India; and I cannot but believe that in the end not only efficiency but economy will be secured by giving very liberal establishments to all Commissariat officers, whose best energies would be neutralized by any deficiency in this respect.

“ *Stores consigned to the Force.*—I would submit that stores consigned for the Ordnance and Engineer Departments be not consigned through the Commissariat Department, which will have enough to do to land its enormous supplies. A division of labour would simplify business; other branches of the Service could arrange to land their stores, and indent on the Land Transport for necessary carriage and the naval transport officers for the boats required for this purpose, as was done in Persia.

“ In conclusion, I would earnestly solicit further establishments of *Inspectors*,

" *Depôt and Transport Officers, and Coolies.* I hear the 10th Regiment and Sappers may arrive in a day or two, and I have no carriage to move the stores, or to provision such a force on our leaving this for the water in the interior, some 16 miles off, in a day or two."

The following letter and statements from the Commissary-General to the Secretary to Government, dated Bombay, 30th November, 1867, show the Commissariat preparations made at Bombay by the end of November :—

Preparations made in Bombay by the end of November.

" In reference to the Government Resolution, No. 4413, of 16th instant, I have the honour to submit for the purpose of being laid before his Excellency the Right Honourable the Governor in Council, the following statements :—

" *Statement No. 1*, exhibiting three months' shore rations for the whole force, six months' shore rations for 9,500 men, with their followers; also for 14,500 Commissariat followers, 3,000 horses, 16,000 mules and tattoos, 8,000 camels, 4,000 pack bullocks, and 1,000 draft bullocks, including the horses, &c., of the mounted corps.

" *Statement, No. 2*, exhibiting the supplies already prepared at Bombay and other stations to meet demands as per Statement No. 1, and the quantities wanted to complete the stock.

" *Statement, No. 3*, exhibiting the quantities of shore rations already dispatched to Zula.

" It will be observed from the Statement No. 2 that the following articles are required to complete the supplies, as per Statement No. 1.

" FOR EUROPEANS.

" Flour, 1st sort, 313,540 lbs. 150,000 lbs. of biscuit have been ordered to be sent from Bombay, and the balance will be obtained from Egypt.

" FOR NATIVES.

" Rice, Bengal, 3,436,652 lbs. One-half of this supply has been ordered from Calcutta, and the balance from Bombay.

" Flour, 2nd sort, 704,308 lbs. This demand will be met from the 1,500,000 lbs. of wheat ordered from Egypt and Calcutta.

" Doll, 763,170 lbs. This supply has been ordered partly from Bengal, and partly from Bombay.

" Ghee, 207,646 lbs. This supply has been ordered from Bombay. Ghee is reported to be procurable at Mussowah also.

" Salt, 117,785 lbs. This supply has been ordered from Bombay.

" FOR HORSES.

" Grain, 13,158,320 lbs. The total quantity of grain required is 25,524,360 lbs., and to meet this demand arrangements have already been made for nearly 13,200,000 lbs. of grain, as per Statement No. 2. The balance will partly be sent from Calcutta, and partly from Bombay.

" Forage, 62,973,850 lbs. The total quantity of forage required amounts to 102,965,850 lbs., and to meet this demand arrangements have already been made for 39,992,000 lbs., and the balance will be sent from Bombay.

" During the monsoon months a sufficient supply of forage was not procurable

“ either at Bombay or out-stations, and therefore it became necessary to purchase forage by instalments, to prevent extraordinary rise in the market.

“ Nine lac lbs. of forage were purchased at Kurrachee, but no more can be obtained at that place, the Commissariat Officer there having reported that, if further supply of forage be drawn from Scinde, serious inconvenience may result to the Government horses and cattle there.

“ Twenty lac lbs. of hay were ordered from Bengal, and the Commissary-General there has since intimated to me that he can hardly meet that demand, and therefore a further supply of this article is not available from that place.

“ Twenty lac lbs. of compressed forage were ordered from England, but it appears from the latest advices that a portion of this supply has been dispatched to the port of debarcation with an intimation that this stock is not kept in stock by the trade there, and therefore the whole quantity cannot be delivered in time for dispatch in the steam-transports.

“ Fifty lac lbs. of straw, and 800 tons of compressed forage, have been ordered to be sent from Egypt.

“ Colonel Merewether has ordered the issue of only 15 lbs. of hay to each horse, and 12 lbs. to each mule. If this arrangement is sanctioned by the Government, it will reduce the quantity of forage to be sent from Bombay to Zula nearly 25 per cent.

“ The Statement No. 2 shows the quantity of ration articles already prepared in Bombay. From this supply the stock for six months' rations for 9,500 men, and for two months' shore rations for the followers and animals, is under shipment on three transports, with the exception of grain and forage for animals, of which only such stock as is ready will be shipped.

“ Three months' provisions* for 4,000 Europeans have been received from England. These provisions have been ordered to be sent to Zula, to be kept there for use on shore, if necessary, or for issue to the troops on their return voyage.

“ The men of the Bengal Brigade are taken into account in calculating three months' stock† for the whole force, and for 9,500 men, but two months' shore rations will also be shipped at Calcutta for the Bengal Brigade.

“ Captain Willoughby reported that in sending two cargo ships, he has made provisions for two months' shore rations of barley, and about six weeks' ration of straw for the number of mules and horses sent from Suez. It is stated that he will not be able to keep this up, owing to the ships not taking many days' rations, but he will arrange to ship as much forage as the vessels will carry.

“ Major Mignon has applied to the Commissariat Officer at Aden to send to Zula 40,000 lbs. of jowaree, and to keep ready and send 40,000 lbs. more; also a month's supply of rice, flour, dholl, and salt for all drivers he may send from Aden. It is reported that ghee could be got cheaper from Mussowah.

“ The Commissariat Officer in the Persian Gulf has a stock of grain and forage awaiting tonnage for sending it to Zula.

“ Out of the supplies ordered from Egypt the following have been shipped for Zula, viz. :—

“ Barley, $9\frac{1}{2}$ lac lbs. ($3\frac{1}{2}$ lac lbs. returned); beans, $10\frac{1}{4}$ lac lbs.; straw, $8\frac{3}{4}$ lac lbs.; wheat, $1\frac{3}{4}$ lac lbs.; patent forage, 130 tons; pressed hay, 15 tons.

“ A large portion of the supplies prepared at Calcutta has been sent to Zula.

“ The supplies prepared at Kurrachee are awaiting tonnage. The ship ‘Pride of the Ganges’ has been taken up for the conveyance of the same.”

* With the exception of biscuit and flour.

† As per Statement, No. 1.

No. 1.

The following Statement exhibits the number of Troops, &c., for whom Shore Rations had been ordered to be prepared up to the 30th November, 1867, and the Period for which they were calculated.

Europeans.														
	Biscuit.	Flour, 1st Sort.	Meat, Salted.	Arrack.	Porter.	Rice, Vergole.	Sugar, Bengal.	Tea, Black.	Salt, 2nd Sort.	Wood, Fine.	Onions.	Potatoes.	Pickles.	Preserved Vegetable.
	lbs. A	lbs.	lbs. A	Gills.	Hhds. B	lbs.	lbs.	lbs.	lbs.	lbs.	lbs. B	lbs. B	lbs. B	lbs. C
Three Months' Shore Rations for the whole Force.	111,270	222,540	111,270	16,690	268	83,453	52,158	14,903	13,910	1,001,430	13,909	41,726	2,800	27,818
3,703 Europeans..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8,688 Natives ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3,470 Public Followers..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2,034 Private Followers	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2,686 Horses ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
47 Mules ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
482 Bullocks ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Six months' Shore Rations for—														
5,800 Natives ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3,700 Europeans ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4,156 Public Followers	..	666,000	..	33,300	..	166,500	104,063	29,732	27,750	1,998,000	..	..	..	..
1,902 Private Followers	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14,500 Commissariat Followers.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3,000 Horses ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16,000 Mules and Tatloos	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4,000 Pack Bullocks ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8,000 Camels ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1,000 Draft Bullocks ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	111,270	888,540	111,270	49,990	268	249,953	156,221	44,635	41,660	2,999,430	13,909	41,726	2,800	27,818
A For one Month only.														
B For fifteen days only.														
C For one Month only.														

No. 1—continued.

	Natives.							Cattle Ration.				
	Rice, Bengal.	Flour, 2nd Sort.	Wheat.	Dhall.	Ghee.	Salt, 2nd Sort.	Wood, Fine.	Hay.	Straw.	Grain, Raw.	Barley.	Beans.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Three Months' Shore Rations for the whole Force.												
3,709 Europeans ..	912,240	651,600	..	195,480	97,740	32,580	280,640	..	..	..	..	..
8,688 Natives ..	430,762	307,688	..	123,075	30,768	20,513	164,100	..	..	..	..	..
5,470 Public Followers ..	109,410	78,150	..	46,890	..	..	62,520	..	..	..	..	..
2,084 Private Followers ..	..	..	..	..	..	..	..	4,834,800	..	1,933,920	..	..
2,686 Horses ..	..	..	..	..	..	..	..	68,450	..	16,920	..	..
47 Mules ..	..	..	..	..	..	..	..	867,600	..	173,520	..	..
482 Bullocks ..	..	..	..	..	..	..	..	..	..	..	..	..
Six Months' Shore Rations for—												
5,800 Natives ..	1,566,000	522,000	..	261,000	130,500	43,500	..	..	..	..	..	..
3,700 Europeans ..	..	..	..	..	..	..	..	..	..	..	..	..
4,156 Public Followers ..	841,590	280,590	..	187,020	46,755	31,170	..	..	..	..	..	..
1,902 Private Followers ..	256,770	85,590	..	85,590	..	..	..	..	..	..	..	..
14,500 Commissariat Followers ..	2,936,250	978,750	..	652,500	163,125	108,750	435,000	..	..	..	..	..
3,000 Horses ..	..	..	..	..	..	..	..	10,800,000	..	5,400,000	..	..
16,000 Mules and Tatooes ..	..	..	..	..	..	..	..	43,200,000	..	11,520,000	..	..
4,000 Pack Bullocks ..	..	..	..	..	..	..	..	10,800,000	..	1,440,000	..	..
8,000 Camels ..	..	..	..	..	..	..	..	28,800,000	..	4,320,000	..	..
1,000 Draft Bullocks ..	..	..	..	..	..	..	..	3,600,000	..	720,000	..	..
	7,053,022	2,904,308	..	1,551,555	468,888	238,513	922,260	102,965,850	..	25,524,360	..	..
A. For one month only.												
D. For the first two months, half of each, and for the remainder, three-fourths of Rice, and one-fourth of Flour, 2nd sort.												

A. For one month only.

D. For the first two months, half of each, and for the remainder, three-fourths of Rice, and one-fourth of Flour, 2nd sort.

No. 2.

The following Statement shows the quantities of Provisions and Forage ordered from Bombay and elsewhere.

	EUROPEANS.													
	Biscuits.	Flour, 1st Sort.	Meat, Salted.	Arrack.	Porter.	Rice, Vergola.	Sugar.	Tea, Black.	Salt.	Firewood.	Onions.	Potatoes.	Pickles.	Preserved Vegetables.
Bombay ..	lbs. 111,270	lbs. 75,000	lbs. 6,170	Gallons. 15,990	Hbds. 268	lbs. 219,953	lbs. 156,221	lbs. 44,635	lbs. 41,660	lbs. 2,999,430	lbs. 13,909	lbs. 41,726	lbs. 2,800	lbs. 7,464
Poona ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Egypt ..	..	800,000	..	..	..	..	..	..	..	..	..	..	..	..
Kurrachee ..	..	..	..	4,000	..	..	..	..	..	..	..	..	..	..
Sholapoor ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
England ..	..	..	105,100	..	..	..	..	..	..	..	..	..	..	30,000
Calcutta ..	..	200,000	..	30,000	..	30,000	..	..	..	..	..	..	..	..
Total supplies ordered ..	111,270	575,000	111,270	49,990	268	249,953	156,221	44,635	41,660	2,999,430	13,909	41,726	2,800	37,464
Balance required ..	..	313,540	..	..	..	..	..	..	..	..	..	..	..	..
Balance in excess of requirements ..	..	..	..	..	..	..	..	..	..	..	..	..	..	9,646

No. 2—continued.

	NATIVES.							Animals.				
								Forage.		Grain.		
	Rice, Bengal.	Flour, 2nd Sort.	Wheat.	Dhall.	Ghee.	Salt, 2nd Sort.	Firewood.	Hay.	Straw.	Grain, Raw.	Barley.	Beans.
Bombay	lbs. 2,816,368	lbs. 1,800,000	lbs. ..	lbs. 688,385	lbs. 161,242	lbs. 118,728	lbs. 444,750	lbs. 15,600,000	lbs. 6,500,000	lbs. 2,529,240	lbs. 436,800	lbs. ..
Poona	..	400,000	..	..	..	..	..	700,000	..	..	..	..
Egypt	..	..	1,000,000	..	..	..	..	1,792,000	5,000,000	..	1,000,000	1,000,000
Kurrachee	..	..	..	..	50,000	..	500,000	900,000	..	1,700,000	1,700,000	..
Sholapoor	..	..	..	..	..	..	..	500,000	..	..	..	..
England	..	..	..	..	..	..	..	200,000	..	..	..	..
Calcutta	800,000	..	500,000	100,000	50,000	..	..	2,000,000	5,000,000	4,000,000	..	..
Total supplies ordered ..	3,616,368	2,200,000	1,500,000	788,385	261,242	118,728	944,750	23,492,000	16,500,000	8,229,240	3,186,800	1,000,000
Balance required	3,436,654	4,704,308	..	763,170	207,646	117,785	..	62,973,850		13,153,320		
Balance in excess of the requirements	..	..	1,500,000	..	..	..	22,490	..		..		

N 2

No. 3.

The following Statement exhibits the Shore Rations shipped for the Troops proceeded to Abyssinia up to the 27th November, 1867.

Europeans.													
	Biscuit.	Flour 1st Sort.	Beef.	Pork.	Onions.	Potatoes.	Porter.	Rice, Vergole.	Spirit, Proof.	Sugar, 2nd Sort.	Salt, 2nd Sort.	Tea, Black.	Wood, Fire.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	Hhds. Doz.	lbs.	Gallons.	lbs.	lbs.	lbs.	lbs.
For the Reconnoitring Party as per Statement No. 1	..	..	..	..	..	..	..	..	..	..	..	..	..
For the Advance Brigade as per Statement No. 3	2,760	2,760	1,864	936	345	1,035	0 12½	4,140	192	2,538	..	740	9,540
For the Scind Brigade as per Statement No. 4	28,515	28,530	..	..	3,729	10,748	69½ 1½	14,415	2,186½	9,160	2,428	2,592½	143,470
For the Followers and Animals as per Statement No. 7	2,220	2,140	440	438	285	825	5 8½	1,125	170½	702½	194	206½	12,730
For the Scind Horse as per Statement No. 5	..	..	..	..	..	..	..	..	..	..	..	..	..
For the Troops as per Statement No. 6	900	850	472	378	107	313	1 0	495	45	301	96	96	5,040
Total	34,395	34,330	2,776	1,752	4,466	12,921	75½ 23½	20,175	2,594½	12,751½	2,718	3,685½	170,830

No. 3—continued.

	Natives.								Cattle Ration.		
	Dhal.	Flour, 2nd Sort.	Ghee.	Salt, 2nd Sort.	Rice, Bengal.	Wood, Fire.	Tobacco.	Turmeric.	Grain, Raw.	Hay.	Barley.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
For the Reconnoitering party, as per Statement No. 1	8,314	25,292	2,842	1,407	25,292	32,211	..	..	95,700	93,203	..
For the Advance Brigade, as per Statement No. 3	132,255	453,525	49,299	23,078	529,275	182,085	..	..	940,700	691,200	..
For the Scinde Brigade, as per Statement No. 4	27,120	84,630	9,207½	4,604	84,630	53,850	..	..	113,775	321,000	..
For the Followers and Animals, as per Statement No. 7	21,975	88,200	10,193	4,285	88,200	68,940	4,651	467	15,000	510,975	64,800
For the Scind Horse, as per Statement No. 5	20,025	68,400	6,303	3,375	68,400	40,050	..	..	475,725	1,121,250	..
For the troops, as per Statement No. 6	10,500	32,475	2,953	1,725	32,475	26,910	..	..	56,475	1,800	..
Total	220,189	752,522	80,797½	38,474	828,272	404,046	4,651	467	1,697,375	2,739,435	64,800

Statement No. 2 shows the Provisions shipped from Calcutta.

The following Returns show the state of the Commissariat stores in Africa landed and on board ship at Zula, on the 3rd January, the date of the arrival of the Commander-in-Chief:—

Commissariat stock in Africa on Sir R. Napier's arrival.

Provisions, &c.	Quantities.	Number of days set apart for 1,000 Men.	Remarks.
For Europeans:—		Days.	
Spirits gallons	27,976	560	
Biscuits lbs.	33,480	33	
Wheat for flour }	222,900	202	} 384
„ for bread }	182,054	182	
Flour, 1st sort }	381,702	1,324	
Rice }	23,038	384	
Salt }	3,531	60	
Tea }	17,390	86	
Sugar }	16,353	21	
Potatoes }	5,588		
For Natives:—			
Rice	1,145,105	3,972	
Flour, 2nd sort	1,092,150	1,032	
Dholl	464,280	1,875	
Ghee	69,035	987	
Salt	69,012	1,152	
Forage:—			
Grain	2,160,927	270	For 1,000 horses.
Hay	2,732,445	182	„ „
Compressed forage	208,480	10	„ „
Chopped straw	206,640	17	For 1,000 mules.

The Stores at Inland Depôts at this time were as follows:—

Stores at inland depôts on Sir R. Napier's arrival.

Depôts.	European Rations.	Native Rations.
Hadoda	5,000 Rations, i.e., for 500 men for one day	10,000 Rations, i.e., for 1,000 men for 10 days.
Kumayli	4,000 Rations, i.e., for 1,000 men for 4 days	10,000 Rations, i.e., for 1,000 men for 10 days
Upper Suru	2,000 Rations, i.e., for 1,000 men for 2 days	4,000 Rations, i.e., for 1,000 men for 4 days.
Ragahedi	2,000 Rations, i.e., for 1,000 men for 2 days	4,000 Rations, i.e., for 1,000 men for 4 days.
Undul Wells	2,000 Rations, i.e., for 1,000 men for 2 days	4,000 Rations, i.e., for 1,000 men for 4 days.
Senafé	For 1,000 Men.	For 1,000 Men.
	Spirits for 16 days.	Rice for 150 days.
	Biscuits „ 20 „	Flour „ 150 „
	Flour for Bread „ 16 „	Dholl „ 150 „
	Rice „ 24 „	Ghee „ 48 „
	Sugar „ 28 „	Salt (can be locally purchased) „ 12 „
	Salt (can be locally purchased) „ 4 „	Grain (for 1,000 horses) 11 „
	Tea „ 12 „	
	Potatoes, fresh „ 4 „	
	Onions „ 2 „	
	Preserved potatoes „ 120 „	
	Compressed Vegetables „ 40 „	

Forage.

Hadoda.—Grain for 16 days for 1,000 horses, and hay for 3 days for 1,000 horses.

Kumayli.—Grain for 1,000 horses for 7 days, and hay for 1,000 horses for 3 days; also compressed forage for 1,000 horses for 4 days.

Upper Suru.—Grain for 1,000 horses for 12 days.

Commissariat arrangements, as shown in Chapter IX,* were first organized in Africa by Major F. P. Mignon. This officer generally superintended all arrangements at Zula, in the passes, and at Senafè, till the arrival of Lieutenant-Colonel A. Lucas, the Deputy Commissary-General. Slaughter yard and slaughter cattle.

Under Major Mignon's superintendence, a slaughter-yard was erected to the south of the camp at Zula, and kept scrupulously clean, the offal being removed daily and buried at a considerable distance. The carcasses as slaughtered were removed and brought to the hanging room; they were hung up for the night, and cut up into joints previous to issue next morning at the ration stand. A stock yard and sheep-fold were put up near the slaughter-yard; the animals were carefully watered and grazed, and also had fodder in the yard for night feeding.

The Commissariat purchased during the first three months at Zula, 855 cattle and 2,173 sheep, in the neighbourhood, from the natives of the country, at prices averaging 8 dollars a cow and 1 dollar a sheep. The cattle were generally in fair condition, but small, and yielded good, wholesome beef, the out-turn for issue averaging 144 lbs. Purchase of cattle.

The sheep were small and not as good as the cattle, the average out-turn was only 16 lbs. The sheep received from Berbera were superior, they were the fat tailed variety, and, although small, were always in good condition. These were generally issued at 30 lbs. each. Sheep.

Meat was issued to the native troops and followers from the 20th January, 1868. They preferred to slaughter for themselves, and took goats in preference to sheep. The average price was one dollar each, and the animals issued averaged the weight of 16 lbs. each. Issue of meat.

The bakery was established at Zula on the 25th December, 1867, and on the same day at Kumayli: the average issue of bread at these posts in January was 1,650 loaves daily. The bread was of fair quality. The establishment at Zula consisted of 1 clerk, 1 master baker, 15 assistant bakers, 5 coolies; at Kumayli, of 1 master baker, 15 assistant bakers, 5 coolies; and a further establishment of 1 master baker, 15 assistant bakers, 5 coolies, was sent to Senafè, where bread was daily supplied to the troops from the 12th January, 1868, to the end of the campaign. Bakery.
Bakery establishment.

The ovens used were taken from Bombay, and were the ordinary field ovens in use, made of plate iron, one in two pieces for camel carriage, each piece weighing 237 lbs.; and the other in four sections for mule carriage, each section weighing 103 lbs. They each held 100 1 lb. loaves, and baked them in one and a half hours. These last were subsequently used in the highlands on the return march from Antalo. The ovens were strong, and could be put together in less than five minutes, and pulled down and loaded as easily and quickly. An establishment of 69 women, with millstones for grinding corn, was sent from Bombay, and was subsequently employed in grinding the wheat received from India. Sheds were erected for the bakery close to the lines of the Commissariat followers. Ovens.

* See pages 321 to 324.

The scale of rations issued to troops and followers on first landing was as follows:—

Scale of
Rations
on first
landing.

To each European per diem.

1 lb. biscuit or fresh bread.	4 oz. rice.
1 „ fresh meat.	$\frac{1}{4}$ „ tea.
1 „ vegetables.	$\frac{1}{4}$ „ salt.
2½ oz. sugar.	3 lbs. firewood.

To each Native Soldier.

2 lbs. rice or flour.	1½ oz. tobacco, or 3 oz. sugar.
4 oz. dhol.	$\frac{1}{8}$ „ pepper.
2 „ ghee.	$\frac{1}{8}$ „ turmeric, and $\frac{1}{8}$ oz. chillies.
$\frac{3}{4}$ „ salt.	

Each Native Public or Private Follower.

1½ lbs. rice or flour.	1 oz. ghee.
4 oz. dhol.	$\frac{2}{3}$ „ salt.

Each Horse.

15 lbs. hay.	8 lbs. gram.
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Each Mule.

12 lbs. hay.	5 lbs. gram.
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Each Camel.

5 lbs. gram.	12 lbs. hay.
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Each Bullock.

4 lbs. gram.	20 lbs. hay.
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Each Elephant.

175 lbs. hay.	2 oz. salt.
25 lbs. flour.	15 lbs. firewood.

Equalization
of rations
of public
and private
followers.

By the Indian scale, private followers were only allowed each half the ration of a native soldier. The scale was inadequate, no supplies to eke out the allowance being procurable at any cost, and they consequently received, on payment, provisions on the scale of a public follower, a rule observed throughout the campaign. From the 20th January, 1868, the native troops and followers received, in addition to the scale given, 8 oz. of fresh meat each twice a-week, and the public and private followers 4 oz. each twice a-week.

Recoveries
for rations
issued on
payment.

Rum issued to the soldier was charged for at 2½ rupees the gallon, 24 degrees under London proof, and recovered from the officers commanding regiments.

Rum issued to officers was charged for at 5 rupees the gallon, and paid for on delivery. The issue was limited to 2 drams per diem.

The following were the rates of recovery for rations:—From officers, 8 annas per diem; from private followers, 1 anna and 4 pies; for officers' horses, 12 annas.

These recoveries were effected by Paymasters, monthly, from officers' pay. Gentlemen attached to the Force paid at the same rate, in advance, direct to the Commissariat, when a certificate, specifying the date up to which payment had been received, was granted, on the presentation of which at any of the inland depôts, they received rations daily up to the date for which payments had been made.

During the months of October, November, and December, the issues at the Zula depôt were in rations :—

For European troops	21,499	For Horses	5,791	Issue of rations at Zula during the first three months.
„ Native „	65,315	„ Mules	56,890	
„ Public followers	104,671	„ Camels	19,730	
„ Private ditto	10,415	„ Bullocks	4,312	

And although numbers of troops, followers, and cattle were constantly leaving for the interior, the number of rations issued at Zula in January were :—

For European troops	39,739	For Horses	7,774	Issues in January.
„ Native „	83,332	„ Mules	20,475	
„ Public followers	120,710	„ Camels	3,005	
„ Private „	12,952	„ Bullocks	5,943	

The three hospital ships for Europeans, the “Golden Fleece,” “Mauritius,” and “Queen of the South,” were supplied with fresh provisions daily, as also the hospital ship “Star of India,” for natives.

The ships of the Bombay Marine, and the tugs employed in the harbour, were also provisioned by the Commissariat.

Bread was made at first from first sort flour received from Calcutta and Bombay, and subsequently with a portion of Trieste flour, which improved the quality. It was always approved of, and the supply was continuous at Zula from the 26th December, 1857, when the bakery commenced working. Biscuit was issued on first landing. It was of excellent quality, manufactured by machinery at the Government Steam Bakery, at Poona. It kept good for a very long time, and was never flinty.

Fresh meat was always supplied to the troops. It was purchased on the spot slaughtered and issued by the department, and was of fair quality.

Two descriptions of flour were issued, both of good quality. First sort for European troops and the manufacture of bread, and second sort (coarser) for native troops.

Two descriptions of rice were issued. Rice, vergole, first sort, for European troops, and rice, Bengal, for natives. Both were good.

Dholl for issue to natives, the Bombay dholl was more approved of than that from Calcutta.

Black tea of good quality was issued in the usual proportion to all the European troops.

Sugar and salt were reported on favourably.

The ghee (clarified butter) was good. The Bombay tins weighed 35 lbs. each; the Calcutta 38 lbs., two in a box, for mule carriage.

The rum was good. The supply from Calcutta was sent in hogsheads, the Jamaica rum from England was very good and received in convenient kegs of 6½ imperial gallons each.

The porter was good; and was issued at 12 annas the gallon.

The native tobacco was good. That for Europeans was also approved, and was sold at 14 annas the lb.

- Curry stuff.** The curry stuff was good.
- Vegetables.** Vegetables were received from Bombay and also from Egypt, consisting of potatoes and onions. The latter supply was very good and received in fair order.
- Lime juice and kokum.** Limejuice and kokum were issued as required. The kokum for natives at half an ounce every four days. It was a good anti-scorbutic.
- Boxes of medical comforts.** Exclusive of large Reserve Stocks of every article in use in hospitals, boxes were received from Bombay containing supplies ready packed to accompany hospitals on the line of march.
- Box No. 1 contained.*—Brandy, 6 bottles; corkscrew, folding, 1; wine, port, 6 bottles; beef, essence of, $4\frac{1}{2}$ oz. tins, 80; knife for opening tins, 1.
- Box No. 2 contained.*—Arrowroot, 4 lbs.; candles, wax, 8 lbs.; measures, quart, pint, $\frac{1}{2}$ pint, $\frac{1}{4}$ pint, set 1; mustard 10 oz.; mustard pot, 1; pepper, 32 ozs.; pepper castor, pewter, 1; salt, 5 lbs.; salt cellar, wood, 1; soap, Europe, 1; sugar, 10 lbs.; tea, black, 5 lbs.; vegetables, preserved, mixed, 5 lbs.; matches, waxed, boxes, 5.
- The two boxes were a mule load and weighed less than 150 lbs. The above were for European troops.
- For Native Hospitals.*—The boxes were of the same weight and contained, port wine, 6 bottles; sago, $1\frac{1}{2}$ lbs.; arrowroot, 3 lbs.; arrack, 3 bottles; limejuice, 6 bottles; brandy, 3 bottles; candles, 1 lb.
- Forage, &c.** The hay received from Bombay was good. It was in screwed bales of 75 and 200 lbs. each. The Calcutta consignments were a description of root grass which was not approved of.
- The best hay was received from England, and the English compressed forage was very highly thought of. It contained a large proportion of oats, and being both grass and grain combined is the only article that is worth its carriage any distance. The packages contained 80 lbs., a day's feed for four horses. The first consignment received was packed square, and the covering canvas was too thin and badly sewn. The consignments received later were of the best shape, long and flat, and fitted compactly to the mule saddles. They were also better secured, and there was little or no wastage. They were carried long distances in the highlands, subject to frequent handling, yet these packages were found perfect. The chopped straw from Egypt for mules was very good fodder, as also the barley and beans from the same source.
- The gram received from Bombay and Calcutta was very good.
- Commissariat establishments.** The establishment that accompanied the reconnoitring party, consisted of 3 clerks, 1 overseer, 2 inspectors, 1 weighing-man. On the arrival of the Advance Brigade on the 22nd October, all these were absent with reconnoitring parties to the interior, with the exception of the overseer. Lieutenant Shewell, Sub-Assistant Commissary-General, arrived with the Advanced Brigade, and brought an establishment of 3 conductors, 9 clerks, 13 inspectors, and 11 weighing-men. Lieutenant Shewell was Major Mignon's only assistant from the 23rd October to the 5th and 7th December, when Lieutenant Smith and Captain Hawkes arrived, and these officers then took over Lieutenant Shewell's duties, who went to Senafè to form the important highland depôt there. On the 23rd December, Major Thacker, Major Bardin, Captain Heysham, and Lieutenant Bryant, with further establishments, arrived.
- First establishments at depôts.** Owing to the non-arrival of the required establishments the inland depôts were not placed on a proper footing for some time. The establishments at the several depôts were at first as follows:—

Hadoda.

1 inspector.

|

1 weighing-man.

|

1 peon.

Kumayli.

2 inspectors.		1 weighing-man.		3 begarees.
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Suru.

2 inspectors.		1 weighing-man.		4 begarees.
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Undul Wells.

1 inspector.		1 weighing-man.		3 begarees.
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Rahagedi.

1 inspector.		1 weighing-man.		3 begarees.
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Senafê.

1 sergeant.		1 assistant-overseer.		2 weighing-men.		6 begarees.
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As officers and subordinate establishments arrived, the following were sent to :—

After establishments
at depôts.

Hadoda.

1 sergeant.		1 weighing-man.		5 begarees.
1 inspector.		1 peon.		

Kumayli.

1 officer.		4 weighing-men.		1 master baker.
2 conductors.		3 begarees.		15 assistant bakers.
1 sergeant.		1 cooper.		5 baker coolies.
3 inspectors.		2 bheesties.		1 fireman.

Suru.

1 conductor.		2 inspectors.		2 weighing-men.		1 begaree.
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Undul Wells.

1 sergeant.		1 inspector.		3 weighing men.
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Senafê.

2 officers.		6 begarees.		2 dhobeas.
6 clerks.		2 carpenters.		1 tinman.
2 shroffs.		2 smiths.		1 sweeper.
8 peons.		1 cooper.		1 master baker.
2 assistant overseers.		1 bheestie, puckal.		15 assistant bakers.
14 inspectors.		4 bheesties, hand.		5 bakers' coolies.
7 weighing-men.		2 mooches.		

As Abyssinia was a country on which no reliance could be placed for supplies, all stores were sent either from England, India, or Egypt, and on these countries indents were made as required.

The Bombay Government in their resolution of (No. 40 A) 26th August, 1867, ordered that six months' shore rations for the force should be sent, in addition to the sea

rations placed on board the transports.* Each body of troops also took two months' shore rations with it.

Extra
supplies
ordered
from Eng-
land.

To supplement, however, the Commissariat stores, which were only slowly arriving by the middle of January from Bombay, the Deputy-Commissary-General of the Force, applied on the 10th January, for the following articles from England by the overland route:—

500,000 lbs. of biscuits, 30,000 gallons of rum, 300,000 lbs. of sugar, 15,000 pairs of English boots, 15,000 English blankets, and 100,000 lbs. of salt pork and beef, all sent out packed for mule transit, the spirit being in iron drums or kegs of 10 gallons each.

Arrange-
ments to
provision
Senafè.

At the time of the arrival of the Commander-in-Chief, the great Commissariat problem was how to provision Senafè. The break-down in the Transport Train left few animals available for this duty, although the Commissariat stated its ability to find all provisions necessary, if carriage were available. In order to utilize to the utmost extent the number of cattle which the Director of the Land Transport declared himself able to place at the disposal of the Commissariat, a calculation was made as to whether it would be more economical to proceed by a system of through traffic, or by a system of relays from station to station. The difficulty of the problem was much enhanced by the fact that there was neither grass nor grain to be obtained in the Pass, and the transport animals had, in consequence, to carry their own provisions included in their loads.

Staging and
through
system.

Staging
system
ordered.

To facilitate the transport of stores to Senafè, the Commander-in-Chief, on the 13th January, directed that the dépôt at Kumayli should be increased, and that the Director of the Transport Train should furnish the Commissariat daily, at Zula, with 400 camels and 382 pack bullocks, which were to be carefully loaded and sent out to Kumayli, from whence another relief of animals was to take the stock on to Suru, another to Undul Wells, another to Rahagedi, and another to Senafè.

Its break
down.

This arrangement, however, broke down, as the Land Transport was unable to supply more than 203 mule-loads per day. It was then attempted to provision the highland dépôt at Senafè by means of a system of through traffic, but as Senafè was five marches from Zula, each mule could only make three trips per month, and on each occasion had to carry its full forage for the march both there and back, besides which it was necessary, in addition, to feed many sick and lame in the Pass.

It was not anticipated that much grass would be obtainable locally at these stations as the season advanced, hence each camel had to carry 32 lbs. of grain and 40 lbs. of hay from Kumayli, and each mule 40 lbs. of grain and 32 lbs. of forage; draught bullocks, 80 lbs. of grain and 120 lbs. of forage per pair; pack bullocks, 16 lbs. of grain and 32 lbs. of grass each; and horses, 40 lbs. of grain and 48 lbs. of grass each, which made a considerable deduction from the stock to be conveyed to Senafè.

In addition to the above, the outposts between Zula and Senafè had to be provided with food for the troops stationed there and for all followers, Transport Train, and others. To do this and ration the animals took 30 per cent. of the whole carriage, and it was calculated that after feeding the troops, dépôts, and animals, only 9,890 mule loads per month were available to form a reserve at Senafè.

By great exertions these difficulties, which threatened to prevent the advance of the Force, were surmounted by the application of cart transport, which was rendered possible

* The desire of the Commander-in-Chief was to start with one month's sea rations for the Force, two months shore rations in the same vessels with the troops, and six months' reserve rations.

early in February by the construction of the road up the Pass. As soon as this was done, regular convoys of carts and fresh animals daily marched from the lowlands for Senafè, and as far as Adigrat. A proposal was submitted at an after date to attempt the staging system again, but for reasons already given no alteration was made, and the through system was worked to the end of the campaign.*

To supplement the Transport Corps, officers were sent to purchase camels and Commissariat supplies at Berbera, Hodeida, and other neighbouring ports. Few, however, were obtained at these places. A large number of camels were purchased in Egypt, and Egyptian camel-men were brought to Abyssinia to look after them.

As the campaign proceeded, it became apparent that the Commissariat Department required a larger staff. Officers and sergeants were attached to it from different regiments, as requirements demanded, until on the 26th February it assumed the following composition, which it retained generally till the conclusion of the campaign. A few officers were, however, afterwards added for the Commissariat camel train.†

Designation.	No.	Final establishment in Abyssinia.
Officers	27	
Warrant Officers	6	
Serjeants	14	
Clerks, Inspectors, &c.	171	
Peons, Begarees, &c.	131	
Porters, Hut Builders, Smiths, Carpenters, &c.	65	
Bheesties, Sweepers, Leather Workers, Dhobies, Tinmen, Coopers, Camel Purchasers, Guides, and Interpreters, &c.	63	
Bakery Establishment, &c.	273	
Total	750	

The Deputy Commissary-General remained at Zula; one Assistant Commissary-General was in charge of the department with each division; and one assistant was attached to the office of the Controller of Supply and Transport. Disposition of officers.

Of the other officers of the department thirteen were on duty with the Commissariat depôts along the line of communications at Zula, Kumayli, Suru, Undul Wells, Senafè, Adigrat, Antalo, and the advanced depôts. Two officers were retained on special duty in Egypt. One officer was on special duty in the ports of the Red Sea collecting supplies. One officer was in charge of the elephants; one was in charge of the Bengal Kahar Corps;† and one of the Commissariat pier. The remainder were attached to the different detachments of the advanced Force. The warrant officers were attached to depôts as required, and to the movable columns.

The Deputy Commissary-General, on the 14th April, suggested that a special Transport Train for Commissariat purposes should be formed of 1,000 Egyptian camels. This was sanctioned by the Commander-in-Chief; and the following statement shows its composition, cost, and the comparative cost of its establishment with that of 1,000 camels in the Land Transport. Organization of Commissariat Division of Transport Train.

* See page 402, chapter XI.

† For complete list of officers, see page 186.

‡ For details regarding Bengal Kahar, or Coolie Corps, see chapter XXXVII.

Comparative statement of its cost, with the cost of a Land Transport division.	Rank.	Scale of the Cost of Commissariat Attendance for 1,000 Camels.					Scale of the Cost of Attendance of 1,000 Camels in the Transport Corps.					Difference.		
		No.	Rate of Pay Per Month.	Cost.			No.	Rate of Pay Per Month.	Cost.			R.	A.	P.
				R.	A.	P.			R.	A.	P.			
Head Overseer	..	1	150	150	0	0	..	..	..	..	..	..	..	..
„ Interpreter	..	3	200	600	0	0	..	..	..	..	..	..	..	..
Second „	..	3	100	300	0	0	..	..	..	..	..	..	..	..
Head Inspectors	..	3	230	360	0	0	2	120	240	0	0	..	..	..
Second „	..	..	..	..	..	..	2	80	160	0	0	..	..	..
Third „	..	..	..	..	..	..	5	40	200	0	0	..	..	..
Head Muccadum	..	..	..	..	..	..	10	20	200	0	0	..	..	..
Second „	..	..	..	..	..	..	40	12	480	0	0	..	..	..
Camel Drivers	..	333	22½	7,292	8	0	333	15	4,995	0	0	..	..	..
Sheiks „	..	47	30	1,410	0	0	..	..	..	..	..	..	..	..
Weighing Man	..	..	..	..	..	..	1	30	30	0	0	..	..	..
Weighing Coolies	..	..	..	..	..	..	2	10	20	0	0	..	..	..
Total	..	..	..	10,112	8	0	..	..	6,325	0	0	3,787	8	0

General working of the Commissariat Department.

The general working of the Commissariat Department was so interwoven and connected with the operations of the Force, rations decreasing as the Force advanced, till for some weeks all had the simplest fare to subsist on (meat and flour, only), and increasing again as the Force returned, that constant reference to the detailed arrangements of the Department will be found in the preceding chapters describing the movements of the Force. The following notes, extracted from various orders, will show the principal arrangements and changes connected with the working of this Department prior to the departure of the Force and in Abyssinia.

The description of rations issued on board ship is given in detail in Chapter VII.*

Rations to wives and children of soldiers.

The Government of India in Resolution No. 72 of the 6th January, 1868, decided that three-quarters and half rations might be granted to the wives and children respectively of the British troops sent from India to Abyssinia instead of half and quarter rations as in ordinary cases.

Issue of cocoa, sugar, and biscuit.

The Bombay Government in Resolution of 1st November, 1867, decided that, in addition to the ordinary rations, a pint of cocoa, with an ounce of sugar and a quarter of a pound of biscuit, should be issued to each man of the British troops proceeding to Abyssinia. The cocoa was obtained from India and England.

Tobacco.

The Bombay Government further sanctioned a supply of tobacco for 4,500 British soldiers to be issued at the port of debarkation at cost price. A quantity of preserved milk was sent out from England on the recommendation of the Medical Department.

Preserved milk.

Cocoa-nut nib.

Two thousand pounds of cocoa-nut nib were sent from Bombay for retail to officers at cost price.

Followers and fighting men to have the same rations.

It was resolved (4438, 18th November, 1867), on the recommendation of the Inspector-General, Indian Medical Department, that followers should have the same rations as fighting men.

* Pages 212 to 216.

Hay, kurbee (stalks of jowarree), and firewood were sent from England,* Egypt, and India to Abyssinia, as none of these were supposed to be procurable in that country.

The Government of Bombay resolved (6th September, 1867) that kokum† and curry stuff should be issued to Native troops in Abyssinia.

It was decided (23rd November) that Parsee clerks, inspectors, &c., and Chinese carpenters in Abyssinia, should be rationed on the European scale, with the exception of spirits. The free issue of warm clothing was issued to all office establishments and public followers; they were also allowed to obtain rations on payment, but afterwards were granted them gratis.

The first alteration in the ration was in the meat, which was increased on the 11th January, 1868, from 1 lb. to 1½ lbs., on the recommendation of the Inspector-General of Hospitals, the allowance of 1 lb. of meat being insufficient; for when cooked and deprived of bone, the actual quantity of animal food remaining did not average more than 9 ounces, and the soldier, having hard work to perform, and being unable to supplement his meal from other sources, the Inspector-General was of opinion that 1½ lb. of meat, of the quality issued to the Force, was necessary to maintain him in a state of health and efficiency.

With respect to the recoveries for rations, the following Order was issued on the 11th January, 1868:—

“The Military Paymaster, Abyssinian Expeditionary Force, will be good enough to recover from all officers drawing pay in Abyssinia, the cost of rations issued to them, their servants, and horses, by the Commissariat, as under:—

“European rations	8 annas per day each.
“Native private followers’ rations ..	1 anna 4 pie each.
“Horses	12 annas per ration.

“The Commissariat will furnish the Military Paymaster with a nominal roll, showing the dates on which each officer commenced drawing rations.

“Officers, on preparing their pay abstracts, to certify on honour, on the back thereof, the number of servants and horses for whom they have drawn provision and forage during the month, deducting, on the face of the abstract, the cost of the same at the rates shown.

“*Form of Certificate.*

“‘I do certify on honour, that during the month for which pay is drawn in this abstract, I have received rations from the Commissariat for myself (one or six servants, as the case may be), and for horses.’”

“In the case of regimental officers, their names will be included in a general roll to be submitted by the Regimental Paymaster to the Military Paymaster.

“In all cases of officers leaving Abyssinia, an entry to be made in their pay certificate, that they have paid for all rations drawn for themselves, their servants, and horses, to date of departure.

“Gentlemen unconnected with the Service, drawing rations from the Commissariat, are required to pay monthly in advance.

“Officers drawing arrack or spirit rations to prepare requisitions twice a month for this supply, at the rate of two drams per diem, under proof, at 5 rupees per gallon of

* Jowarree.—*Holcus Saccharatus*.

† Kokum.—An oil extracted from the Mangosteen fruit.

"40 drams. Spirits will only be issued by the Commissariat on ready money payment."

Similar rations to all native troops and all followers.

On the 13th January, a General Order was issued with regard to the rations for the native troops and followers, which placed all from Bombay, Bengal, and Madras on an equal footing :—

On the 16th January, on account of the scarcity of rice, &c., the scale of rations was altered as follows :—

Reduction of rations 16th January.

"*European Rations.*—The daily allowance of 4 ozs. of rice to cease; the men to be permitted, in lieu, to draw money compensation for this article.

"*Native Rations.*—The rice and flour ration of fighting men to be reduced to 12 ozs. of each per man per diem; $\frac{1}{2}$ lb. of mutton, or money compensation in lieu, at the option of the soldier, being given for the difference.

"*Public and Private Followers* will draw 10 ozs. of flour and 10 ozs. of rice per diem, and $\frac{1}{4}$ lb. of mutton or goat in lieu of the balance.

"Other articles of ration to stand as before; and in the case of public followers, money compensation, if desired, in lieu of the balance of rice and flour, will be allowed.

"Officers' horses only to receive 6 lbs. in place of 8 lbs. of grain per diem."

The public followers of the Land Transport were however, afterwards, by a General Order dated 1st February, allowed to draw the full ration of flour and rice, in lieu of the portion of meat ration ordered above.

Issue of spirits to clerks and public followers.

On the 16th January, the issue of spirits was authorized to all clerks and public followers drawing European rations (excepting Parsees and Chinese) at 2 rupees 8 annas per gallon of 40 drams, 24 degrees under London proof; but it was afterwards found necessary to restrict the issue of spirits south of Kumayli to fighting men only, after arrival in the highlands; the rations of sugar and tobacco could not always be supplied on account of the difficulty of transport, and the supply of meat was also sometimes scarce.

The out-turn of the sheep in Abyssinia was very small. The Commissariat Officer at Adigrat, reported on the 7th February, that the day preceding, 8 issued weighed only 81 lbs., and 9 others only 108 lbs.

Reduction of rations, 18th January.

The Native rations issued at this time were as follows, on an Order dated 18th January :—

Native Fighting Men.					Public and Private Followers.				
				Ozs.					Ozs.
Flour	..	..	..	..	12	Flour	..	..	10
Rice	..	..	..	..	12	Rice	..	..	10
Dholl	..	..	..	..	4	Dholl	..	..	4
Ghee	..	..	..	..	2	Ghee	..	..	1
Meat	..	..	..	..	8	Meat	..	..	4
Salt	..	..	..	..	$\frac{2}{3}$	Salt	..	..	$\frac{2}{3}$
Turmeric	..	..	..	..	$\frac{1}{8}$				
Pepper	..	..	..	..	$\frac{1}{8}$				

The rations for animals were :—

Horses.—6 lbs. grain and 12 lbs. hay.

Mules.—4 lbs. grain and 10 lbs. hay, or 3 lbs. grain and 12 lbs. hay.

Bullocks.—4 lbs. grain and 10 lbs. hay, or 2 lbs. grain and 12 lbs. hay.

When grain was scarce, a proportionate reduction had to be made; and when a halt of 48 hours was made, half allowance of grain, and no forage was issued.

On the 12th February, it was ordered that bi-weekly returns of provisions in hand at Zula, or on board ships anchored in Annesley Bay, and daily similar returns from any other stations, were to be sent by officers in charge of Commissariat depôts, direct to the Deputy Adjutant-General of the Force. This order was duly carried into effect, and Sir Robert Napier was thus kept aware of the number and description of rations at all stations; and instructions were from time to time sent, as required, to the Commissariat officers in charge of depôts to send to the front such articles as were in demand. By this means reserve stocks were duly kept up at Antalo and other advanced stations.

Towards the middle of February it became necessary to reduce the ration again; and as the spirit kegs were some of the most difficult articles to transport, and could not be carried by the pack bullocks of the country, which were now brought into use to push up nearly all other supplies, the following Order was issued on the 12th February:—

“The daily ration of spirits issued to fighting men will be reduced in future to one dram.”

“In publishing this Order, the Commander-in-Chief wishes it to be made known to the troops under his command, that it is with the greatest reluctance he feels himself compelled to deprive them of any part of their rations.

“The difficulties, however, in providing for the numerous wants of an Army in a country almost destitute of supplies renders it imperative that the essential articles of food, such as biscuit, flour, and rice, should be sent to the front in preference to all others, which must be looked on in the light of luxuries when troops are in the field.

“The Commander-in-Chief has remarked with pride the fine spirit shown by all ranks of the Army since its arrival in this country; and he feels assured that whatever further privations may have to be endured, in order to insure the success of the Expedition, one and all will cheerfully submit to them.”

At Agula, on the 27th of February, the following scale was laid down for the troops and followers which advanced beyond Antalo:—

European Troops.				Native Troops.				Followers.				Scale of rations south of Antalo, 27 February.
			ozs.				ozs.					
Flour	..	..	16	Flour	..	..	14	Flour	..	..	12	
Meat	..	..	24	Ghee	..	..	2	Ghee	..	..	2	
Salt ..	..	..	$\frac{2}{3}$	Salt	..	..	$\frac{2}{3}$	Salt	..	..	$\frac{2}{3}$	
Ghee*	..	..	2	Meat	..	..	16	Meat	..	..	16	
Vegetables	..	..	2	Kokum	..	..	$\frac{1}{2}$		..			
Tea ..	..	..	$\frac{1}{2}$		..				..			
Sugar	..	..	1 $\frac{1}{2}$		..				..			

The rations for the few Native fighting men who could not eat meat were—flour, 16 ozs.; rice, 8 ozs.; ghee, 4 ozs.; salt, $\frac{2}{3}$ oz.; and kokum, $\frac{1}{2}$ oz.

On the advance of the Army without baggage beyond Lat, the Commissariat supplied rations only to Staff officers and departmental followers. Fifteen days' rations, according to the following scale, were carried by corps, and issued regimentally:—

* It was assumed that ghee (clarified butter) would be obtainable in Abyssinia.

<i>Europeans.</i>		<i>Natives.</i>
Biscuit or flour, 1 lb.		Flour, 1 lb.
Vegetables, 2 oz.		Ghee (if obtainable), 2 oz.
Salt $\frac{1}{2}$ "		Salt, $\frac{1}{2}$ oz.
Sugar $1\frac{1}{2}$ "		Vegetables (once a week), 2 oz.
Tea $\frac{1}{2}$ "		
Rum, 1 dram.		

This arrangement was extended to all highland stations as announced in the following memorandum.

All troops provided with fifteen days' rations.

" In future all regiments and detachments leaving Senafè or other highland stations for the front will be provided with rations for fifteen days, to be received into regimental charge, and issued agreeably to scale under regimental arrangements. The Commissariat limiting its operations to the supply of medical comforts, the purchase and supply of slaughter cattle, grass, grain, wood, and any other article such as ghee, flour, bread, &c., which may be procurable locally. The last-mentioned articles must be received and issued whenever tendered by the Commissariat; the similar ration articles in regimental charge being kept intact so far as such local issues will admit. All empty bags, &c., must be carefully preserved and returned to the Commissariat.

" The Transport Train mules attached to regiments, &c., that become unloaded as rations are consumed, must be delivered over day by day to the officers in charge of the Transport Train, who will place them at the disposal of the Commissariat officer for the carriage of local purchases made over and above that which is required for daily use."

Final reduction of rations.

The fifteen days' supplies were expended early in April, and for some time the rations for all troops and followers had to be reduced to 1 lb. of meat, 8 ounces of flour, and such salt as was procurable in the country. The privation which the troops had to undergo in this stinted allowance, together with exposure and fatigue, told so heavily upon them that a scorbutic tendency manifested itself, which called forth from the Medical Principal Officer on the 21st April the following letter:—

Sickness on account of reduced rations.

" I have the honour to bring to the notice of his Excellency the Commander-in-Chief the number of sick in the Force, chiefly from bowel complaints.

" I am of opinion that this is partly to be ascribed to the monotonous diet, to which the soldiers have been restricted for some weeks past.

" The want of such necessary articles as rum, sugar, and vegetables is telling sensibly upon the health of the troops. I beg, therefore, to recommend that every effort be made to obtain a supply of the above, with as little delay as possible, and that, further, one ounce of limejuice be issued daily per man, and the present allowance of salt be increased from half an ounce."

Limejuice recommended.

While the Army was in front of Magdāla, and south of the Takkazze, limejuice could hardly be obtained, but when the Takkazze was regained it was issued, and a ration of spirits and vegetables was also obtained. South of the Takkazze, forage and grain were very scarce, and the troops had to endure many privations. The beef procured from the country was very poor, tough, and hard, and mutton could not be frequently obtained, as the country people were unwilling to part with their sheep. After leaving Magdāla on the return march the ration of beef was increased to 2 lbs., and Abyssinian flour, a mixture of wheat, barley, and bajree, was frequently issued. Gogo, or native bread,

made of this flour, was also largely used by the troops, but was reported by the medical officers as insufficiently baked and very indigestible.

The portion of Abyssinia through which the Army marched was wretchedly poor, and produced no vegetables, and very little grain or grass in comparison with the requirements of the Force. Eggs, fowls, butter-milk, and honey were occasionally procurable in small quantities, but not sufficient for issue to the troops.

Paucity of supplies in Abyssinia.

The Commissariat had for some time been unable to supply officers with the regulated rations for their horses, the price charged was consequently reduced, as shown in this Memorandum, dated Camp before Magdāla, 15th April, 1868:—

“ Government regulations having laid down a certain scale of rations for horses, and circumstances having rendered it impossible to supply the proper quantity, the Commander-in-Chief is pleased, with reference to G. O. C. No. XVII of the 11th January last, and subject to confirmation of Government, to order that the rate chargeable to officers for rations supplied for their horses shall be eight annas per diem per horse, from 15th April, 1868, pending sanction for further retrospective effect.

Recoveries for horse rations reduced to eight annas per diem for each horse.

The following extract from a Report, dated the 10th June, by Major Mignon, the Senior Commissariat Officer with the advanced Force, shows the working of the Commissariat on the highlands:—

“ From Senafè to Magdāla the Commissariat established and maintained in good working and efficient order large depôts at Adigrat, Agula, Antalo, Atsala, Ashangi, Lat, Dildi, Takkazze, Sindi, south edge of the Talanta Plain, bed of the Bashilo.

Major Mignon's Report on the Commissariat Department on the highlands.

“ At each of these troops have been posted and provisioned, and far more than the ordinary victualling duties of a camp performed; for at all, without exception, large supplies had not only to be received but to be forwarded with regularity and despatch to the front; at all, had the resources of the country to be opened out, extensive purchases to be effected and arrangements to be made for the feeding from local sources, of large numbers of Transport Train animals passing and re-passing.

Depôts.

“ These depôts again were supplemented by others at Gunaguna, Fokada, Mai Wahiz, Adabaga, Dongolo, Dolo, Eikkullet, Masgah, Mashik, Bulago, Makan, Mussagita, Marawah, Wundatch, Santara, Gahso, Abdikum, north edge of Talanta Plain. These, under arrangements, I had the honour to propose to his Excellency at Adigrat, were worked by the non-commissioned officers of Cavalry commanding the outposts, and at each of these depôts large supplies of grain, grass, wood, and cattle were purchased, which enabled the Force as it moved forward,—mounted corps, convoys, and Transport Train,—to receive grain and forage as they passed along our line of communication. Thus from Senafè to Magdāla no less than 11 main depôts were organized and maintained by Commissariat establishments, and 18 subordinate depôts worked by the Army.

Wyele 350

“ These depôts have been a peculiar feature of the campaign. They entailed very heavy work and responsibility on the officers and subordinates employed, the more so as their numbers were so small; and to succeed at all, constant personal exposure and unremitting strenuous labour and exertion were necessary from the first to the last. The difficulty of obtaining supplies, the difficulty of purchasing even those offered for sale, the entire absence of any trading class, the entire absence of any standard of measure, the necessity for the constant daily, nay hourly, exercise of patience, of discretion, of

"tact, of forethought, are matters too well known to his Excellency to require further notice from me.

Native
carriage.

"Through arrangements made by the political authorities at Senafè on the 29th January, a system of forwarding Commissariat stores to the front by employing native carriage was introduced. These arrangements were continued from dépôt to dépôt, and perfected and matured by the temper and judgment exercised by the several Commissariat officers on the highlands.

"Through the agency of this carriage alone were we enabled to forward ample supplies as far as Atsala. It is true the arrangement failed beyond Atsala, and at Ashangi and Lat, owing to disputes and jealousies amongst the natives and their fear of the Galla tribes; in time, however, these difficulties would doubtless have been overcome, but the speedy and successful termination of the campaign rendered it unnecessary to forward to the front any large proportion of the stores which had accumulated at those places.

"That this system has done us much good, that it benefited the people, that with the establishment of the dépôts the entire resources of the country were placed at our disposal, cannot for one moment be disallowed. Our exactness in business matters, our moderation, our kindness, our just and generous treatment of the natives, bore their fruit when, on our return from Magdāla, we found all our dépôts well supplied, when at even the poorest places, with a few exceptions, the large mass of our Cavalry and our Transport received full rations of grain and grass.

Reduction
of rations.

"The break-down of the native carriage necessitated a reduction in the scale of rations; instead of 1 lb. of flour to European soldiers, 14 oz. to Native soldiers, and 12 oz. to followers, the allowance was reduced to 12, 10, and 8 oz. respectively, but the meat ration was increased to 2 lbs. per man. This rate continued from the 30th March to the 8th April; for the 9th, 10th, and 11th April followers received 1 lb. of country bread, or 2 lbs. wheat, and Native soldiers 12 oz. wheat, in addition to 8 oz. of flour. On the 10th of April, on advancing from the Bashilo, every man received 2 lbs. biscuit or flour. On the 12th, 13th, and 14th April, European soldiers received 1 lb. of biscuit or flour, and Natives 12 oz. flour, the 2 lbs. of meat being continued the whole time. From the 15th to the 17th the scale was the same as before the break-down of the native carriage; and after that date the usual scale was adhered to, and extra articles in extra quantities supplied, the scale varying almost daily as we passed through our dépôts on the return march; and, had circumstances compelled a halt before Magdāla, large supplies would have reached us in a few days from Ashangi, from Lat, from the Takkaze, from Sindi, and from Talanta Plain, where I had left a portion of my stores in reserve. At Magdāla itself every arrangement was made for the supply of the troops; ample provisions and live stock followed immediately in rear of the columns, and after the assault rum, was served out to every man.

"The difficulty of forwarding supplies was recognised at a very early period, and before the force left Antalo it had been determined that only the bare necessities of life should be forwarded. I remained a week at Antalo to mature the native carriage, and I succeeded in forwarding to Atsala, not simply necessities, but every article that formed part of the soldiers' ration and other supplies. The entire population of the neighbourhood tried to become our carriers, and in five days supplies had left Antalo sufficient to last the entire force for two months, and this entirely exclusive of the large balances at Senafè, at Adigrat, and *en route* between those places to the front. I allude to this subject to show the arrangements that had been made, and that the Army would never have been without a single article of ration had the Department not necessarily been

“ dependent upon a means of transport which, valuable as it proved, still was independent
“ in its working, and subject to no control.”

List of all Commissariat stores sent to Abyssinia from England and Calcutta will be found in Chapters IV and VI,*† and the following Report, from the Deputy Commissary-General, dated the 9th of May, shows the manner in which the surplus Commissariat stores were being on that date disposed of:—

“ All surplus Commissariat stock, as well as that of other departments, has already, as
“ far as practicable, been shipped, and some 13 vessels arrived lately from Bombay, the
“ cargoes of which have not been broached, are ready for despatch, but pending the arrival
“ of a good portion of the Army at Zula, I do not think it would be safe to send the
“ whole of these away.

Lieutenant
Colonel
Lucas' Re-
port on the
Commissariat De-
partment.

“ Of the surplus grain, forage, provisions, &c., some 12,000 bales hay (two ship
“ loads) and a proportionate quantity of grain, together with other articles of provision
“ stock, will be made over to the Executive Commissariat officer at Aden.

“ The whole of the vessels for conveyance of Cavalry to India have been provisioned
“ with grain and forage, and the water has also been shipped.

“ The approach of the monsoon has prevented my withdrawing all surplus provi-
“ sions from the highlands, as I should otherwise have done. The Pass may be closed for
“ some days at any moment, and in which case the feeding of the Army must be provided
“ for; hence it is not safe to withdraw our provision stock until the greater part of the
“ Army has marched down the Passes.

“ The necessity of the above may cause the loss of surplus provisions at Senafé,
“ but this is, I submit, a matter of secondary importance when the efficiency and safety of
“ the Army depends upon a liberal quantity of supplies being always available on the
“ highlands for their use.

“ On the completion of the embarkation of the main body of the Army the
“ regimental officers acting in the Commissariat will be returned to their regiments, and
“ the Field Commissariat will be returned to India, with the exception of two or three
“ officers and the necessary establishment to complete the embarkation of stores, &c., and
“ whom I shall hereafter detail and furnish a report of to you in due course.

Officers.

“ I am led to believe that 500 of the Egyptian camels will only be taken back to
“ India, the remainder of the available tonnage for animals will be made use of for convey-
“ ance of mules and such draft bullocks of the Transport Train as may be found effective
“ and fit for return passage.

“ The rains have commenced, and a portion of the Suru Pass road has been washed
“ away, and which for a few days has stopped traffic; the Sappers with working parties are
“ at work, however, and I trust the road will be re-opened for pack animals by to-morrow.

Rains.

“ Yesterday a very heavy storm burst over Zula, during which half the camp
“ came down. Many boats were wrecked and broken up, and the provisions under ship-
“ ment on board the “Camperdown” and “Sam. Cairns” were more or less damaged, and
“ 225 of the Commissariat sheep were killed in the storm, the temporary cover to protect
“ them from the fierce rays of the sun was blown down, and injured or killed some, the
“ remainder, having gone to be watered, were killed by the hail and general effects of
“ the storm.

Storm.

“ I may here mention that the mortality amongst the sheep is very heavy. During

Mortality
among
sheep.

* NOTE—Lists of Commissariat Stores sent from Bombay and Kurrachee will be found at page 189.

† Pages 71 and 200.

"two very hot days last month, 93 were killed by the sun, having, by frequent personal inspection, and from the great attention paid by the officer in charge of the slaughter animals, satisfied myself that all the losses proceeded from circumstances beyond the control of the Commissariat; I have sanctioned the writing off of these casualties accordingly.

"The mischief done by the storm, when its violence is considered, is comparatively small, and it will not, I think, in any way retard the embarkation of the troops; the damaged provisions under shipment are being replaced, and it is anticipated the whole will be completed by to-night."

Disposal of
surplus
stores.

A large amount of Commissariat stock was handed over to Prince Kassai, as noted in Chapter XXI,* and supplies being needed at Aden, the following quantity of Stores was taken over by the Aden Commissariat.

<i>For executive use.</i>		<i>To be sold.</i>	
Grain,	200,000 lbs.	Ghee,	12,000 maunds.
Hay pressed,	15,000 bales.	Rice,	10,000 bags.
Dholl,	33,000 lbs.	Dholl,	5,000 lbs.
Ghee,	13,000 „	Sugar,	1,000 bags.
Salt,	1,000 „	Wheat,	1,000 „ of 168 lbs. each.
Sugar,	1,100 „		
Rice,	150,000 „		

The Commissariat Officers nominated to do duty with the Force on its organization have been shown in Chapter VI.† The following is a list of Officers serving in the Department at the conclusion of the operation :—

Rank and Name.	Corps.	Departmental Rank.	Where Employed.
Lieut.-Col. A. W. Lucas ..	Bombay Staff Corps ..	Deputy Commissary-General..	Zula.
Major F. P. Mignon ..	Ditto	Assistant Commissary-General, 1st Class ..	1st Division.
Major G. R. F. Bardin ..	Madras Staff Corps ..	Ditto	2nd Brigade, 1st Division.
Major J. Leven ..	Bengal Staff Corps ..	Assistant Commissary-General, 2nd Class ..	Antalo dépôt.
Captain M. W. Willoughby.	Bombay Staff Corps ..	Ditto	Assistant to the Controller of Supply and Transport, Zula.
Captain H. P. Hawkes ..	Madras Staff Corps ..	Ditto	Zula dépôt.
Major B. F. Heysham ..	Ditto	Deputy Assistant Commissary-General, 1st Class ..	Ditto.
Major W. Stansfield ..	Ditto	Ditto	Egypt.
Major John Thacker ..	Bombay Staff Corps ..	Ditto	Senafé dépôt.
Captain N. R. Burlton ..	Bengal Staff Corps ..	Deputy Assistant Commissary-General, 2nd Class ..	Zula dépôt.
Lieutenant W. F. Keays ..	Bombay Staff Corps ..	Ditto	Ditto.
Lieutenant A. M. Shewell ..	Bombay Staff Corps ..	Sub-Assistant Commissary-General, 1st Class ..	With the advanced force.
Lieutenant G. F. Bryant ..	Ditto	Ditto	Zula dépôt.
Lieutenant W. O. Smith ..	Bengal Staff Corps ..	Ditto	Charge of Bengal Kahars, Zula.

* See Page 96.

† See Page 183.

Rank and Name.	Corps.	Departmental Rank.	Where Employed.
Lieutenant C. B. Smith ..	Madras Infantry ..	Sub-Assistant Commissary-General, 1st Class ..	Charge of Madras dhooley bearers. Advanced force.
Lieutenant Luckhardt ..	109th Foot ..	Ditto ..	Egypt.
Lieutenant S. Hunt ..	Madras Staff Corps ..	Ditto ..	Ditto.
Major B. G. Vandergucht ..	Bengal Staff Corps ..	Ditto ..	Kumayli depôt.
Major F. J. Ellis ..	Ditto ..	Ditto ..	Senafè depôt.
Captain H. W. Burlton ..	Ditto ..	Ditto ..	Undul wells depôt.
Captain J. Stevenson ..	Ditto ..	Ditto ..	Suru depôt.
Lieutenant W. E. Begbie ..	General List ..	Ditto ..	Zula depôt.
Lieut. M. A. Rowlandson ..	41st Regiment, N.I. ..	Ditto ..	Ditto.
Lieut. J. W. Ouchterlony ..	Late Madras Fusileers ..	Ditto ..	Charge of elephants. Advanced force.
Captain R. J. Callwell ..	45th Regiment ..	Ditto ..	Atsala depôt.
Lieutenant W. S. Hore ..	General List ..	Ditto ..	Ashangi depôt.
Captain H. W. Newport ..	18th Regiment ..	Ditto ..	Adigrat depôt.
Lieut. D. W. Mackinnon ..	109th Regiment, attached 26th Regt., N.I. ..	Ditto ..	Charge of Commissariat camels.
Lieut. John Humprey ..	45th Regiment ..	Ditto ..	Charge of ditto.
Lieut. E. J. Gunthorpe ..	Madras General List, attached 2nd Grenadiers. ..	Ditto ..	Egypt.
Ensign J. C. Scott ..	1st Batt. King's Own Regiment ..	Ditto ..	Kumayli depôt.

Bazaars.

As soon as possible after the arrival of the Force, a bazaar was established at Zula, and afterwards at Senafè and some other stations. These bazaars were established on the general principles prevailing in Indian military cantonments. Officers were appointed as superintendents, and the following were the regulations issued to prevent drunkenness :—

- “ 1. All licensed dealers are permitted to sell by retail (to be drunk on the premises), ale, wine, and spirits, to any one who does not belong to the European regiments or batteries, to the Naval Brigade, or to the ships in the harbour.
- “ 2. All wines, &c., drunk on the premises, should be paid for on the spot, as no complaints for non-payment will be entertained.
- “ 3. No wine, spirits, or beer can be taken out of the Bazaar, either on board ship or for transport inland, without a pass countersigned by the Superintendent of Bazaars.
- “ 4. Officers and others requiring wine, spirits, or beer from the Bazaar, can obtain stamped passes on application at the Bazaar Office; but it is particularly requested that all passes may either be returned to the Bazaar Office or destroyed when no longer required.
- “ 5. No ale, wine, or spirits, unless drunk on the premises, are to be sold without a stamped pass, signed by the Superintendent of Bazaars.
- “ 6. Any man in the Bazaar found with country liquor in his possession will be flogged and turned out of camp, in addition to any other penalty that may be awarded.
- “ 7. No shops to be opened before six o'clock in the morning, or after gun-fire in the evening.

" 8. Dealers and owners of stores will be held responsible for good order on their premises. No excuse whatever will be received, and the police have orders to enter any house at any hour if they have reason for supposing that the Bazaar regulations are being infringed.

" 9. All dealers in wine, beer, and spirits are required to keep one sample bottle of every liquor they sell on a table in their stores, where it can be seen by the police.

" 10. Any one giving information to the police, of the violation of these rules or any other irregularities, will be rewarded. The strictest punishments will be enforced after the publication of these rules."

The Superintendents of Bazaars were invested with the powers of Provost Marshals, and the following report from Major R. M. Bonnor, the principal Superintendent of Bazaars, shows how the Bazaar System worked with the Force :—

Major Bon-
nor's report
on the
Bazaar
system.

Zula Bazaar.

" It now becomes my duty to report to you the working of the Bazaar Establishment in Abyssinia since the arrival of the Force in the country.

" The largest and the most important is the Zula Bazaar, which prior to the termination of the campaign rapidly grew into a town. Almost everything was procurable here, the wants of the large fleet in the bay have been supplied, and the necessities of life have been obtained at prices generally lower than those prevailing in Bombay, and I hope that as it has been of the greatest assistance to the Force, that it has also been a relief to the Commissariat Department.

" With the large number of sailors, the Europeans employed on the railway, and other Departments, and the very mixed population, a large number of whom were composed of the lowest classes from Egypt and the Mediterranean seaports, there has been a good deal of magisterial and police work, but there have been no serious crimes, the principal offences being cases of theft. The police that have been employed here have been found sufficient to protect the residents and to maintain order.

Kumayli
and Senafè
bazaars.

" The other Bazaars have been formed at Kumayli and Senafè. About 70 shops have been opened at Kumayli, which from being the head-quarters of the Transport Train has been a place of considerable importance during the last three months.

" Owing to the difficulty in procuring carriage there was some delay in getting shops up to Senafè, but about 20 have been established there, which would have proved of immense benefit to the Commissariat had a force been detained there for the rains.

" The Kumayli Bazaar was established on the 15th of February, after which I proceeded to Senafè and was employed in collecting grass and forage at Guna-guna, when I was ordered to the front by double marches. On arrival at Ashangi I received an order from His Excellency the Commander-in-Chief to return to Antalo, where I discharged the duties of Provost-Marshal and received charge of the Conservancy Establishment there. On Major Sheppard's departure to Bombay, I returned here and resumed charge of the office at Zula.

Bazaars
self-support-
ing.

" I am glad to be able to report that the whole of the Bazaars that have been established here have been self-supporting, and that the expense of maintaining the police and establishments have entailed no cost upon Government."

The following are lists of Commissariat Stores sent from Bombay and Kurrachee to Zula :—

STATEMENT of Provisions, Medical Comforts, Dead Stock, &c., shipped at Bombay.*

Name of Stores.	No. or Quantity.	Name of Stores.	No. or Quantity.
<i>Provisions for Europeans.</i>		Wheat, Hunsia	486,075 lbs.
Biscuit, 1st sort	655,053 lbs.	Garlic	477 "
Beef, salted	252 tierces.	Fish, salt	18,748 "
	136 barrels.	Tamarind	3,340 "
	22,604 lbs.	Paun leaves	89,000 "
Pork, salted	255 tierces,	Jageree	289,025 "
	36 barrels.	Tobacco	43,738 "
	16,697 lbs.	Barley, country	390,150 "
Rice, Vergole, 1st sort ..	382,897 "	Wheat	387,870 "
Spirit, proof	14,374 galls. 15 drs.	Pepper, black	107 "
Sugar, Bengal, 2nd sort ..	337,481 lbs.		
Tea, black, 1st sort	85,101 " 15 ozs.	<i>Seeds.</i>	
Flour, 1st sort	651,182 " 2 "	Littac, 2nd sort	1 lb.
Mustard seed	2,087 " 12 "	Long orange carrot ..	1 "
Onions	60,522 " 12 "	Hollow-crowned parsnip ..	1 "
Potatoes, fresh	135,617 " 4 "	Musselburghlick Savoy ..	1 "
" preserved	16,185 " 4 "	Musselburghlick	$\frac{1}{2}$ "
Peas or dhal	34,465 " 8 "	Green carlet barcole ..	$\frac{1}{2}$ "
Raisins	11,004 " 8 "	Flanders spinach	1 "
Vinegar, country	10.92 $\frac{1}{2}$ pints.	Egg plant	$\frac{1}{2}$ "
Porter	1,728 $\frac{1}{2}$ hogsheads.	Drumhead cabbage	1 "
	2,047 doz. bottles.	Canterbury French beans ..	4 "
Preserved meat (soup & bouilli)	63,593 lbs.	Batavian endive	$\frac{1}{2}$ "
Wood	2,970,814 "	Cabbage	4 "
Flour, American	83,200 "	Onion	10 "
Mustard, European	105 " 2 ozs.	Cauliflower	2 "
Rice, Jeerasal	592 "	Pumpkin (red)	5 "
Chocolate	24,816 "	" (white)	5 "
Hops	80 "	French beans	8 "
Rum	26,588 galls. 7 drs.	Myath's parsley	1 "
Salt, 2nd sort	6,512 lbs. 8 ozs.	Neapolitan peas	5 "
		Princess Royal peas ..	5 "
<i>Provisions for Natives.</i>		Pineapple	1 "
Dhal, Broach, 2nd sort ..	2,612,163 lbs.	Radishes, 2nd sort	1 "
Dates	149,900 "	Red tomato	$\frac{1}{2}$ "
Ghee, Kurrachee, 1st sort ..	1,104,155 " 15 ozs.	Stock wood cucumber ..	$\frac{1}{4}$ "
Gram, parched	617,434 " 10 "	Vetches, red, turnip ..	1 "
Flour, 2nd sort	4,156,007 " 8 "	Walcheren broccoli ..	$\frac{1}{2}$ "
Powa	447,727 "	White celery	$\frac{1}{2}$ "
Rice, Bengal, 1st sort ..	8,761,578 " 8 "	Nolkohl	1 "
Salt, 2nd sort	748,961 " 5 "	Cauliflower, 2nd sort ..	1 "
Sugar, Bengal, 2nd sort ..	834,585 " 2 "		
Wood, fire	2,000,510 "	<i>Medical Comforts.</i>	
Suran	4,652 "	Arrowroot	6,607 lbs. 10 ozs.
Potatoes	5,852 "	Arrack	466 galls. 33 drs.
Onions	2,776 "	Bandage cloth	3,689 yards.
Chillies	12,802 "	Barley, European	5,021 lbs.
Cocum	47,099 "	Brandy	582 dozen bottles.
Coriander seed	36,332 "		11 single bottles.
Turmeric	50,104 "	Lime juice	6,051 galls. 37 drs.
Beetle nut	840 "		259 $\frac{1}{2}$ dozen bottles.
Cummin seed	105 "	Sherry	79 $\frac{1}{2}$ " "
Jowaree	365,250 "	Port	1,032 $\frac{5}{12}$ " "
		Port, in pint bottles ..	156 " "

* The names and quantities of stores in this Return, have been given, as received from the Commissary-General, Bombay, in a statement, dated 27th October, 1869.

Name of Stores.	No. or Quantity.	Name of Stores.	No. or Quantity.
Sago	3,236 lbs.	Dishes, meat, tin	283
Sugar, 1st sort	19,771 "	Forks, dinner	3,820
Candles, wax	4,876 " 8 ozs.	Infusers, tea, with stands complete	28
Essence of beef, $\frac{1}{4}$ lb. tins	16,559 tins.	Ladles, soup, pint	80
Rum, in bottles	204 bottles.	Matches, wax	395 boxes.
Ale, in quart bottles	928 $\frac{1}{4}$ dozen bottles.	Plates, tin, dinner	4,207
Coffee, raw	2,337 lbs.	Spoons, table, iron	3,961
Mustard, European	148 "	" soup, gravy	19
Pepper, black	230 "	Shapes, pudding, tin, quart	332
Milk, dessicated	718 "	Triangles, with tubular joints complete	76
Salt, 1st sort	1,189 "	Basins, wash-hand, zinc	272
Vegetables, preserved	2,240 "	Bottles, oil, tin, 2 quarts	29
Camphor	385 "	Buttons, metal	1,575
Creast	288 " 2 ozs.	Soap, Europe	6 cakes.
Honey	52 bottles.	Candlesticks, tin, &c.	496
Lime pickle	11 $\frac{1}{2}$ lbs.	" with shades	32
Vinegar, European	3,550 "	Choppers, meat	151
Snuff	1,675 galls 33 drs.	Close stools, field service	167
Nutmegs	28 lbs.	Cotton, darning	66 ozs.
Beer, in pint bottles	2,250 "	Cups, spitting, zinc	527
Mustard, country	30 dozen.	Hammers, claw, small	119
Acid, nitric	152 lbs.	Needles, darning	96 packets.
Cantharides	52 bottles.	Poringers, block tin, small	189
Calomel	13 lbs.	" " large	24
Deemallee	52 "	Saws, meat	92
Ginger, dry	19 " 4 ozs.	Scissors, lamp	111
	120 "	Straps, leather	142
	6,821 " 1 oz.	Thread, white	46 lbs. 14 ozs.
		Kettles, tea, folding handles	22
<i>Medical Dead Stock.</i>		Axes, pick	419
Sulphur	754 lbs.	" felling	174
Oil, common or sweet	267 "	Baskets for half-a-dozen bottles	51
Poppy heads	1,481 " 14 ozs.	Baths, foot	106
Wax, bees'	1,027 " 12 "	Billhooks	207
Soap, country	197 "	Brushes, shaving	114
Beds, for hammocks	120	" shoe	69
Pillows, for ditto	120	" washing	307
Frying pans, iron	135	" whitewash	127
Basins, copper	34	" hair	340
Sealing wax	350	" dust	124
Wax cloth	800 yards.	Buckets, water	58
Tape, coarse	19,070 "	Cans, soup, 3 gallons	95
Ink, marking	200 lbs.	Combs, hair	380
Close stools, wooden	13	Corkscrews	393
Copper pans for ditto	9	Forks, carving	96
Soap, European	1,822 lbs.	" flesh	78
Oil, sweet	6,409 "	Hasps and staples	117
Oil, turpentine	(290 $\frac{1}{2}$ gallons.)	Knives, carving, large	100
Dishes, copper	100 bottles.	" for opening tins	249
Oil, linseed	3	Pickles, country	781
Oil, neat's foot	(11 lbs. 14 ozs.)	Knives, dinner	4,174
Bail, fruit	248 bottles.	" butcher	45
Pomegranate root	2 maunds.	Lamps, table	136
Chisels, ripping	77 lbs.	" operating	44
Cups, drinking, 1 pint, tins	26 lbs. 1 oz. 9 drs.	Lanterns, talc	62
	128	" coloured glass	78
	652		

Name of Stores.	No. or Quantity.	Name of Stores.	No. or Quantity.
Baskets, large	18	Braces, wooden	12
Chests	8	Budla, leather	47
Leeches	800	Basins for washing sores ..	254
Steel, butcher's	12	Chattees, earthen, spitting ..	406
Mortar and pestles, iron ..	102	" " for water	68
Glass measures	52	Stewpans	33
" " fluid	50	" " iron, with covers ..	90
Slabs ointment	52	Trays, dressing	19
Gunnies for poultices	1,300	Tea Trays	36
Wicks, cotton, to suit burners	24 lbs.	" "	28
Filters, water, in wickers ..	23	Stool Pans, copper	(38 lbs. 3 ozs.)
Cups, drinking, tin, pint ..	250	Tickets, bed-head, tin	862
Matches in boxes	104 boxes.	Tumblers	79
Bed pans, pewter	57	Steels, butcher's	112
Measures, milk, $\frac{1}{2}$ gill ..	33	Saws, setter	8
Lamps, operating	5	" " tenon	16
Spoons, hand, tin	33	Pumps, thumb, tin	12
Stands for close stools	2	Syphons, copper	21
Brooms, date	400	Pails, clapos and covers ..	9
Burners, tin, with double wick	184	Twine, coarse	260 bundles.
Frames, sea, cot	46	Chaggles	67
Hammocks	1,972	Camp tubs	34 pieces.
Beds	867	Sieves, brass, 18 meshes ..	2
Pillows	847	" " 24 "	1
Chumchas, brass (spoons) ..	3,000	" " 45 "	3
Kuttoras, brass (cups)	3,000	Bamboos, large	24
Pots, cooking, with covers ..	114	Log lines	20
Thalies, brass (dishes)	3,000	Trunks, camel	21
Mustard pots and spoons, } pewter	7	Dunnage	10
Measure, quart, tin	1	Chalk	40 lbs.
" " pint "	1	Dammer	672 "
" " $\frac{1}{2}$ pint "	1	Hoops, iron	2,352 "
" " $\frac{1}{4}$ pint "	1	Paint, black	224 "
Table, operating	1	Twine, European	400 "
Kettles, tea, of sizes, copper {	21 kettles. (78 lbs. 4 ozs.)	Brushes, camel hair	72
Pins, iron, with rings	64	" " for paint	60
Cotton	495 $\frac{1}{2}$ lbs.	Bungs, wooden	2,000
Charcoal	6,810 "	White lead	100 lbs.
Saws, butcher's	12	Bamboos nowganie	500
Spoons, mustard, pewter	39	Ropes for nowganies	500
Sponges, bath	40	Butl	136
Lanterns, cabin	149	Tanks, iron	836
Plates, stencil	34	Tools, tinmen's	22
" " alphabet	34	Triangles, wooden, with } chain and hooks	14
Planes, joiners', with spare iron	8	Hammers, cooper's	258
" " jack	12	Tapes, measuring	4
Resin	400 lbs.	Traps for rats	20
Chests, liqueur, 3 doz. ..	12	Triangles, iron, complete ..	12
" " 6 doz.	12	Punches	299
Cups, pint, pewter	2,981	Burrel	1
Triangles for kettles	37	Sieves, brass	4
Camel trunks, small	18	Powras	438
Basins, pint, soup	1,944	Tar	682 lbs.
" " wash-hand, tin	112	Blocks pully	48
Kettles, tea, block tin	28	Bits, centre, for braces ..	12
Bamboo	34	Bungs, nail	100
		Bags, tester, iron	48

Name of Stores.	No. or Quantity.	Name of Stores.	No. or Quantity.
Chisels, cooper's, of sizes ..	329	Buckets, galvanized ..	7,171
Drivers	230	Brooms, Goa	10,291
Gimlets	48	Candles	169,625½ lbs. (or 16,962 lbs. 5½ ozs.)
Grid, iron	97	Funnels, tin	470
Glasses, trial, for spirits ..	22	Kabooses, complete ..	191
Hydrometers, with books ..	6	Life buoys	439
Crowbars	56	Measures, tin, 1 gallon each..	635
Baskets, hand	38	Necessary boxes	596
Boxes, clamp, with iron } locks and keys	79	Pots, cooking, copper ..	222 (weighing 903 lbs.)
Trunks for records	47	Funnels, copper	64 (weighing 292 lbs. 15 ozs.)
Chairs, office.. ..	84	Pots, copper, water	24 (weighing 259 lbs. 4 ozs.)
Tables, camp	127	Scales, copper	602
Chairs	12	Steelyards	462
Trunks, mule.. ..	6	Covers, copper	1,099 (weighing 5,824 lbs. 7½ ozs.)
Tubs, 2 gallon	24	Degs	452 (weighing 26,976 lbs. 15 ozs.)
Cork press	9	Ladles	445 (weighing 2,105 lbs. 1 oz.)
Carpenter's benches, large ..	4	Measures, copper, 1 gallon, Winchester	81 (weighing 449 lbs. 1 oz.)
" " small	4	" " ½ "	78 (weighing 262 lbs. 10 ozs.)
Nets for charcoal	69	" " ½ "	72 (weighing 165 lbs. 11 ozs.)
Solder, soft	12 cwts.	" " dram	235 (weighing 123 lbs. 12½ ozs.)
Cases, tool, blacksmiths' ..	11	Swabs	1,574
Triangles, bamboo	62	Scrapers	11,391
Bellows	61	Sheet lead	193
Hoes, iron	107	Scuttles, butt.	102
Tubs, 12 gallon	54	Tubs, grog	98
" 4 gallon	60	Weights, iron, 56 lbs. ..	95
Tanks.. ..	1,000	" " 28 lbs.	77
Carpenters' tools, chests, } complete	11	Measures, copper, 1 gal. Imp. {	44 (weighing 200 lbs. 15 ozs.)
Seals, brass	13	" " ½ " " {	66 (weighing 190 lbs. 4 ozs.)
Saws, cooper.. ..	22	" " ½ " " {	64 (weighing 107 lbs. 9 ozs.)
Coopers' tools, chests, complete	4	Weights, iron, 14 lbs. ..	77
Lotas, large	3,000	" " 7 "	73
Feeders, earthenware ..	93	" " 4 "	88
Weighing machines, platform	49	" " 2 "	73
Awnings	279	" " 1 "	73
Cases, with locks and keys ..	54	" " 1 oz.	15
Handles, wooden, for hammers	307	" brass, from 4 lbs. to ½ oz. ..	18 sets.
Tarpaulins	5,672	" " 1 lb. to ¼ oz. ..	24 "
Grates, iron	187	Rasps	258
Ropes, European, 5 fms. each	1,183	Tin for soldering	40 lbs.
Pumps, water, complete ..	6	Ammonia	30 "
Scales, with beams, complete	46	Corks	100 gross.
Triangles, wooden	41	Chains for hooks for training	100
Ovens, iron, portable	20		2 c 3
Knives, cutting, leather ..	18		
Beaters, leather, iron ..	18		
Files, saw	34		
Plates, brass, for peons ..	411		
Plynes	18		
Stones for sharpening tools ..	18		
" for beating leather ..	18		
Hammers, pointing	150		
Pincers	150		
Weighing machines for gro- } ceries, from ¼ lb. to 7 lbs., } with sets of weights	3		

Name of Stores.	No. or Quantity.	Name of Stores.	No. or Quantity.
Stakes, anvil	150	Planes, large.. ..	31
Scales, brass, for shroff	8	" small.. ..	31
" copper "	8	Saws, large	46
Casks, dry	4,744	" small	46
Curry stones with rollers	17	Spokes	31
Measures, tin, 1 dram	3	Bradawls, large	92
Boxes for records	11	" small	92
" " stationery	4	Hammers, shoeing	108
Casks, empty, for water	2,069	Spades, with helvcs	21
Butts for water	849	Anvils	61
Baskets, hand, small.. ..	2	Measures, copper, Imp. 4 gall. { 8 (weighing 124 lbs	
Cocks, brass	81	" " " 2 " { 6 ozs.)	
Hydrometers	8	" " " 2 " { 8 (weighing 72 lbs.	
Tents, N. P.	19	" " " 2 " { 4 ozs.)	
Tubs, 4 gallon	18	Vices, large	16
Lanterns, horn	396	" of sizes	31
Hatchets	1,029	" hand	61
Pumps, copper	652	Files, large	123
Weights, iron, from 4 lbs. to.. } 472 sets.		" medium	123
1/2 oz.		" small	123
Lanterns, dark, with lock.. } 678		Saws	16
and key		Chisels, large	62
Oil, cocoa-nut	38,319 lbs. 6 ozs.	" small	62
Spoons, ghee, iron	573	Late screws, large	16
Hose, canvas	138	" small	16
Wicks, cotton	838 lbs.	Hammers, large	123
Scales, balance, spring	102	Callipers	16
Disinfecting powder.. ..	12,335 lbs. 8 ozs.	Boilers, small	3
Measures, tin, 1 quart	66	Brushes, flat	3
" " 1 pint.. ..	13	Fire engine, complete	1
" " 1/2 "	45	Brushes, scrubbing	32
" " 1/4 "	13	Mallets, small, wooden	95
Blocks, chopping, wooden	8	Chests, treasure, small	39
Pincers	108	Horses, wooden, slope	8
Grinding stones	300 pairs.	Pots, cooking	276
Chimtas, iron (pincers)	625	Baskets for covers	4,693
Lanterns, tent	310	Bags, canvas	9,583
Handles for pickaxes and.. } 336		" gunny, single	616,009
powras		" " double	—
Needles, shoemakers'	144	" Dungaree, double	7,044
Blacking, in tins	3,000 boxes.	" sheeting	74,207
Pipeclay	750 lbs.	" mat or cuppos	10,829
Galleys, patent, European	2	" Pudumpaut	197,435
Measures, tin, Imperial gallon	12	Duffers	915
" " 1/2 gallon	12	Hogsheads	1,712
Chubb's locks, brass.. ..	28	Half hogsheads	27
Towas, iron	3,000	Cases	20,104
Lotas, brass	300.0	Cannisters, zinc	18,987
Chisels, cold	92	" tin	9,099
Compasses	48 pairs.	" iron	1,185
Screwdrivers	92	Bottles, quart	10,122
Files, of sizes	62	" pint	168
Hammers	296	Casks, empty, scuttled	214
Gimlets, large	46	Keys	3,940
" small	46	Jars, European	184
Gongs	89	Toonias	2,354
Covets	78	Adres	92
Foot rules	16		

Name of Stores.	No. or Quantity.	Name of Stores.	No. or Quantity.
<i>Clothing, &c.</i>		Pillow cases, straw ..	189
Banians, flannel ..	18,659	" " large ..	219
" loose ..	38,924	" " small ..	36
Cumblies, black ..	18,442	" hair, large ..	1,821
Drawers, flannel ..	11,730	Quilts, gingham, lined with } ..	3,032
" loose ..	200	loolie ..	
Coats, great, cumblies ..	2,375	Cases, slip, for bolsters ..	769
Dhoties ..	6,000	Canvas ..	2,000 yards.
Dhopatas ..	3,000	Comforters, blue worsted ..	4,000
Bags for bedding ..	364	Caps, worsted ..	4,000
Gowns, blue, serge ..	800	Belts for peons ..	405
Bundies sheeting, cloth ..	6,000	Gowns, gingham, lined with } ..	20
Cumblies loose or blankets ..	11,581	flannel ..	
Flannel ..	99 yards.	Jerseys, blue ..	4,000
Bed covers, waterproof ..	540	Mitts, worsted ..	4 pieces.
Cases, pillow, straw ..	1,367	Cloth, Dungaree ..	6,000 yards.
" bolster straw ..	1,730	Boots ..	48 pairs.
" for large pillows ..	1,205	Clew, for clothes ..	10 bundles.
" for small " ..	372	Cases, slip, for hair beds ..	124
Cholera belts ..	6,770	Covers, waterproof ..	1,350
Sheets, linen ..	4,611	Cloth, Pallumpaut ..	10,000 yards.
" cotton ..	11,313	Dungaree for bandages ..	2,600 yards.
Shirts, cotton ..	5,020	Blankets, country ..	4,535
Slippers, leather ..	1,476 pairs.	Towels, round ..	25
Socks, cotton ..	3,894 "	Tape broad ..	700 lbs.
" worsted ..	43,215 "	Cloth, calico ..	2,132 yards.
Settrinees ..	5,691	Caps, flannel ..	40
Great coats, cloth ..	18,986	Gowns, gingham, lined with } ..	40
Lascars Mirzaitis ..	14,624	cotton ..	
Mosquito netting ..	678 yards.	Gowns, gingham, lined with } ..	20
Trowsers, cloth ..	17,916 pairs.	loolie ..	
Beds coir in lieu of cork ..	445	Gowns, gingham, single ..	40
Hand towels ..	5,698	Slippers, canvas ..	20 pairs.
Belly bands, flannel ..	164	Chapples, leather ..	142
Bed cases, strong, Dungaree ..	190	Laces, boots ..	12,000 pairs.
" Dungaree ..	40	Banians, blue serge ..	4,000
Caps, gingham, lined with } ..	230	Gunny ..	500 yards.
cotton ..		Slippers, brown ..	90 pairs.
Gowns, flannel ..	110	Bolsters, straw ..	150
Shirts, " ..	5,427	Cases, slip, for hair beds and } ..	1,887
Trowsers, flannel ..	680	bolsters ..	
" blue serge ..	212	Pillow cases, Dungaree ..	120
Towels, Dungaree ..	983		
Wa'stecoats, blue serge ..	831	<i>Stationery.</i>	
Blankets, European ..	10,754	Weekly returns on board ship ..	148
Pyjamas ..	5,888	" of sick ..	1,104
Shoes ..	5,196 pairs.	Stamps wafer ..	3
Banians, flannel, coloured ..	3,686	Straps ..	3
Boots, half, English ..	33 pairs.	Paper, Portuguese ..	18 quires.
Night caps ..	3,763	Inkstands, pewter ..	6
Waterproof sheets ..	11,092	Ink powder, red ..	4 bundles.
Gowns lined with flannel ..	30	Hones ..	19 "
" " cotton ..	10	Books, French paper of 3 } ..	8
Covers, cotton ..	358	quires ..	
Numdas or hairy mitchins ..	150	Certificates for oil and tin- } ..	482
Boots, English ..	8,335 pairs.	ning ..	
Beds, hair ..	911 "	Extra indents for medicine ..	200
Bolsters, hair ..	719 "		

Name of Stores.	No. or Quantity.	Name of Stores.	No. or Quantity.
Blank books, 3 qrs., 3rd size	1	Urmoodha ujwan	6,000 lbs.
" 2 " "	2	Peny grated root	5 "
" 4 foolscap ..	3	Oil, sweet	612 quarts.
" 3 " "	39	Grease	2,000 lbs.
" 2 " "	13	Hand rubbers	300
" foolscap, or }	16	Tobras	200
French paper	253½ quires.	Saddles, mule	200
French paper	100	Ropes for mules, loading ..	200
Bound books	12	Charsas for mules	800
Copies of ready reckoners ..	50	Puckals for mules	800
Slates, large	200	Doles with ropes for mules ..	800
Diet rolls	342	Charsas for camel puckals ..	1,000
Returns of wine expenditure	46	Slings, camel	6
Admission and discharge books	52	Mangers, wooden	656
Cases book	50	Coorpas with strap or belts..	14,640
Medical certificate books ..	72	Hooks, iron	250
Guard books	71	Mussacks, leather	30
Memorandum books	403-9 quires.	Ropes, hempen, loading ..	1,534
Foolscap paper	27,500	Salamoniac	8 cwts.
Daily cholera states	1,911	Sickle, or gras-cutter's knives	12,200
Weekly returns of Medical Officers }	1,670	Shoes, horse	4,000
Classified returns of wounds	8,900	Ropes for sulleetas	350
Envelopes	47 pieces.	Saddles, mule, for girths ..	765
India-rubber	47	Girths, large, for saddles ..	2,960
Ink bottles	132 bundles.	" small, "	355
Ink powder, black	34-1 quires.	Hides	781
Blotting paper	159	Bolts, axle-tree, iron	80
Lead pencils	2,644	Iron	4,100 lbs.
Quills	32	Pieces, yoke, wooden	200
Red tape, skeins	52	Squire, axes, iron	80
Rulers	93	Steel	364 lbs.
Knives	57 quires.	Ropes, hempen	1,357
Wrapping paper	92½ dozen.	Bran	150,740 lbs.
Steel pens	26½ ozs.	Gram, raw, ghatly, 1st sort..	11,708,770 "
Wafers	46 boxes.	Hay, screwed	39,930,540 "
"	537	Pepper, black	46,120 lbs. 11 ozs.
Indents for hospital bedding	1,183	Bamboo baskets, small	13,905
" miscellaneous	450	Head pads with horse collars, canvas }	1,800
" wine, &c.	550	Nets, hay	16,160
" necessities	1,696	Tobras, gunny, paut	10,718
" Medical Store-keeper .. }	2,903	Mats, coir	16,002
Diet sheets	13	Slings, horse, canvas, resting	764
Ward books	21,821	Buckets, horse, pail, galvanized }	2,015
Morning states	517	Brooms, Goa	5,373
Monthly sanitary reports ..	275	Chloride of lime	1,747 lbs.
Returns of sick on board ship	1,220	Vinegar, country	8,952 gallons 28 dr.
Weekly returns of sick ..	25	Slings, horse, for hoisting ..	606
Ink bottles, China	3,002	Straw, screwed	5,593,213½ lbs.
India rubber, pieces	26	Lanterns with locks and keys	1,350
Indent forms	100	Sir William Burnett's disinfecting fluid	642 gallons 6 dr.
Monthly returns of sick ..	60	Baskets, large, for hoisting litter, &c.	503
Indents for medicines ..		Tubs, large, for watering horses and soaking grain .. }	191
<i>Cattle Gear, &c.</i>		Rock salt	12,820 pieces.
Pins buch, iron	80	Saltpetre	2,485 lbs.
Hides, buffalo	25		
Shoree ujwan	6,000 lbs.		

Name of Stores.	No. or Quantity.	Name of Stores.	No. or Quantity.
Linseed	66,482 lbs.	Bridles, watering	11
Scrapers	868	Heel ropes	165
Disinfecting powders ..	2,690 lbs.	Saddle and bridle	1
Sponges	1,307	Saddles, pack, for tattoos ..	58
Oorid	990,850 lbs.	Buffers, wooden	150
Forage, compressed	167,840 "	Sugar canes	2,000
Mutt	1,119,900 "	Butter	46 lbs.
Kirbee	174,166 "	Sugar candy	120 "
Rope, cotton	9,623 "	Googoil	20 "
" loading	1,348 "	Slings for elephants	6
Gunny, paut, for gear ..	6,000 yards.	Ropes	16
Curry combs	4,812	Lime	112 lbs.
Danna coories	1,200	Koolkee	6,040 lbs.
Doomches	1,700	Inderjow	20 lbs.
Gulla bunds	1,750	Phalas papelic	20 "
Head stalls with chain ..	3,260	Calla jeera	20 "
Hand rubbers, coir	4,601	Ajwan	12,020 "
Head stalls, leather, with chains	1,999	Gunduck	10 oz.
Pegs, iron	3,440	Para	10 "
Nuckles with ropes	1,700	Calla bitchwa	10 "
Bulla tongs	1,722	Ajwan kafull	20 "
Churchas	1,200	Heera hing	40 lbs.
Rope, coir, picketing ..	2,000 yds. (531½ lbs.)	Gum beed	10 "
Ropes, loading, camel, cotton ..	747	Shewraf	10 ozs.
Saddles, camel	1,512	Mosumbee	20 lbs.
Sulleetas, camel	4,485	Russoondoor	5 ozs.
Mallets, iron, with handles ..	83	Woorkee atel	10 ozs.
Jools (horse cloths)	1,230	Mun seed	285 lbs. 10 ozs.
Nails, iron, for cattle shoes ..	1,441,560	Bulching	10 ozs.
Kettles, camp, copper, weighing 42 lbs. 4 oz. ..	2	Gyloon	20 "
Screws	20 gross.	Talee seooge	10 lbs.
Shoes, mule	74,800	Sahup	24,024 lbs.
" bullocks'	56,400	Awagasee	24 lbs.
Nails, iron	49,460½ lbs.	Ellchee	24 "
Screws	524	Dalchienee	24 "
Head stalls, leather	238	Tabaseer	20 oz.
Pickers, iron	263	Maythee	24 lbs.
Ropes, coir	87,533	Butch.	6,020 lbs.
Numdas	7,149 pieces.	Head ropes	12
Tacks, iron	108,700	Pegs, wooden	18
Harness	3 sets.	Hooks, iron	124
Buckets, wooden	283	Horse box	1
Hammers, shoeing	150	Puckals, camel	500
Glue	50 lbs.	Chains, iron	4,587 lbs. 12 oz.
Brushes, horse	247	Chaff cutters	2
		Grain crushers	2
		Buckets for camel puckals ..	800

Statement of Stores shipped for Kurrachee.

Provisions for Europeans.			
Arrack	4,048 gallons.	Mutton, fresh	160 lbs.
Biscuits, 1st sort	540 lbs.	Onions	1,205 lbs. 12 ozs.
Bread, 1st sort	160 "	Potatoes, round	463 lbs.
Beef, salted	327 "	Porter, in quart bottles ..	5 dozen.
Dhall, moorig	79 "	Pork, salted	276 lbs.
Flour, 1st sort	90 "	Rice, 1st sort	180 "
Firewood	3,540 "	Raisins	27 lbs. 4 ozs.
Mustard	4 lbs. 14 ozs.	Sugar, 2nd sort	50 " 14 "
		Tea, black, 1st sort	36 " 6 "

Name of Stores.	No. or Quantity.	Name of Stores.	No. or Quantity.
Vinegar, country	3½ gallons.	Cloth Dungaree, double	200
<i>Provisions for Natives.</i>		Bamboos	500
Ghee	181,447 lbs. 7 ozs.	Quarter galleries	11
Flour, 2nd sort	1,016,580 lbs.	Kaboose bot	10
Wheat	424,425 "	Grates, iron	8
Firewood	607,090 "	Buts, empty	38
Dhall moorig	15,240 "	Ladles, copper	12 (weighing 28½ lbs.)
Dates	9,226 "	Lead, sheet	7 (weighing 1,607 lbs.)
Gram, parched	9,258 lbs. 12 ozs.	Pots, cooking, copper	5 (weighing 60½ lbs.)
Powah	32 " 8 "	Covers for ditto	13 (weighing 18½ lbs.)
Rice, 2nd sort	53,010 lbs.	Hogsheads, empty	211
Salt,	2,544 "	Measures, 1 gallon, tin	7
Sugar,	3,094 lbs. 4 ozs.	Scales, copper	7
<i>Medical Comforts.</i>		Weights, 4 lbs. to ½ oz.	7 sets.
Arrack, proof in quart bottles	16 bottles.	Bottles, quart, empty	35
Brandy, French	16 "	Tierces, salt meat, empty	3
Arrowroot	15 lbs.	Cases of sorts	22
Sago	23 "	Cock, brass	1
Sugar, 1st sort	26 "	Planks, deal, 9 in. by 1 in. ..	37½ square feet.
Mustard	7 "	Battens, 2½ in. by 1 in. ..	75 " "
Port wine	11 bottles.	Nails, iron	123 lbs.
Limejuice	21 "	Battens, wood, 1½ in. by 3 in.	300 square feet.
Disinfecting fluid	1 "	Poles, wood, 3½ feet long, 3 in. by 4 in. ..	5
M'Dougal's Disinfecting Powder	120 lbs.	Poles, 10 feet long, 3 in. by 4 in. ..	6
<i>Provisions for Animals.</i>		Tubs, grog	4
Grain	1,835,000 lbs.	Ropes, hempen or tarred	216
Barley	2,303,375 "	Oil, cocoanut	190 lbs.
Hay	423,400 "	Numdass	64
Kurbee	400,000 "	Jacks, iron	45 lbs.
Bhoosa, wheaten	367,500 "	Hammocks	40
Bran, wheaten	21,461 "	Cloth handages	25 yards.
Pepper, black	7 lbs. 4 ozs.	Lanterns, deck	1
<i>Clothing.</i>		Pumps, copper	13
Banians, flannel	100	Force pump	1
Chogas	193	Buckets, wooden	33
<i>Dead Stock.</i>		Brooms, Goa	50
Swabs	19	Lanterns, glass	8
Steel yards	4	Candles, wax	46
Lanterns, complete	35	Hatchets	9
Slings, resting	16	Ropes, pieces	9
Jars, earthen	15	Casks, scuttled	4
Cases, for ghee	1,321	Shovels	12
Bags, canvas or gunny	132,933	Screws, iron	10 dozen.
Cans, tin, ghee	4,731	Oil, tin, feeders	1
Hammocks, complete	7	Dhols, leather	200
Mats, country	842	Churns	200
Tobras	400	Ropes for dhols	200
Hooks, iron	154	Wooden handles for dhols ..	200
Chest treasure	1	Tanks, iron, for water	12
Scrapers, iron	66	Measures, gram feed, tin ..	1
Needles, packing	100	Baskets, bamboo	2
Twine, Europe	297	Mats, coir	4
Bags, gunny, double	867½	Buckets, galvanized	1
" canvas	211	Lanterns, horn	1
Buckets, fire	3	Tubs for soaking gram	1
Dappers, leather	16	Horse box	1
		Dags, copper	13 (weighing 314½ lbs.)
		Covers,	5 (weighing 30½ lbs.)

CHAPTER XXV.

LAND TRANSPORT.—(SUPPLY OF MULES FROM THE MEDITERRANEAN.)

BEFORE the expedition to Abyssinia was finally determined upon, orders* were sent from England by telegraph to Bombay to commence the collection of animals for the transport train, for it was argued that, as time was short, even if the animals were not subsequently required but little loss would be incurred by their collection compared to the expenditure (and inefficiency) that would result if the formation of the Transport Corps were delayed in case that the expedition was found necessary. The Government of Bombay, on the 6th August, telegraphed to England a request that the Sultan and Pasha should be asked to instruct all the functionaries at the Turkish and Egyptian ports to facilitate the purchase of animals.

Orders to collect animals in India.

On the 21st August, the Secretary of State for India asked the Government of Bombay what number of mules, if any, should be sent from this side of the Isthmus of Suez. The Government of Bombay, in reply, telegraphed on the 25th August, that as many mules as could be purchased and delivered at Suez before the end of November, should be obtained.

Orders to collect mules in Europe.

The Secretary of State for India consequently requested the Secretary of State for War to make arrangements for procuring as many mules as could be ready at Suez before the end of November, not exceeding 7,000, with a sufficient number of attendants to take care of them during their transit across Egypt, and if necessary on board ship in the Red Sea. This was accordingly done, and Sir John Pakington requested Lord Stanley to take the necessary steps for obtaining the consent of the Viceroy of Egypt to the establishment of a depôt at Alexandria for the reception of the mules on their disembarkation, and the formation of a second depôt at Suez, where the mules were to be concentrated prior to their embarkation for their destination on the Red Sea. This was done.

Foreign Office to obtain consent of the Viceroy of Egypt for the establishment of depôts in Egypt.

The following were the arrangements made for obtaining the mules required from the north of the Isthmus of Suez:—

The Consuls at Malaga, Alicante, Cadiz, Barcelona, Genoa, Tripoli, Beyrout, Constantinople, and Smyrna, were requested to look out at once for mules, and to assist in every way British officers and others sent out to select and purchase. Such officers were sent, accompanied by veterinary surgeons, to examine and select the animals. At Alicante and Smyrna the Consuls paid the expenses, on the order of the officer, by drawing bills on the Paymaster-General on account of the War Office. The officers proceeding to other stations were accompanied each by a Commissariat Officer, to undertake payment for the mules, and the necessary expense for hiring, stabling, and food for them, and also to hire such attendants as were necessary. These attendants were engaged on the condition of accompanying the mules to Alexandria, and, if necessary, to

Arrangements in Europe for purchase of mules.

* Telegrams dated 31st July and 1st August, 1867.

Massowah, with free passage back. In every case where the mule had a pack-saddle, such pack-saddle was to be included in the purchase. The officers received the pay of their rank, and 3*l.* 3*s.* a day, which included remuneration and hotel charges, in addition to their actual travelling expenses.

General
direction.

The general direction of the arrangements for the purchase of mules in the Mediterranean was placed under an Officer at Alexandria, who made arrangements for their landing, maintenance, and transit, and for delivering them over to the Indian Government at Suez. This Officer received his pay, and 3*l.* 3*s.* a day in lieu of all allowances. He was assisted by a dépôt establishment of the Military Train, and by two Commissariat Officers to make all necessary arrangements for foraging and maintaining the mules at the dépôts; one was stationed at a dépôt formed at Alexandria, and the other at a dépôt at Suez. Such subordinates of the Commissariat Staff Corps as were necessary were attached to each Commissariat Officer, and a veterinary surgeon was attached to the dépôt establishment. These Officers received their pay, and, in consequence of the special and temporary nature of the service, 1*l.* 10*s.* a-day each in lieu of all allowances.*

Pay to
Officers.

Veterinary
Surgeons
employed.

The General commanding at Gibraltar was requested to cause mules to be purchased in the vicinity of Gibraltar, Cadiz, and Malaga, and the General commanding at Malta to cause them to be purchased in the islands, and in the vicinity of Tunis or elsewhere. A veterinary surgeon was sent to each of these stations to examine and pass the mules purchased. Officers detached upon this duty continued to draw their usual pay and allowances, and 2*l.* 2*s.* a-day whilst so employed, to cover remuneration and hotel expenses.

Military
Train
Officers.

The places selected as centres for the purchase of mules were Alicante, Valentia, Majorca, Minorca, Barcelona, Genoa, Smyrna, Scanderoon, Tyre, Sidon, Beyrout, and Constantinople. An Officer of the Military Train or Artillery, to look out for and select mules, proceeded to each of these centres, and was accompanied by a veterinary surgeon. A Commissariat Officer was also attached to draw bills on the Treasury to pay for the mules, and to superintend the necessary subsidiary arrangements for foraging and keeping them till their embarkation, and to hire the necessary attendants. These Officers were under the orders of the Officer at Alexandria, and were to keep him informed of their proceedings.

These Officers were furnished with passports and circular letters of recommendation from the Foreign Office to the Consuls in the Mediterranean ports. The service of purchasing mules being temporary and special, and subjecting the Officers to considerable expense, they received 3*l.* 3*s.* a-day to cover remuneration and hotel expenses, in addition to the pay of their rank. Each Officer proceeding to Italy and Spain, received an imprest of 50*l.* before leaving England, and each Officer for the Levant received 100*l.*

Steam
transports
for mules.

Seven steamers were chartered by the Admiralty, and despatched to the several ports for embarking mules according to the orders of the Officer at Alexandria. They were provided with compressed forage for the voyage, and took out a supply of head-stalls for use on board; they also took out and deposited spare head-stalls at Alexandria for the use of the mules in transit. These vessels were fitted with steam hoists for embarkation. A veterinary surgeon was on board each steamer to receive the mules, look after them on the voyage, and hand them over to the Officer in charge at Alexandria. He had such assistance as the Officer in charge at Alexandria

* Subsequently increased to 3*l.* 3*s.* a day.

might direct. These Officers received 1*l.* 1*s.* a-day in addition to their pay whilst on board ship.

Colonel Clark Kennedy was the Officer stationed at Alexandria to direct the entire service, and it was arranged that Military Officers were each to be accompanied by a Commissariat Officer and a Veterinary Surgeon, and an Interpreter was to be engaged when necessary. The instructions to the Officers purchasing mules were as follows :—

Col. Kennedy appointed to superintend.

“ 1. They will purchase, in conjunction with the Commissariat Officer, serviceable mules for the British Government, not less than four years old, with bridles and two sets of spare shoes if possible. The mules to be inspected and passed by the Veterinary Surgeon.

Instructions to Officers purchasing mules.

“ They are also authorized to employ the Consuls or other persons to purchase mules, and to allow such commission, either at a fixed sum or otherwise, not exceeding five per cent., on approved purchases, as may be agreed upon. Every animal to be branded on one hoof and on the flank as soon as possible after purchase.

“ 2. The mules to be shipped to Alexandria in steamers which have been chartered by the Admiralty for the purpose.

“ 3. The British Consuls at all ports have been instructed to render all assistance.

“ 4. Attendants must be engaged to take charge of the mules to Alexandria, and remain with them one month in Egypt if required; not exceeding one attendant to eight animals. They will be provided with a free passage home.

“ 5. Reports are to be made, at frequent intervals, to Colonel Clark Kennedy, C.B., especially of the number of animals provided, and attendants hired, to enable him to send steamers to bring the animals to the depôt at Alexandria. Reports by telegraph are to be made when necessary.

“ Duplicates of the reports as to the number of mules and attendants hired are to be sent to the War Office for the information of the Secretary of State for War.

“ 6. The utmost exertions will be required to procure the required number of animals before the 1st November, after which date no purchases are to be made.

“ The Officers are at liberty to move to any other neighbouring places where a better supply of animals may be expected.”

The instructions to the Commissariat Officers were as follows :—

“ 1. They will consult with the Consuls as to the best means of obtaining tenders for the supply of the mules, and they will accept such tenders and make such purchases as may be advisable, taking the opinion of the Military Officers acting with them, who will signify their concurrence on the schedules or tenders, and will certify to the vouchers for direct purchases.

Instructions to Commissariat Officers.

“ 2. The ages and sizes of the mules should be stated in the tenders and certificates, and it should be stipulated that the contractors will be paid in bills at 30 days' sight on the Lords Commissioners of Her Majesty's Treasury, at such rates of exchange as may be current or agreed upon on the delivery of the mules, and on their being passed by the proper officers as sound and according to agreement. Payment may also be made in cash where necessary.

“ 3. They will, in conjunction with the Military Officer, engage the muleteers and enter into agreements for the hire of stables, supply of forage, bridles, and such other articles as may be required, making payment, and accounting, in monthly store and cash accounts, for these and all expenses connected with the service on which they are employed.

“ 4. In engaging muleteers to take charge of the mules during the voyage to Alex-

“andria, care should be taken that proper agreements are made with the men, under the covering signature of the Consul when possible, and the wages should include every-thing except victualling on board ship, which will be free.

“5. They will transmit schedules and copies of tenders to the War Office in the usual manner; they will send a weekly report of the amount expended and number of mules purchased, and attendants hired; report their transactions generally from time to time; and they will be guided in all respects, as far as possible, by the regulations of the Service.

“6. They will advise the Paymaster-General of the bills drawn in accordance with regulation, and will render their accounts to the Chief Auditor monthly, vouching the charges by certificates from the Military Officer in charge at the station that the number of mules paid for were duly embarked for Alexandria, or were otherwise accounted for.

“7. Invoices of the number of mules embarked from time to time for Alexandria are to be furnished by the Commissariat Officer at the port of embarkation to the Military Officer in principal charge at Alexandria, who will require from the captain of the ship, or other officer in charge of the mules while on board, a certified statement showing that the number of mules embarked were disembarked and duly handed over to the officer in charge of the dépôt at Alexandria, or were otherwise accounted for.

“8. They will make inquiries as to the amount of forage procurable in the neighbourhood in case of a demand from Alexandria, and will ship a sufficient supply of forage for the voyage, and for seven days over. The supply of compressed forage may be on board the vessel to be considered as a reserve.”

Names of
Officers
employed.

The names and destinations of the Officers employed on this duty were as follow :—

Destination.	Military Officer.	Commissariat Officer.	Veterinary Surgeon.
Alicante	Captain Whinyates, Royal Artillery.	Assistant Commissary-General Cumming.	Mr. Partridge.
Valencia	Captain Wortham, Royal Artillery.	Assistant Commissary-General Irving.	Mr. Bolton.
Barcelona	Lieutenant Turnbull, Royal Artillery.	Deputy Commissary-General Wingfield.	Mr. Harrison.
Majorca and Minorca ..	Captain Corbett, Military Train.		Mr. Death.
Piedmont and Genoa ..	Lieutenant Roberts, Military Train.	Assistant Commissary-General Baynes.	Mr. Harpley.
Smyrna	Captain Hobart, Royal Artillery.	Assistant Commissary-General Downes.	Mr. Henge.
Scanderoon	Lieutenant Brace, Military Train.	Assistant Commissary-General Maule.	Mr. Tatam.
Antioch and Aleppo ..	Major Dartnell	Ditto	Mr. Marshall.
Tyre, Sidon, and Beyrout ..	Captain M'Neill	Deputy-Assistant Commissary-General Casolain.	Mr. Fleming.
Samsoon and Trebizond ..	Captain Webber, Royal Engineers.	Deputy-Assistant Commissary-General Furse.	Mr. Anderson.
Gibraltar			Mr. Field.
Spain, under Mr. Wetherell's Contract			Mr. Thacker.

On the 2nd September, 1867, Captain Willoughby, R.N., Principal Transport Officer

in Egypt, was informed by the Military Secretary of the India Office that mules would be landed at Alexandria from various points, and he was requested to render every assistance in landing them, and embarking them at Suez.

Colonel Ross, Deputy Quartermaster-General in Egypt, was also requested to give every assistance to Colonel Clark Kennedy whilst employed in Egypt.

These arrangements were summarized and communicated to the Government of Bombay in the following terms, in a letter of the 3rd September, from the Secretary of State for India, of which the following is an extract :—

Transport
and Quarter-
master-
General's
Departments
in Egypt
to assist.

“ Having ascertained by your telegram of the 25th August, that you were desirous of being supplied with as many mules as can be got ready at Suez before the end of November, measures have been taken by the War Officer to collect, in the countries bordering the Mediterranean, as many mules, not exceeding 7,000, as can be delivered at Suez by the time specified.

Government
of Bombay
informed
of arrange-
ments.

“ The collection of the mules, their maintenance in Egypt, and their conveyance to Suez, in order to their embarkation, will be arranged by officers appointed by the War Office ; but it will rest with your Government to provide vessels at Suez for the transport of the animals to their destination ; and I request that the Commander of these vessels, or the officer whom you may send in charge of them, may be directed to report immediately on arriving at Suez to the Transport Agent of the Indian Government, who has been directed, in communication with the officer in charge of the Mule Dépôt, to take immediate measures for embarking the mules, with a proper proportion of stable equipments, spare shoes, &c.

“ I assume that the mule drivers to be employed in the expedition will be natives of India or the adjoining countries, and it is desirable that you should send some of these to Suez to receive charge of the mules from the European or Egyptian attendants who will have accompanied them thither.

“ The vessels which you will send for this purpose will of course be fitted for the accommodation of the animals, and will convey a sufficient quantity of fodder and water.

“ You have been informed by my telegram of the 28th ultimo that the mules will begin to arrive at Suez in October, and when further information may reach me I will communicate to you, from time to time, the probable number of these animals for which it will be necessary to provide transport, and the probable dates on which they will be ready for embarkation.”

The arrangements for conveying the mules from Suez are shown in the following telegram from the Governor of Bombay to the Secretary of State for India, September 4th, 1867 :—

Arrange-
ments for
conveying
mules from
Suez to Zula.

“ As soon as the reconnoitring party is landed, our own steamer, the “Coromandel,” 1,000 tons, fit for mules, proceeds from Massowah to Suez ; and she will be followed by the “Canning,” 1,200. We have chartered the “Queen Victoria,” 2,800 tons, for the same duty, and I hope also the “Samanood,” Egyptian steamer, 2,300 tons, now at Suez. The “Desohzai,” Egyptian, 1,062, and “Lagoje,” 800, are also at Suez. Tell me beforehand when the transports will be wanted. I do not like limiting the number of mules which you can send, lest the supply should fail from Bushire, but I have not reckoned on so many. Send all you can ; send pack-saddles for all your mules.”

Trained and
untrained
mules to be
collected.

On 4th September the following telegram was sent from the Secretary of State to the Governor of Bombay :—

“ It is very doubtful whether the untrained mules to be obtained in Europe will be “ useful. Do you wish us to go on collecting at the present expensive rate ? ”

To which was sent, as a reply, this telegram from the Governor of Bombay to the Secretary of State for India, 11th September, 1867:—

“ It would, of course, be better to have trained mules, but if they are not obtainable, “ we must have all the animals you can get, and do the best we can with them. There is “ great difficulty in the Persian Gulf, in consequence of the sudden establishment of “ quarantine, and therefore we require every animal that can be procured.”

Officers and
establish-
ments for the
formation of
mule depôts
in Egypt.

For the formation of mule depôts in Egypt,—Major Shervington, 7 officers, and 26 non-commissioned officers and men of the Military Train, and Assistant Commissary-General Robinson and Stanes of the Commissariat Staff, with a Veterinary Surgeon were appointed to assist Colonel Clark Kennedy.

Number of
mules
required.

On the 6th September, by the desire of the Secretary of State for India, the number of mules to be provided from Europe and the Levant was limited to 5,000, and this decision was communicated in a telegram, on the same day, to the Government of Bombay. On the 7th September, Smyrna was struck out of the list of places where mules were to be purchased.

On the 15th October, the following telegram came from the Governor of Bombay to the Secretary of State for India :—

“ More than 5,000 mules advisable ; telegraphed, a fortnight ago, to Alexandria, “ for addition up to 8,000, either mules or pack-horses,—the latter cheaper and as “ good. Instruct Colonel Kennedy as to this.”

This was answered by the following telegram from the Secretary of State for India to the Governor of Bombay :—

“ We shall obtain for you about 8,000 mules, but we provide only 5,000 pack-saddles. “ Can you manage for the rest of the saddles ? ”

Number
purchased.

Colonel Kennedy reported, on the 12th November, that a sufficient number of mules had been purchased to meet casualties, and to enable 8,000 efficient animals to be handed over to the Indian Government.

Office at
Alexandria.

A temporary office at Alexandria was furnished to Colonel Kennedy, one of the smaller rooms at the British Transport Office being lent to him for that purpose. It was decided that his operations were not to extend beyond Suez, as it was understood that all transactions on the Indian side of the Isthmus would be made by the Government of Bombay.

The Government of Bombay at first sent agents to Egypt to purchase mules ; it was

however found, by Colonel Clark Kennedy, that these officers were brought into competition with the officers of the Home Government. He therefore telegraphed to the Government of Bombay, who desired their agents to leave the purchase of mules in Egypt solely to him.

The Turkish Government sent the necessary orders to the Imperial authorities of Baghdad, the Hedjaz, and Yemen, to give their utmost assistance to the officers sent to procure beasts of burden in the East. Assistance of Turkish Government.

The Spanish Government permitted Spanish muleteers to take mules to Alexandria, but these had to present themselves before the Military Governor of the place of embarkation, to be warned of the consequences they would incur if they took service in another country, enlistments for foreign countries being punishable by the laws of Spain. Spanish muleteers.

About 3,000 Cossack horses could have been purchased at Kozloff for about 11/ each, but considering the difficulty attendant on the transport of pack animals by way of the Black Sea in autumn and early winter, and the facilities offered in Turkey and Egypt for their collection, Sir Stafford Northcote did not think it desirable that any measures should be taken for obtaining horses from Russia. It was decided, however, that pack horses might be substituted for mules within the specified number, if obtainable at any of the places where mules were being purchased. Cossack horses obtainable. Pack horses.

At Tunis, mules were scarce, and their exportation prohibited. The Bey, however, in deference to the British Government, permitted the exportation of 100, to be extended if necessary. No purchase of importance could be made in Tripoli, as mules in that country were extremely rare, and of an inferior kind. Mules scarce at Tunis, Tripoli, and Alexandretta.

Very few mules could be purchased at Alexandretta, so the officers sent there went to Aleppo, where they succeeded in buying many, which were sent to Alexandretta for embarkation. Obtainable at Aleppo.

In October, a proposal was made to obtain horses from Bulgaria and Servia. It was too late then, otherwise, doubtless, labour, expense, and risk attending the collection of pack animals would have been diminished in proportion to the number of pack-horses demanded, as they were cheaper and more abundant (particularly in the Levant), and bear sea transport much better than mules. Bulgarian and Servian horses obtainable.

Transports were taken up, and sent to carry the mules from the different ports in the Mediterranean to Alexandria. Further particulars concerning these vessels will be found in Chapter VII.*

The Military Train stores required for the mule depôts formed at Alexandria and Cairo, were supplied from England.

The following is a list of these Stores :—

Ropes, heel	2,000	List of Military Train stores for mule depôts in Egypt.
„ picket, 16 yards each	1,000	
Mauls for ditto	200	
Cords, forage (equal to 18,000 yards)	2,250	
Nose-bags	7,000	
Sacks, corn	200	
Pickers, hoof.. .. .	500	
Lanterns	300	

* See page 240. Vol. I.

Padlocks, with staples and loops	..	..	..	..	..	100
Forges, farriers'	..	..	..	..	..	2
Tools, farriers', sets	..	..	..	..	..	4
Brands for mules	..	..	..	..	..	40
Axes, felling	..	..	..	..	..	12
Hammers	..	..	..	..	..	20
Stoves, cooking, small	..	..	..	..	..	4
Blankets, soldiers', field	..	..	..	..	..	100
Head-collars	..	..	..	..	..	3,000
Blankets, leather	..	..	..	..	..	500
Veterinary equipments, sets	..	..	..	..	..	2
Saddles, drivers', with bridles and whips, but without numdahs	..	..	..	..	..	12
Axes, pick, 6½ lbs.	..	..	..	..	..	150
Spades	..	..	..	..	..	150
Shovels	..	..	..	..	..	150
						lbs.
Grease	..	..	..	..	..	112
Nails, iron, clasp, No. 35	..	..	..	..	..	10
" " " " 36	..	..	..	..	..	20
" " " " 37	..	..	..	..	..	20
" " " " 38	..	..	..	..	..	20
" " " " 46	..	..	..	..	..	5
" " " " 57	..	..	..	..	..	5
" " elout " 58	..	..	..	..	..	3
" " " " 59	..	..	..	..	..	3
" " " " 66	..	..	..	..	..	3
" " tacks " 82	..	..	..	..	..	11

Purchased at Malta :—

Carts, Maltese, with covers and lashing ropes, 5-ft. wheels	..	12
Harness for mules, for riding and driving, sets	{Near ..	12
	{Off ..	12

Purchased in Egypt :—

Posts, picket, necessary proportion for 1,000 ropes.		
Blankets or rugs, mule		1,000
Surcingles for ditto		1,000

Commissariat stores
for mule
depôts.

The Commissariat stores required for these depôts were forwarded from England, and the following supplies were sent :—

500 tons of compressed hay and 300 tons of patent compressed forage. This hay and forage was stored at the mule depôts at Alexandria and Suez, as a reserve, to meet emergencies. A small portion of the hay was put on board the ships conveying mules, for use in case of the ordinary supply of forage running short.

10,000 sacks (four bushels each) to facilitate the transport of grain in Egypt, and for exchange with the masters of vessels for full sacks landed by them. 10,000 sacks were also placed on board each ship conveying mules, to exchange at the ports for full sacks put on board, and 500 sacks were sent to each shipping port, for putting corn on board ship with mules.

Four beam scales (10 cwt. each), with boards and weights complete, and four port-

able weighing-machines, on wheels, to weigh 5 cwt., were sent to Alexandria for use there and at Suez, in the purchase and issue of forage.

200 halters were also put on board each vessel for the use of mules.

The working arrangements for the purchase, transport, and depôts of mules will be found in the following Reports from Colonel Clark Kennedy :—

Arrangements in Egypt.

“ Having obtained an interview with Chérif Pacha, the Regent in the Viceroy’s absence, and after explaining the nature of the permission and assistance required, His Excellency stated that every facility would be given towards the assembly and storage of mules and their equipment in Egypt, and of their transit from Alexandria to Suez. “ Upon leaving the Regent, the Director of the Railways, who had been desired to

Colonel Clark Kennedy’s Report of the 11th September, 1867.

point out such places in the vicinity of the landing wharf and railway as might be available for the formation of a mule depôt, took us to three places, one of which, the Gabary Palace, now unoccupied, appeared suitable as barracks for the depôt and encamping ground for the mules ; but, as the inspection of these places was not concluded till dark, and there are other sites to be visited to-morrow morning, a final decision cannot be made until noon, and then all necessary arrangements will be made for quartering the detachments which left England for Alexandria on the 4th instant, and for the reception of the first lot of mules that may arrive.

“ The cholera having appeared in Malta, no personal communication took place, but the Governor wrote to say that there were 200 mules ready for shipment to Egypt ; I therefore applied at once upon arrival here to-day to know to what (if any) quarantine mules from Malta would be subjected, and upon receipt of an answer will communicate with the Governor of Malta.

“ I have reason to believe that a few hundred mules may be obtained in Egypt, and, if an arrangement can be made with Cairo dealers to deliver them at a certain rate at our depôt at Suez, a very considerable saving may be effected on the price of each mule, and acclimatized animals obtained.”

“ On the 13th, the Viceroy returned from Constantinople, and on the following morning Her Majesty’s Acting Consul-General, having obtained an appointment, presented me to His Highness at the Ras-e-tin Palace. The Viceroy inquired into the details of the collection and transit of the mules, and expressed himself in strong terms that every facility he could afford should be given, and personally confirmed the offer of the site in the grounds of the Gabary Palace made by his Minister prior to His Highness’s return, and, moreover, added, that orders had been given to all departments of the Egyptian Government in any way concerned with the mule service to give every assistance in their power. In the course of conversation the Viceroy stated it was his intention in about three weeks to send 10,000 men to his Abyssinian frontier, in order to protect his own territory and subjects from the incursions and excesses that might be anticipated from the condition of Abyssinia during war.

Colonel Clark Kennedy’s Report of the 18th September, 1867.

“ After leaving the Viceroy, and having previously examined all probable sites, the Alexandrian depôt was fixed at the Gabary on the outskirt of the city, where there is shade and water for the mules, short and direct communication with the railway wharf, where leave has been given to land the mules, and a disused siding in the grounds, but in working order, where the animals, their stores, and parties in charge, may be loaded on trucks for transit by railway to Suez.

“ The buildings placed at our disposal, a sort of wing of the now dismantled palace,

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" is sufficient to quarter the detachments and provide offices and storage for all the requirements of the mule transport service, and the Viceroy has repaired and whitewashed the buildings to fit them for our occupation, at his own expense.

" In addition, I have secured the promise of very large storage-room from the railway authorities (as they state free of charge), in the event of the paragraph in my instructions relative to storage being intended to warn me that other stores not connected with the mules may be consigned to me, the latter portion of the paragraph being capable of being so interpreted, and in a country like this it is necessary to be prepared on all points. Moreover, no expense has been incurred.

" These storehouses are very extensive, are close to the wharf near the railway, and would hold the stores of an army.

" The surplus compressed hay will be stored at the Gabary, where also will be placed the stores of the mule transport service.

" The detachment Military Train, which embarked at Southampton on the 4th instant, landed here yesterday, and are quartered at the Gabary, where the buildings had been prepared and fitted for their reception with wooden stretchers, bedding suited to the climate, large earthenware jars for ablution, &c.

" Arrangements have been made with the Prussian hospital for the reception of any of our non-commissioned officers or men who may fall sick, at the rate of 3s. a-day, which is increased to 5s. if the case requires special attendance in a separate ward. The establishment, as may be inferred from these rates, is not self-supporting. I have inspected it thoroughly; it is well conducted and organised under European medical men, and some German Sisters of Charity who devote themselves to the duties of the hospital. The Maltese, Spanish, and other attendants attached to the mules will be treated when necessary in the European hospital.

" The soldiers at the Gabary will be visited once a week by a medical man in practice in the city, who will also be available in case of accident, or any sudden attack of illness.

" With respect to that portion of my supplementary instructions to submit a fair and liberal commuted rate in lieu of rations in kind, Assistant Commissary-General Robinson and myself have been engaged in obtaining information as to prices from all sources, including the British Consular authorities, and we will not be prepared to submit a final rate for a day or two. The sum will probably range between 3s. 6d. and a dollar for the actual cost of provisions, exclusive of fuel, light, cooking utensils, crockery, &c. The basis of the ration to consist of 1½ lbs. of bread, 1 lb. of meat, and 1 quart of good beer—it is very unadvisable to issue spirits of any kind.

" With reference to your injunctions 'to exercise the strictest economy consistent with efficiency,' I have to assure you that no care or exertion will be wanting on my part, and I am confident from my own personal knowledge of Assistant Commissary-General Robinson, that that excellent and experienced financial officer will work energetically in keeping the expenditure within proper bounds. The expenditure, however, will be very considerable.

" The rate of exchange in Egypt is so unfavourable that Mr. Robinson, after consulting with me, has arranged by telegraph with Her Majesty's Treasury, that the necessary funds for our expenditure are to be sent in gold from England, and in the mean-time only the sums absolutely required will be obtained by bills.

" The dépôt arrangements at Alexandria being complete, I am about proceeding this afternoon to Cairo, *en route* to Suez, whither Mr. Reade will accompany me,

“furnished with an order to the Governor at Suez to point out any available sites for the dépôt, and to allot such ground as I may select.

“Tentage for the officers and men to be stationed at Suez has been ordered through the Consuls to be prepared at Cairo; but, as the weather at Suez is now excessively hot, I intend to detain the detachment in Alexandria until it becomes necessary to send them to Suez to prepare for the first lot of mules.

“The men will thus remain under a roof as long as the service will admit.

“Since my arrival here I have been gathering as much information as possible with reference to the kind of mule required for Abyssinia.

“The opinion of the Egyptian ministers and other officers is unanimously in favour of the Syrian mule when contrasted with the Spanish mule. Raghib Pacha, the Minister for Foreign Affairs, one of the ablest men in this country, told me, from his own knowledge, that during an expedition of Said Pacha's, the late Viceroy, to the Sudan, the Syrian mules stood the climate, whilst of the Spanish mules 30 per cent. died.

“From offers that have been made, I am satisfied that at least 2,000 mules could be obtained from Syria by the native dealers, principally resident in Cairo, and delivered at Suez for about 25*l.* per mule, but it would require from 8 to 10 weeks to carry out the transaction, and as time is made the important point in the present service, the proposals could not be entertained; but if the Abyssinian expedition is a longer affair than is anticipated, and a further supply of mules is required, it would be an efficient and economical source of supply for any number of mules demanded by the Indian Government in excess of the present order. The transaction would, however, require to be arranged with great care and judgment, so as to exclude the mixture of Levantine mercantile agency in the business.

“With respect to the transit of the mules through Egypt to Suez, it is at present purposely kept an open question whether they will be sent by railway, by the Suez Canal, or march across the country, until I can obtain an official answer to my official request through the Consul-General, as to the terms upon which the railway purposes to carry the mules to Suez. From all I can gather it will be probably under 2*l.* a head, and will be inclusive of a charge for landing the mules at Alexandria in some Government horse-boats now in the Arsenal—an arrangement which, if it can be carried out, will be better and cheaper than hiring barges from private individuals.

“The communications with the officials of the Suez Canal Company in this country have satisfied me that, although there is 18 feet of water in Port Said, the transit of any considerable number of mules could not be depended upon with sufficient certainty as to time, the risk would be considerable, and the collective expenses for feeding and attending upon the mules during the transit greater than those of the conveyance either by railway or of the march by land.

“As to the march across country, it will only be resorted to in the event of any failure on the part of the railway. The placing food and forage at so many stations, the increased number of men in charge, and risk of loss on the road, would involve far greater expenditure than even the highest rate the railway could impose; and whatever difficulties may arise, I trust that, if the animals cannot be carried to Suez, they will be at least conveyed as far as Cairo by railway, from whence the march across the desert can be made with more facility than that from Alexandria to Cairo.

“The railway authorities are aware that the Suez Canal Company have made an offer to convey the mules, and also are aware that, if driven to it, the mules can march.

“Mr. Reade is of opinion that it will be some days yet before I receive a reply as to the railway charge, and principally because the Viceroy will probably fix the rate himself.

" His Highness has most liberally allowed the baggage of officers and men to be landed free of duty; and I have had a communication, through Mr. Reade, that no duty will be charged on the mules, either on landing, passing through, or on leaving Egypt.

" The quarantine between Malta and Alexandria is an unfortunate complication, but until I receive a list of the seven steam transports, their dates of sailing, and their respective destinations, I am unable to give any directions to the purchasing parties at their various stations.

" I hope to receive this information by the mail that left London on the 11th instant, now due here, but which is not yet reported as in sight.

" I leave this evening for Cairo, accompanied by Colonel Ross, to be present to-morrow morning, at the request of the Acting Consul-General, at a formal public reception to be held at Cairo by the Viceroy. Mr. Reade placed some stress upon the point of my attending upon this occasion. As soon as the reception is over we go on to Suez, to fix the site for the dépôt there, and from thence return to Alexandria without delay."

Colonel
Clark Ken-
nedy's re-
port of 25th
September.

" I have the honour, in continuation of my letter of the 19th instant, to report that, after waiting in vain all the next day in the hope of an interview with Koorshid Pasha, who was unable to keep the appointment his Excellency had made, Mr. Reade and myself met him on the morning of the 21st instant, prior to our departure for Suez; and the Viceroy having given his sanction to certain terms being proposed, the basis upon which the charge for the conveyance of mules by railway from Alexandria through Cairo to Suez was accepted by me; but owing to some charges for the minor details of transport, which it is desirable should be consolidated in one sum, not being yet ascertained, I am unable to state the exact rate, but the highest possible charge that can now be made, under any pretence whatever, will be far below the expense of either taking the mules by the Suez Canal or marching across the country.

" The exact terms in writing will be given to the Consul-General in a day or two after the return of His Highness the Viceroy from Tanta to Cairo.

" Osman Bey, on the part of the Government, accompanied us to Suez on the 21st, and after going over the ground in the vicinity of the town, I selected a site for the dépôt on good ground to the windward of the town, near the T arm of the freshwater canal, and close to the line of railway by which the mules will arrive.

" The distance to the point of embarkation is about three-quarters of a mile. The space is ample, and appears to have every sanitary advantage to be found in the desert.

" The Governor of Suez approved of the site selected, and the ground is now at our disposal.

" The tentage prepared at Cairo was inspected and approved of by Colonel Ross Deputy Quartermaster-General, and myself, the bargaining being conducted by the Consular Agent in our presence. The tents are those of the country, reasonable in price. The tents purchased for the muleteers and native attendants are not quite so good as those brought for the officers and men from England.

" Filters and other articles that are necessary to the health of the establishment are being provided.

" On the 22nd, Captain M. Willoughby, of the Bombay Commissariat Department, the officer adverted to in my letter of the 19th, arrived at Suez, together with two other officers, one a Veterinary Surgeon charged with the purchase of mules and pack-horses in Egypt and Syria, the purchase of forage, taking up vessels in the Red Sea for mule transport, &c.

" The telegrams enclosed in my letter of the 19th prevent any clashing on account

“ of two parties being in the market at the same time ; and as the contract for forage, entered into on the 23rd instant, is of a favourable nature, and so extended as to enable any amount of forage (barley and chopped straw) to be drawn at Suez, requisitions from the Bombay authorities for forage to supply Red Sea transports, or for use upon first landing at the base of operations, can be complied with.

“ Any other articles required by the Bombay Government from Egypt, that are not transport animals or forage, can be purchased by Captain M. Willoughby or his officers in the open market without exciting any competition of interests.

“ From what I can learn, it does not appear that the Bombay Government are aware of the instructions which I have received, or of the arrangements made for the formation of a depôt of mules at Suez for service with the Abyssinian Expedition. Neither does it seem that any preparations have been made for sending mule transports to Suez, or providing syces for the mules during the voyage. I have informed Captain Willoughby that every assistance in our power will be given at Suez towards the shipment of the mules, and also towards obtaining any number of muleteers from this side of the isthmus which the Bombay Government may wish to engage to serve with the Expedition, either by treating with them after their arrival in Egypt, or at the various ports from whence the mules are embarked for Alexandria.

“ Under the doubt existing as to transports being sent from Bombay to fetch the mules, and a telegram having reached Captain M. Willoughby to take up the ‘Samanoud’ and other vessels in the Red Sea, the property of the Azeeziah Company, and offered through the Consul-General to the British Government, Colonel Ross, Captain Willoughby, and myself went down to the roads and inspected the ‘Samanoud,’ a fine vessel of over 2,200 tons, well suited for the transport of mules or horses, and capable of carrying about 700 on each trip of about five days to Massowah. The other vessels are smaller and not so well suited for the service as the ‘Samanoud.’”

“ The charge for the conveyance of the mules from Alexandria to Suez by railway has been fixed at 160 tariff piastres (about 33s. per mule), which includes the fares of muleteers and those in charge. The rate is fair and reasonable, and, unless the pressure upon the railway becomes too severe, there is every prospect of the service being carried out. Owing to the usual delays in all business matters in Egypt, the official letter containing the terms has not yet been received, but the proposition has been verbally accepted.

Colonel
Clark Ken-
nedy's Re-
port of the
30th Sep-
tember.

“ The offer of the Suez Canal Company has been declined, but, should events make it desirable to attempt the conveyance of mules by that route, arrangements can be made in the course of a few days.

“ The first arrival of mules is expected in two days' time, to the number of 30, from Brindisi ; the weekly steamers to continue to bring from 60 to 70 by every trip.

“ The reports from Beyrout and Aleppo (Scanderoon) promise to afford their quota, and the mules from those districts will be more efficient for service in the Abyssinian climate than those from Spain or Italy. A steamer will either be taken up here and sent to those ports when a full cargo is ready, or else they will be sent down in lots by some of the various coasting steamers ; either way the charge will be about 2l. per mule. An estimate of numbers cannot yet be given.

“ With respect to the 300 mules at Malta awaiting embarkation, proposals were put out yesterday for a steamer to be taken up for their conveyance here, and terms will be concluded on the 1st or 2nd proximo. The quarantine still continues, and, were

“ one of the mule transports from England to communicate with Malta and embark
 “ mules, there would be very great difficulties in using her in the Mediterranean, and,
 “ although the quarantine here with a clean bill of health is only five days, yet a single
 “ case of illness amongst the muleteers or crew, or a death, would deprive the Govern-
 “ ment of its use at the very time most needed. From what I learn it will cost about
 “ 1,500*l.* to take up a vessel to call at Malta for the mules on its return voyage from the
 “ westward.

“ Upon the receipt of the mail of the 26th, informing me for the first time that
 “ the number of mule transports was reduced to five, immediate steps were taken to
 “ press the purchase of mules in Egypt; an Officer and Veterinary Surgeon were sent
 “ on the 28th to Tanta, where it was stated mules were to be had. The expedition
 “ failed. Notices are out for Alexandria and Cairo, and probably a few hundreds may
 “ be obtained.

“ The accounts of Cyprus as an island abounding with mules are good. The first
 “ steamer for Larnaca does not sail from here until the 10th, and on that day it is in-
 “ tended to send Major Sherinton and a Veterinary Surgeon, unless any change takes
 “ place in present arrangements.

“ I am also endeavouring to obtain reliable information as to the prospect of getting
 “ mules together at Suakin on the Red Sea, which, although some distance from the
 “ Abyssinian frontier, is in constant communication with Tigré, and it is supposed that,
 “ were it once known that mules could be purchased there, they would be brought from
 “ Tigré in considerable numbers. I trust to be able to get some definite information
 “ in a day or two, as the person best able to give it is supposed to be at Cairo, and I
 “ have requested him to come down to Alexandria.

“ It would be a point of the first importance to be able to secure, at a reasonable
 “ rate, a proportion of Abyssinian mules, especially at the outset of the expedition. A
 “ few hours would enable the steam transports to fetch the mules from Suakin and
 “ land them at Massowah.

“ With respect to the requisition of the Bombay Government for 3,000 additional
 “ transport animals, which was transmitted by telegraph on the 28th instant, arrange-
 “ ments are being considered for the supply of that number at Suez by the 20th Novem-
 “ ber, but no actual steps will be taken until your orders are received. I have, however,
 “ telegraphed to-day to Commissary-General Downes, who will arrive at Smyrna to-
 “ morrow, to accept a tender for the delivery of 250 mules from Syria at Suez overland
 “ by the 20th November, at the rate of 26*l.* 10*s.* a mule. If the purchase of the 3,000
 “ is sanctioned, these 250 will form a portion of that number, and, if not, they will be a
 “ small reserve to meet any loss or failure in numbers from other places.

“ From what I can learn from Captain M. Willoughby, the Bombay authorities wish
 “ for a portion of their transport to be pack-horses; they can be procured in Egypt and
 “ Syria at a much less cost than mules.”

Colonel
 Clark Ken-
 nedy's
 Report of
 the 26th
 October.

“ Yesterday morning the following telegram was sent to the War Office :—‘ 2,085
 “ ‘ mules assembled in Egypt, whereof 1,517 have been sent to Suez, whereof 580 have
 “ ‘ embarked for Massowah;’ and, in addition, I have now to state that, by yesterday
 “ evening, the embarkation of 910 pack animals, on board of the three transports provided
 “ by the Bombay Government, was completed.

“ 350 pack-saddles were with difficulty obtained and sent by railway from Cairo to
 “ Suez, on the 23rd, 24th, and 25th, for shipment with the mules.

“ Articles of camp equipment were provided and handed over with the animals to the

“ Principal Agent for Her Majesty’s Indian Government, for use on board ship, and to picket and feed them on disembarkation.

“ I have to report the arrival and departure of the following transports and hired vessels :—

“ The ‘Bolivar,’ having sailed from Alicante on the 10th instant, arrived here on the 19th, having embarked 131 mules and landed 128; these were purchased by the officers sent to Alicante, and are of a superior and more serviceable class than the mules received by the ‘Venetia.’ The fittings of the ‘Bolivar’ were altered during the night by the carpenters of Her Majesty’s ship ‘Terrible;’ she was coaled and watered and sailed for Scanderoon on the 20th, the day following her arrival.

“ The ‘Empress,’ the ‘Atlantic,’ and the ‘Theban,’ all arrived on the morning of the 20th, and, owing to the exertions of the officers and men, the whole of the three cargoes (with the exception of 60 from the ‘Atlantic’), were landed, and brought up to the depot by midnight without accident. A train, conveying 290 mules, already in the depôt, was also loaded and sent off to Suez the same day.

“ The ‘Empress’ left Alicante on the 12th instant, with 112 mules, and landed 111; they appear of the same class as those sent in the ‘Venetia,’—inferior animals; four have died from the effects of the voyage, and several others are in a precarious state. The mules shipped on board the vessel were supplied by Messrs. Wetherell and Co.

“ The ‘Atlantic’ left Malta on the 16th instant, embarked 300 mules, and landed them all in good condition. The disembarkation was tedious, as, Malta being in quarantine, every mule had to be dropped into the sea without head-collar, and immersed, a new halter from the shore slipped on when the mule had been netted out, and then towed on shore by the boats of Her Majesty’s ship ‘Terrible.’ The whole 300 were landed without injury. The Maltese mules are in good condition, some of them very fine useful animals, but a proportion are very small, a few not exceeding 11 hands 2 inches; all, however, are serviceable. The ‘Atlantic’ was only taken up for the voyage, but, as soon as she is out of quarantine, she will probably be hired for a voyage to one of the Levantine ports, on freight, at so much per mile engaged.

“ The ‘Theban’ brought down 218 from Smyrna, and landed all safely and uninjured. The mules were sturdy and serviceable, and the 18 pack-horses sent by my order, as a sample, were the same. This vessel appeared so well suited for the service in the Levant, that, after having had the opinion of Captain Commerell, V.C. and C.B., as to her merits, and the owners having offered her on very favourable terms, viz., 2,500*l.* for a month, she was taken up for that time, and Captain Commerell having placed a Lieutenant of Her Majesty’s ship ‘Terrible’ on board, she sailed for Lamacca, the port of Cyprus, on the 23rd, whence she will bring a cargo of the mules already purchased in that island.

“ The ‘Venetia,’ having left Alexandria on the 17th instant, for Beyrout, returned here on the 22nd with 204 mules on board, which were landed uninjured. The alteration made in her fittings, whereby she carried safely 204 instead of 114, has therefore answered for a short passage; she was coaled, watered, and sent off to Smyrna within 24 hours after her arrival.

“ The mules from Beyrout were serviceable and hardy-looking, but appeared to have been hard worked from the state of their backs, having evidently been most of them purchased whilst working on or just out of a caravan.

“ The ‘Coumoundouros’ left Alicante the 15th October, arriving here on the 22nd; she embarked 170 mules, and landed 158. These are somewhat of the same class as

“ those that were shipped under Messrs. Wetherell and Co.'s contract, perhaps a little better than the two previous shipments.

“ The ‘ Parana ’ sailed from Valencia 12th instant, with 247 mules, and landed 244 on the 24th instant. These mules are in good condition and serviceable animals. The ‘ Parana ’ is the vessel out of the five best suited for a mule transport, but she is very slow, and requires to be docked, which could not be permitted.

“ The ‘ Empress ’ sailed for Gibraltar on the 21st. The ‘ Coumoundouros,’ on the 24th, having been delayed by the necessity of repairs, consequent upon coming into collision with another vessel on entering this harbour, and the ‘ Parana ’ on the 25th. This latter vessel cannot be expected back from Gibraltar much before the 19th November.

“ The ‘ Marie Antoinette,’ a vessel employed in the cattle trade, was taken up yesterday for a single trip to Beyrout, at the rate of 2*l.* per mule, and sailed this morning. We have the option of taking her for a month at a reasonable rate on her return, should it be desirable and her voyage a successful one.

“ The arrangements for the purchase of the extra 3,000 mules and pack-horses have now been made in Egypt and the Levant, and I have every expectation of having them in Egypt by the day named by the Bombay Government, viz., the 20th November, but there still seems so much doubt as to the actual number of mules purchased or contracted for in Spain, and the means of transport available for their conveyance, that, at present, I do not see my way clearly to fixing a date when the last Spanish mule will be landed in Egypt.

“ I have the honour to transmit a Return of the arrivals and sailings of the mule transports.

“ The ‘ Hellenis,’ with all the stores on board for the mule depôts, arrived here on the 21st instant, and, as she was chartered to go into Malta, the stores are all in quarantine, and will not be available until the 28th instant; the delay in sending out this vessel, her slow rate of speed, and her placing herself in quarantine by going into Malta, have been the cause of a very considerable increase in the expenditure of the mule depôts for the purchase of articles absolutely necessary, most of which are on board the ‘ Hellenis.’ ”

Terms upon which muleteers were engaged for service in Abyssinia.

Muleteers were engaged for service in Egypt, and to accompany the mules to Abyssinia, upon the following terms:—

Daily pay, 1*s.* 6*d.*

Free rations whilst on board ship and on service.

A commuted allowance whilst in Egypt of 9*d.* a day in lieu of rations.

A free passage home to place of engagement at the completion of service.

Each muleteer was, moreover, furnished with a numbered card, signed by Colonel Clark Kennedy, issued with blanks, to be filled in by the person engaging him, after having fully explained the terms of the agreement to each individual.

A numerical and nominal roll was kept of the recipients of the cards.

The head men each had charge of 20 muleteers, with pay at the rate of 3*s.* a-day, with rations; they were engaged as muleteers, and, when appointed head men, the appointment and date were written across the face of the card, and signed by the officer making the appointment.

Reduction to the rating of muleteer was made in a similar manner.

Each muleteer wore a metal badge, the badges being numbered consecutively, from 1 upwards.

The badges for the head men were of different metal from those of the muleteers, and also numbered from 1 upwards.

The payments made to each man were noted on the back of the card of engagement; when the card was full, fresh paper was pasted over it, care being taken that the last payment was repeated on the fresh surface.

The muleteers were paid regularly, but, whilst in Egypt, were kept four days in arrears.

In the first instance, each muleteer had charge of four mules. The subsequent proportion of Arab or Syrian muleteers was to be fixed by the Indian authorities.

The muleteers were organized in divisions of 20, under a head man. A nominal roll, which had to be compared with the muleteers' cards of agreement, was given over with each division to the Officer of the Bombay Commissariat charged with the transmission of the transport animals. Organiza-
tion of
muleteers.

The muleteers were formed into divisions, at the discretion of the Officer Commanding the depôt. Friends and acquaintances were allowed to serve in the same division.

Each mule and pack-horse was given over with a halter or head-collar, a nose-bag, either heel-ropes or hobbles, and watering-buckets (1 to 8 mules), together with a length of picketing rope proportionate to the number embarked in each transport. A small proportion of common veterinary medicine was placed on board each transport. Equipment
of Mules.

Rugs and surcingles were also given with mules or pack-horses requiring that protection, at the discretion of the officer commanding the Suez depôt.

Colonel Kennedy on the 6th November, 1867, reported that the 8,000 mules required had been all purchased, and that arrangements had been completed for their transport to Suez. He then asked for instructions relative to the breaking up of the mule depôt establishments, and to the return of the officers and men to their duty in England, and proposed that all surplus and part-worn stores in possession of the mule depôt should be offered to the officer acting for the Bombay Government in Egypt, that he might select the whole or such portion as would be of use to the Expedition: that tents, wooden bedsteads, and miscellaneous articles purchased for the use of the troops in Egypt should be sold, and the amount credited to the public, and that the officers, non-commissioned officers, and men, should be sent to England in suitable detachments, whenever the closing of the depôt at Alexandria, or continuous embarkation of mules at Suez, would permit of the establishments being reduced. Arrange-
ments com-
pleted.

The officers of the purchasing parties in the Levant and at Brindisi were ordered home to their respective stations, when their accounts were closed, with the exception of veterinary surgeons selected for service in Abyssinia.

On the 12th of November, Colonel Clark Kennedy reported as follows:—

" I HAVE the honour to report that the original order to have 5,000 mules at Suez by the 15th of November, has this day been carried out, and that 5,119 animals have now been sent through Egypt from Alexandria to Suez without a single accident of any kind.

" The Principal Agent for Her Majesty's Indian Government has already embarked 1,661, and the remaining 3,400 are awaiting the arrival of the Bombay transports.

" The supplementary order for 3,000 additional animals is being carried out as speedily as possible, and 853 of that number have already arrived in Egypt.

" Since my last letter, the weather has been and is so bad that considerable losses must occur amongst the mules on board the transports now at sea.

" On the 7th instant four vessels came in: the 'Thomas Snowden,' from Valencia,

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Colonel
Clark Ken-
nedy's
Report of
the 12th
November.

“ with 198 mules and one dead; the ‘Minieh,’ from Smyrna, with 382; the ‘Minia,’ from Beyrout, with 368; and the ‘Theban,’ from Scanderoon, with 321. On this day there was a lull in the gale, and the whole were landed safely.

“ On the 9th, the ‘Empress’ returned from Gibraltar, with 147 mules, four having died on the passage.

“ The gale has now lasted four days, and has increased during the night. Several vessels have been lost, and much damage done to the shipping, especially to those arriving from the westward.

“ Yesterday four more vessels managed to get into port with great difficulty. The ‘Atlantic,’ with 190 animals, from Beyrout, and the ‘Iberia,’ with 200, from Smyrna, brought in their cargoes alive, but in a weakly state. The ‘Italian,’ mail-boat, lost 57 out of 100, and the ‘Bretagne,’ from Malta, where she had put in to refit, lost four more in addition to those reported lost in my last letter.

“ Only a proportion of the mules on board these vessels were landed yesterday, and it was impossible to do more, the lighters refusing to go out, on account of the very dangerous state of the port. It is blowing harder this morning, and we shall probably lose several of the animals left on board these vessels; there is no present prospect of being able to land them.

“ The details of any losses that may occur will be given in my next letter. The percentage purchased over the 8,000 to meet casualties will be ample to cover loss, and enable 8,000 efficient animals to be handed over to the Indian Government. Both telegraph lines are broken.”

Colonel
Clark Kennedy's
Report of
the 26th
November.

The following extract from Colonel Kennedy's Reports describe the after proceedings in Egypt:—

“ 7,374 mules have been sent through to Suez, out of which number 2,902 have been embarked for Abyssinia, and 4,472 are now at Suez awaiting the arrival of Indian transports to carry them away.

“ The number at Suez being so large, with no immediate prospect of embarkation, a number of weak and sick animals are kept at Alexandria to recover their strength, and also to test whether they will ever become sufficiently efficient to be sent on.

“ With reference to my last letter reporting the severe gale then raging, I am glad to state that all the mules were eventually landed without loss.

“ The ‘Theban’ came in on the 13th instant, with 350 mules from Cyprus, which were safely landed, and she returned to Cyprus the next day.

“ On the 15th, the ‘Counoundouros’ returned from Gibraltar with 227 mules, five having died on the passage. She was coaled, watered, and sent to clear out at Brindisi on the 17th.

“ The ‘Marie Antoinette’ arrived here on the 16th from Beyrout, with 152 mules, and was discharged on the 18th instant. The ‘Cairo’ came in from Brindisi, with 87 mules, and the ‘Achilles’ from Valencia and Alicante, with 304 mules, one having died during the voyage.

“ The ‘Bolivar’ came in on the 20th, from Gibraltar, with 131 mules, and the ‘Theban,’ from Cyprus, with 135; no losses.

“ The ‘Parana’ returned from Gibraltar on the 22nd, with 253 mules, one having died during the voyage.

“ The ‘Theban’ was discharged, and notice was given to the Senior Naval Officer that the services of the Admiralty transports ‘Bolivar’ and ‘Parana’ were no longer required as mule transports.

" I went to Suez last week, and can report the very large dépôt there in admirable order.

" Our own detachments are healthy, with the exception of occasional bowel complaints, which it is necessary to guard against by the use of suitable clothing. There is no serious illness amongst the 500 or 600 Native muleteers, and the transport animals are free from sickness, and in good condition.

" The dépôts at Brindisi, Cyprus, Beyrout, Scanderoon, and Aleppo are closed, and the officers ordered to return to England without delay.

" There is some difficulty existing with respect to the dépôt at Smyrna; and Assistant Commissary-General Downs, who was on his way home, has been stopped and sent up this day to Smyrna.

" Everything in Egypt is working satisfactorily."

" The present state of the mule transport service in Egypt is as follows :—8,106 have been embarked for or purchased in Egypt, whereof 2,902 have been shipped for Abyssinia at Suez by the Agent for India, 4,601 are in camp at Suez ready to embark, and awaiting the arrival of transports from India, 271 have died at sea, and 22 were landed at Malta, having been injured on the voyage; a considerable number of weak and sickly animals are being temporarily retained at Alexandria, and the transports 'Empress' and 'Touraine,' with about 400 mules from Gibraltar, are still at sea, having been delayed by the bad weather, as they have now been away from Alexandria 23 and 31 days.

Colonel
Clark Ken-
nedy's
Report of
the 3rd
December.

" Out of the mules now in dépôt at Alexandria, there are several more not likely to become efficient, or render it worth while to send them across Egypt; these I propose to sell when the dépôt is broken up; the authority for so doing I expect to receive by the next mail.

" As soon as the last mule that is efficient reaches Suez, and the whole of the accounts with the railway and for general expenditure are closed, nothing will then remain but the feeding and care of the mules at Suez waiting for transports, which duties can be well performed by Captain Morrison, of the Military Train, commanding the mule dépôt at Suez, and Deputy-Assistant Commissary-General Stanes. The forage is all contracted for, to be delivered at Suez, and the payment of the detachment and arranging for its passage home will be the sole financial duties. I would, therefore, submit for your consideration that the mules at Suez, waiting for the arrival of transports, should remain in charge of Captain Morrison, the Commissariat Charge in the hands of Mr. Stanes, and that the rest of the officers and men not employed at Suez should return to their duty in England by the first convenient opportunity.

" From what is reported, it does not seem likely that the whole of the mules at Suez can be embarked for another month."

" The 'Empress' has just arrived, with 101 mules on board, in good order. She cleared out Gibraltar. The 'Touraine' is the only vessel now out, and a coasting steamer is bringing down about 160 mules from Smyrna; this will make up a total number of a little over 8,500 mules and pack-horses, from which must be deducted deaths at sea, deaths in Egypt, and non-efficient animals not worth the expense of their transit from Egypt to Abyssinia, thus leaving the full demand of 8,000 animals all efficient and in good condition for transfer to the Agent for India at Suez."

" I HAVE the honour to report, in continuation of my letter of the 3rd instant, that since that date the following vessels have arrived with mules :—

Colonel
Kennedy's
Report of
the 12th
December.

" The 'Empress' arrived December 3rd, from Gibraltar, and landed 101 mules, losing none *en route*.

" The 'Touraine' arrived December 4th, from Gibraltar, and landed 308 mules, having lost three *en route*.

" The 'Persia' arrived from Smyrna on the 6th instant, and landed 162 mules and pack-horses, losing none *en route*.

" These animals, making the last expected, were all sent on to Suez.

" There then remained at Alexandria 20 sick animals, not worth sending to Suez, on which a Board was held that recommended their being sold; they have been accordingly handed over to Assistant Commissary-General Robinson, to sell by auction.

" On the 10th instant I had the honour to receive your telegram of the 9th, saying, 'Your telegram of the 7th received; steps recommended therein approved,' in accordance with which I have broken up the Alexandrian Dépôt.

" All stores, barrack furniture, &c., were next submitted to a Board, who decided what should be sent on to Suez to be handed over to the dépôt remaining there, or to Captain Michael Willoughby, of the Bombay Commissariat, for the Abyssinian Expedition, and what, being unserviceable, might be sold.

" Some rope used for fastening the mules in the dépôt here was handed over by Assistant Commissary-General Robinson to Captain Willoughby, R.N., of the Transport Service here, to be accounted for by him to Mr. Robinson, as that officer might deem best in the interests of Government.

" The detachment, consisting of Ensign Storr and 11 non-commissioned officers and men, will embark to-night for England in the 'Southampton' steamer.

" The other officers on duty in Alexandria have been ordered to draw their passage money and proceed to England by the earliest opportunity.

" The state of the detachment Military Train, and other officers left at Suez, will then stand thus:—

" 1 Captain (Morrison).

" 1 Lieutenant.

" 1 Ensign.

" 17 Non-commissioned officers and men.

" Several Veterinary Surgeons under orders for Abyssinia.

" 1 Deputy-Assistant Commissary-General.

" 3 Non-commissioned officers and men, Commissariat, under orders to proceed to Suez from Alexandria.

" With regard to the mules, 3,944 have been embarked for Abyssinia, and 4,459 remain at Suez to embark, of which I believe 1,600 will probably be embarked by the 18th instant."

On the 18th December, 1867, Colonel Clark Kennedy died at Alexandria, after a severe attack of dysentery.

The reports on the supply of mules in Egypt were continued by Colonel Ross, C.B., Deputy Quartermaster-General, and ran as follows:

" I do myself the honour of reporting that, a few days after Colonel Kennedy's death, I visited the mule dépôt at Suez, where I found everything going on most satisfactorily under Captain G. E. Morrison, of the Military Train.

" The men of the detachment were all well, the camp was in good order, and most of the animals appeared to have improved in condition.

Death of
Colonel
Clark Ken-
nedy.

Colonel
Ross' Re-
port of the
4th January,
1868.

“ Strong westerly winds impeded for some days the embarkation of the mules.
 “ Two vessels are now taking mules; they will complete their load this evening; 1,458
 “ animals will then remain to embark, 6,790 having already gone.

“ If the vessels expected arrive in time, it is probable that the last mule may be
 “ despatched in three weeks.

“ I shall then proceed with the detachment at Suez, as the late Colonel Kennedy did
 “ with that here, unless I have the honour to receive your instructions to the contrary,
 “ namely, assemble a Board to cast any animals not worth sending on, and request
 “ Mr. Staines, Assistant Commissary-General, to dispose of them.

“ From what I hear, it appears probable there may be about 100 animals not worth
 “ sending on; 56 animals have died at Suez to this date.

“ Thus before the end of this month, there will have been embarked in all for
 “ Annesley Bay 8,148 animals, allowing 100 now at Suez not to be fit to go.

“ I shall then assemble a Board, as was done here, on all stores, camp equip-
 “ ment, &c., and request Assistant Commissary-General Staines to arrange for the
 “ transfer to Captain M. Willoughby, Bombay Commissariat, of such stores as he may
 “ wish to take over for the Abyssinian Expedition, and to dispose of the others as he
 “ may think best for the public service.

“ The officers and men of the Military Train can then be sent home by mail steamer
 “ to Southampton, and may arrive in England by the middle of February.

“ As reports have reached this that there has been some loss among the mules
 “ and horses in Abyssinia, though to what extent is not known, I take the liberty of
 “ asking whether it is wished that any steps should be taken to replace these losses.
 “ If so, if I was informed by telegraph, the depôt at Suez could be detained, and,
 “ without re-opening the establishment at Gabari, I think a small number of mules
 “ could still be purchased in Egypt to supply losses.

“ As far as I can ascertain, nothing more is known here of losses of animals in
 “ Abyssinia than what has already appeared in the English newspapers.

“ The late Colonel Clark Kennedy frequently mentioned the great service that a
 “ detachment of Egyptian police, stationed at his request at Gabari by Ali Bey, Prefect
 “ of Police, had been to him, and said he would see that they were properly rewarded.
 “ I therefore consulted with the Consul-General, who approved of their being rewarded,
 “ and suggested 20*l.* being given to the Superintendent, 10*l.* to the Serjeant, and 5*l.*
 “ to each of the 11 Cavasses. They were employed three months. I requested Assistant
 “ Commissary-General Robinson, C.B., to pay this. It was done in my presence, and the
 “ men expressed themselves most grateful.

“ I propose to give the same reward to a small detachment of police employed
 “ protecting the camp at Suez.”

Mules were purchased from the following stations in Europe and Syria. The order
 in which these stations are placed shows the relative adaptation to the Service of the
 pack animals purchased at each:—Cyprus, Brindisi,* Malta,* Cairo, Smyrna, Gibraltar,
 Alicante,† Valencia,‡ Scanderoon, and Beyrout.‡

Stations at
 which mules
 were pur-
 chased and
 relative
 adaptation
 to the service
 of pack
 animals.

* The mules purchased at Brindisi and Malta were the same class of animal.

† The mules purchased at Alicante and Valencia were the same class of animal.

‡ It was principally the poor class of horses from this place that made the class so low.

Mule depôts
in Egypt
broken up.

On the 27th November, the Secretary of State for India telegraphed to the Governor of Bombay that, as the 8,000 mules had been collected, he had concurred in a proposal of the War Office to break up the Mule Depôts. On the 17th January, His Royal Highness the Field-Marshal Commanding-in-Chief expressed his opinion that the depôt at Suez should not be broken up till it was finally decided that no more mules or other animals were to be sent from Egypt to Abyssinia. It was decided, however, that the depôt should be broken up, and that any officers and men whom it was desirable to retain, and who wished to remain, should be transferred to the Indian Establishment.* In March, Sir Robert Napier telegraphed for 4,000 more animals. Arrangements to procure them were entered into by the Senior Commissariat Officer in Egypt, but were rendered unnecessary by the early termination of the campaign.

Steamers of the Aziziah Company, chartered at Suez, and others chartered at Bombay, were used to take the mules from Suez to Annesley Bay.

Equipment
ordered from
England.

The equipment of the Transport Train applied for from England consisted of 400 Maltese carts, 5,000 pack-saddles for mules, 1,000 sets of harness (leader), and 1,800 sets of harness (wheel) for mules. 900 pairs short traces, and 400 whips.

Otago pat-
tern of pack-
saddle
selected in
England.

Much correspondence took place in England with regard to the pattern of pack-saddle to be adopted, to meet the above demand, and it was finally arranged that, before any further steps were taken in the matter, the Ordnance Select Committee should be called upon to inspect the present pattern of pack-saddle, according to which it was proposed to make the supply, and to report upon its suitability for the purpose; and also, in the event of their objecting to it in its present form and material, to suggest a modification or a description of saddle in substitution, stating how soon the requisite number of saddles of such pattern could be got ready.

Report of
Ordnance
Select Com-
mittee on
pack-
saddles.

The following was the report of the Ordnance Select Committee, dated the 13th September, 1867, on this subject:—

“The Committee have the honour to report that, in accordance with the instructions of the Secretary of State for War, they proceeded with Assistant Commissary-General Bailey and Captain Fen to consider the several questions referred to in the letter from the India Office of the 11th instant, in respect to the proposed supply of pack-saddles for the Abyssinian Expedition.

“After a careful consideration of the subject, the Committee have come to the opinion that it is desirable to at once decide upon adopting the Otago pattern pack-saddle, furnished from New Zealand in March 1866, with the slight alteration in the sweep of the side bearing, with the points turned up, proposed by Captain Fenn, so as to afford further relief to the animal's withers; and their reasons for the change are as follows:—

“1st. They consider that the Otago pattern pack-saddle is so arranged that the weight of the load is taken on the animal's back on a long bearing, relieving the withers from any undue strain, and therefore reducing the chance of a sore back to a minimum.

“2ndly, and principally. Because, from the evidence of Assistant Commissary-General Bailey, it appears that this description of pack-saddle has undergone a severe trial in New Zealand, under varying circumstances and for a long continuance; and that,

* India Office letter, 30th January.

“ with the exception of two or three cases of sore backs amongst the animals, the trial
 “ was eminently satisfactory. The trials which have recently taken place at Aldershot
 “ and Woolwich are also most favourable to this construction.

“ The Committee are satisfied that the Otago pattern pack-saddle is decidedly pre-
 “ ferable to the present Service pattern, and they recommend that it be adopted in lieu
 “ of it.

“ The Committee are informed by the Principal Superintendent of Stores that, in his
 “ opinion, of the requisite number of pack-saddles required for the Abyssinian equipment
 “ (viz., 5,000) a large proportion could probably be supplied in a month, and the whole
 “ completed within six weeks from the date of order, provided that the Indian Store
 “ Department take prompt action, and employ well-known contractors without restriction;
 “ and as the Superintendent, Royal Carriage Department, has stated that his Department
 “ will not be able to undertake the manufacture of the requisite supply, the Committee
 “ recommend that it be obtained from the trade in the most expeditious manner
 “ possible.

“ In anticipation of approval of this course, the Committee have taken steps for the
 “ immediate preparation, by the Saddlery Department (Military Store), of pattern saddles
 “ in quadruplicate to guide manufacture.

“ The patterns are to consist of three sizes, and the Committee recommend that no
 “ contractor have more than 500 saddles allotted to him at one time.

In accordance with this recommendation, the Otago saddle was adopted, and instruc-
 tions were given to the India Office Store Department for the necessary supply. Patterns
 were made at Woolwich, and the saddles supplied by the trade. The saddles, as soon as
 received from the makers, were forwarded overland. 4,000 of these saddles cost 5*l.* 11*s.* 6*d.*
 per set, and the remaining 1,000 were supplied at 3*l.* 17*s.* 6*d.* per set; but the contractors
 of these last having represented that they had been losers by the transaction to the extent
 of 18*s.* 6*d.* per set, a reference on the subject was made to the Treasury, who consented
 to the extra payment being made, provided that the contractors were willing to have their
 books examined.

Otago saddle
adopted.

Cost of
Otago
saddles.

These arrangements were communicated to the Government of Bombay, at whose
 request ammunition and any stores likely to be carried on pack animals, were packed in
 boxes of not more than 80 lbs. weight.

Five pack-saddles, on the principle advocated by Lieutenant McMahon, of the
 Military Train, were also constructed at the Government expense under the supervision of
 that officer, and sent to Abyssinia, so that the system might be tested.

At the conclusion of the campaign, a special Report was drawn up by Captain
 Holland, Assistant Quartermaster-General, on each description of pack-saddle or pad
 used. This Report, with sketches illustrative of each saddle, will be found at the end of
 Chapter XXVIII.

Report on
the action of
saddles in
Abyssinia.

CHAPTER XXVI.

LAND TRANSPORT.—SUPPLY OF MULES FROM INDIA.

Order to the
Bombay
Government
to collect
animals.

THE Government of Bombay received telegraphic orders to collect transport animals dated the 1st August, 1867. On the 17th of that month, the order for the purchase of these animals was given,* and the Governor of Bombay telegraphed to the Viceroy in India for assistance, as there were very few mules to be obtained in the Bombay Presidency. The Viceroy sent orders for the purchase of mules in the Punjab, but informed the Bombay Government at the time that he was not sanguine of success, as the only first-class trained animals were in possession of the frontier force; and these he considered it would be impolitic to take, as the transport of that force was limited, and the corps liable to be called on for active service at an hour's notice.

Orders sent
to the
Punjab to
purchase
mules.

The Government of Bombay despatched officers to purchase animals in Arabia and the Persian Gulf, established an agency at Suez, and asked the Government of Madras to aid in its formation. To this request, as to all others made to it, the Government of Madras cordially assented.

Cordial
Assistance of
Madras
Government.

About 1,000 mules were purchased in Baghdad at an average cost of Rs. 124 8 0 each, conveyed to Aden in native craft. Rs. 50 were given for every animal delivered alive.

** Resolution of the Government of Bombay.*

On the Governor informing the Secretary of State that, in order to collect transport animals for an Expedition to Abyssinia, it would be necessary to procure them from the Persian Gulf, Egypt, the Red Sea, and from distant parts of India, and that it was desirable to lose no time in doing so, his Excellency received the following telegram from the Secretary of State, dated August 1st. :—

“Proceed to collect transport animals; make known to us your requisitions on England without delay. Inform Government of India.”

Poona, 17th August, 1867.

Resolution.

Resolution of
the Bombay
Government
on the col-
lection of
transport
animals.

The purchase of transport animals should be at once proceeded with under instructions which will be separately given.

2. The accounts of expenditure for this purpose, and for any other preparation for an Expedition to Abyssinia, should be kept distinct, under a general head of “Abyssinian Expedition,” in the Military and Marine Departments respectively.

3. The Government of India will be asked to give an immediate credit of five lacs of rupees in the Military Department, to meet the immediate purchases of transport animals.

4. Whenever oral, or otherwise informal orders, in connection with the contemplated Expedition, are given to Heads of Departments, the officer receiving the orders will at once take steps to procure the formal authority through the Secretary to Government, although the execution of the order is not to be delayed thereby.

5. Whatever appointments or nominations may be agreed upon in personal discussion will be formally proposed in the usual manner.