C.S.

P. W. D.

No. 23/24

1924.

C.S.O

SUBJECT.

1924.

4th Jany.

Previous Paper.

Stanley Improvement Scheme.

Tenders for
1. Steam Roller.
2. Yard Lorries.
3. Rock Drilling Plant.

M.P. 237/23

MINUTES.

29 Sept 24
P.A. 51/2/55

Copy of Ltr to Co. Agents 237/23 5 July 1923 (1)
Encl to Ltr. . . . . (1a)

Ltr from Co. Agents 9th Nov. 1923 (2)
Encls in separate envelopes.

Y.E. Submitted before passing on to Mr Neave.
P.R.L. 13
Office
4 Jany 1924.

5/Jan. 24

Mr. Neave,
Referred.
P.R.L. 13
Office
5 Jany 1924

Subsequent Paper.

Ltr from Mr. A.A.P. Neave 28 Febry 1924 (3)
with Draft. Telegram [illegible]

Telegram to Crown Agents 1st March 1924 (5)

~~Mr. A. A. P. Neave.~~

~~To see~~

~~G.K. 1/3~~

~~A. C/sec~~

~~1 March 1924~~

Letter to Crown Agents 5 March 1924 (6)

Mr. A. A. P. Neave

To see

G.K. 1/3

A. C/sec

7 March 1924

Hon. C.S.

Noted & returned. [signature] 22/3/24.

Minute from Governor 1st June 1924 (7)

Letter from Governor to Colonial Office 7th April 1924 (7a)

Letter from Crown Agents to Governor 1st April 1924 (7b)

Copy of letter from Messrs Barford & Perkins Ltd. to Crown Agents (7c)

Tender by Messrs Barford & Perkins. (7d)

Specification and description of water Ballast and Motor Roller (7e & 7f)

Copy of Spare Part List (7g)

Conditions of tender (7h)

This can go to Mr. Neave for the favour of his views. [initials] 9 June 1924

C.S.O. No. 23/2nd

Inside Minute Paper.

Sheet No. 2a

Consulting Engineer

Referred accordingly

11 June 24

Hon C.S

The motor roller offered appears to meet the requirements of the contemplated programme of road construction.

The price quoted (£613-3-.) is high for so light a roller (working weight 1 3/4 tons) compared with the heavier rollers previously offered (c.f. Messrs Marshall's quotation of £738.10.0 for a steam roller of working weight 7 3/4 tons).

It is unfortunate that the Acting Governor's telegram of 1st March has precluded en route as comparative tenders for other light rollers (steam or motor) would probably have shown considerably lower figures for suitable machines. Also having regard to local conditions & sources a low speed type engine such as fitted to the motor roller manufactured by Messrs Aveling & Porter Ltd (vide fly 32 attached) would prove more satisfactory in working than the high speed type (1000 r.p.m.) under consideration.

If however however road

construction work is to be carried out during the coming summer it would appear to be necessary to order a roller at an early date without incurring the inevitable delay in obtaining at this distance further instructions from England.

14 June 1924.

Extract from "Engineering" of 30th Nov 1923 page 674 —— Encl (8)

Y.I.

Submitted

Mr. Neave has informed me verbally that he is still much in favour of a steam roller

18 June 24

H.E.S.

Will you please have this circulated to members of Ex. Co in connection with 254/1923 & 465/24.

22 July 1924

Hon Ag Treasurer
Hon Colonial Surgeon }

Circulated
G.R. Brown
Clerk Executive Council
14 July 1924

C.S.O. No. 2724

Inside Minute Paper.

Sheet No. 3

Letter from Crown Agents 19th May 1924 (9.)
List of Tenders (9a)

H.C.S.

Purchase of a road roller was discussed with Mr Roberts yesterday: he is strongly in favour of a steam roller on grounds of simplicity of working: he also considers that whatever make is selected it should have to do a hill test & that weight should not exceed 5 tons.

2. There is no immediate urgency for purchase of roller & it would be advisable that Mr Roberts should be put into communication with the Crown Agents & that he should discuss requirements with them.

3. A water cart will also be required.

4. The rock drilling plant is more urgent than the generators in (9) for plant capable of working one 1" drill at a time but Mr Roberts made a strong point that it should be made clear to suppliers that what is required is a drill capable of drilling hard quartzite rock. This was originally pointed out in (?) but Mr Roberts considered that attention should again be drawn to what is required before an order is placed: this matter might also be taken up with Crown Agents by Mr Roberts.

5. With regard to Motor lorry capital outlay is a serious consideration. Mr Roberts is of opinion that a Ford one ton, one-way-tipping lorry will meet requirements. He advised that front wheels should be pneumatic & back wheels should be double with solid tyres.

R.H.

20 September 1924.

COPIED FROM M.P. 257/23

5th July, 1923.

Gentlemen,

I am directed by the Acting Governor to transmit herewith an extract from a letter from Mr. A. A. P. Neave, Officer-in-Charge of the Naval Works locally, who is at present investigating on behalf of the Colonial Government the practicability of certain works proposed for the improvement of the roads and drainage of Stanley.

2. The letter deals with the question of the provision of suitable plant and I am to request that you will be so good as to obtain the information required as indicated in the extract, together with particulars of cost.

I am,

Gentlemen,

Your obedient servant,

G. R. L. Brown,

for Colonial Secretary.

The Crown Agents for the Colonies,

4, Millbank,

Westminster,

London, S. W.

Extract from letter from Mr. A. A. P. Neave, Officer-in-Charge of Naval Works, dated 30th June, 1923

. . . . . .

2. As regards provision of a steam roller for roads, in view of the fact that the total mileage of roads is very small the question of the purchase of a satisfactory second hand roller is worth consideration. On my departure from England in the Autumn of 1921 there was a very large number of steam rollers surplus from the Army requirements, many of them in very good condition. If such a roller with a dead weight of say 6 to 7 tons is available a considerable saving in cost over that of a new roller might be effected. At the same time care should be exercised and the purchase of such a machine should only be made on the certificate of a firm of high standing, such as Messrs. Aveling & Porter, Ltd, who specialise in steam road roller manufacture, that the condition of the roller - and particularly as regards the boiler - was, after thorough examination, overhaul and test, found to be quite satisfactory in all respects. The fitting of a scarifier to the roller was mentioned as desirable in my preliminary report, but as this is not really essential in view of the limited funds available for public works I do not now consider the additional cost of a scarifier fitment justified and suggest it be omitted. It will be desirable, however, to obtain a certain number of the most often required spare parts of the road roller.

5. I also recommend in my preliminary report that 2 No. Ford (1 ton) lorries and spares be obtained, and small portable rock drilling plant for removal of boulders and outcropping rock on sewer and water main trench lines prior to laying pipes. This latter should be light and compact on small carriage with broad flange wheels for easy transport along pipe line routes and may be either (a) compressed air driven off paraffin engine, or (b) steam driven. Messrs. Merryweather, the well known fire engine builders, manufacture a machine of this type I believe. I suggest enquiries be made for these items from several manufacturers through the Crown Agents and particulars and quotations be obtained from makers for consideration. The drilling plant must be capable of drilling shot holes for insertion of blasting charges in the local metamorphic sandstone rock which is of an extremely tough character.

.....

(2)

ALL COMMUNICATIONS
TO BE ADDRESSED TO THE
CROWN AGENTS FOR THE COLONIES,
THE DATE OF THIS LETTER BEING QUOTED,
AND THE FOLLOWING REFERENCE: 144 W
TELEGRAMS, "CROWN, LONDON." Falk.Is.1687
TELEPHONE, 7730 VICTORIA.

4, MILLBANK,
WESTMINSTER,
LONDON, S.W. 1.

9th November 1923

Sir,

Falkland Islands Requisition No.1687.

I have the honour to acknowledge the receipt of your letter No.257/23 dated 5th July enclosing extract from letter from Mr. A.A.P.Neave, Officer-in-Charge of the Naval Works, requesting information regarding the cost of the following plant:-

(a) A new or secondhand steam roller deadweight 6/7 tons.

(b) Two Ford one ton lorries with spares.

(c) Small portable rock drilling plant operated by oil or steam engine.

2. Regarding (a) quotations have been obtained from Messrs. Marshall Sons and Company, Wallis and Steevens Ltd. and Aveling and Porter Limited and are enclosed. The prices of the rollers offered are as follows:-

Messrs.Marshall Sons & Co. 6 ton single cylinder new road roller, weight in working order 7¾ tons
Cost £438. 10. 0

Messrs.Wallis & Steevens Ltd. 6 ton single cylinder new road roller, weight empty 6¼ tons.
Cost £495. 0. 0

Secondhand single cylinder road roller, weight empty 6⅓ tons.
Cost £335. 0. 0

Messrs.Aveling & Porter Ltd. new single cylinder piston valve engine road roller, weight empty about 7 tons.
Cost .....£570 including governor.

3. With reference to (b) one ton Ford lorries, particulars are given below of the costs of Ford, Cubitt and Albion vehicles, delivered to the Falkland Islands.

Approximate

The Colonial Secretary,
Falkland Islands.

WE

Approximate Prices.

Make.	Net Price.	Spares.	Packing f.o.b. Liverpool.	C.A. Charges.	Freight.	Marine Insce.	Tota
	£	£	£	£	£	£	£
Ford 20 cwt.	140	10	20	5	50	2	227
Cubitt 15 cwt.	340	15	25	11	60	3	454
Albion 25 cwt.	615	20	30	20	69	5	759
Albion 30 cwt.	645	20	35	21	71	5	797
Albion 30 cwt. tipping	675	20	35	22	71	6	829

Regarding the Ford one tonner we would point out that owing to the enormous maintenance cost of this vehicle many users have found that it is actually cheaper to run 30 cwt. Albions in spite of the greater capital outlay, insurance, etc., and this apart from the consideration of the extra load capable of being carried by the Albion. Numerous reports from both Colonial and home users bear this out. In the West African Colonies the average life of the Ford one tonner is proved to be from two to three years but the life of the Albion may be estimated at not less than fifteen years. Many, if not all, Albions which were supplied prior to 1908 are still in use in these Colonies. A misleading feature about the Ford one tonner is that its capacity is generally understood to be 20 cwt. nett, whereas this includes weight of body and driver. Even in this country, users have found it inadvisable to load up to more than 15 cwt. nett whilst in the Colonies, the safe load is not more than 12 cwt. If however capital outlay is a vital point and prohibits the purchase of Albion 25 or 30 cwt vehicles, we would

would suggest for consideration the Cubitt 15 cwt.vehicle. It is capable of carrying 15 cwt. nett even under Colonial conditions. Many of these vehicles are in use in Gambia, Gold Coast, Nigeria and Uganda and are giving satisfaction as substitutes for Ford one tonners. Four Cubitts are now being supplied to Tanganyika. As the supply of Cubitt lorries was only commenced towards the end of 1921, it is not possible to give information as to their actual life but they would probably be fit for ten years service.

4. Portable rock drilling plant (c). Quotations are enclosed from the Parsons Motor Company, Globe Pneumatic Engineering Company and Broom and Wade for oil engine driven plant and from Messrs. Merryweather & Sons for steam engine driven plant. Particulars are appended giving briefly the prices and leading particulars of the plants offered:-

Firm.	Capacity of plant cubic ft.free air per minute.	Pressure lbs. per sq.inch.	Cost.	Extras
Parsons	90	100	£419	2-1 " rock drills & 200 ft. hose £54.0.0
Alternative	120	100	£520	do
Globe Pneu. Engg.Co.	90	100	£424	3 rock drills & 150 ft. hose etc £80.0.0
Broom & Wade Ltd.	80	100	£402	3 rock drills & 150 ft. hose. £111.0.(
Alternative.	118	100	£525	do

Merryweathers

Firm.	Capacity of plant cubic ft.free air per minute.	Pressure lbs. per sq.inch.	Cost.	Extras.
Merryweathers.	40	80	£515	1 Jack hammer drill & 25 ft. tubing etc. included.

5. Should it be desired to accept any one of these tenders, we shall be obliged if you will return it to us together with any papers attached thereto and an indent authorising the supply.

I have the honour to be,

Sir,

Your obedient Servant,

for Crown Agents.

(3)

Port Stanley,

FALKLAND ISLANDS.

28th February, 1924.

Sir,

With reference to the attached tenders for steam road rollers the weights of the machines offered are specified by the contractors as "weights empty" (except that of Messrs Marshalls who state the weight in working order of their roller is $7\frac{3}{4}$ tons), and each of the steam rollers when loaded in working order would exceed the 7 tons maximum proposed.

Whilst still of the opinion that to form roads in the town of really good construction in accordance with modern practice the foundations should be consolidated by a roller at least 6 - 7 tons weight, which is really very light compared with those usually employed (12 - 15 tons) on this class of work, yet having regard to the possibility which has been brought to my notice of light roads outside the town boundaries being considerably extended at some future date and the objection to expending money on a light roller in addition I suggest that alternative tenders for rollers having a maximum weight of 5 tons be invited for consideration.

"Engineering" dated 30th November, 1923 contains illustrations and particulars of some interesting light road rollers, steam and motor driven, exhibited at the Public Works Exhibition held at Olympia that month.

Particulars

Particulars and quotations are desired for the single cylinder motor road roller (3 wheel type) driven by low speed Blackstone oil engine and manufactured by Messrs Aveling & Porter Ltd:, Rochester,

also

for the motor roller (3 wheel type) with Fordson tractor unit manufactured by the Chaseside Motor Co: Ltd:, Enfield,

also

for the 3 wheel water ballast type roller (see "Engineering" dated 30th December, 1921) manufactured by Messrs Barford & Perkin, Peterborough,

also

for 4 - 5 ton steam rollers manufactured by Messrs Aveling & Porter Ltd:, Rochester, and Messrs Wallis & Stevens, Basingstoke.

2. As regards provision of two motor lorries I understand that the question is being separately dealt with on other papers which have not been referred to me, but provided a couple of good lorries with tipping bodies and capable of carrying about a ton of road metal etc: are obtained requirements for road construction etc: will be met.

3. As regards the portable rock drilling plant the outfits offered are good, but in view of the limited amount of funds available for expenditure on public works a saving could be effected by the provision of a smaller plant which would at the same time meet the requirements of the extent of the work now contemplated. I therefore suggest that Messrs The Parsons Motor Co: Ltd:., The

Globe

The Globe Pneumatic Engineering Co: and Messrs Broom & Wade Ltd: be asked to furnish alternative quotations for portable oil driven rock drilling plant as specified but capable of working one 1" drill at a time complete with one drill and 150 feet of hose pipe and one spare drill and 3 spare sets of drill steels; the contractors being allowed to quote for either paraffin or crude oil engines provided easy starting arrangement is fitted.

I am,

Sir,

Your obedient Servant,

The Honourable

The Colonial Secretary,

STANLEY.

~~[illegible]~~ Crown Agents

Following for Middleton message begins Heaton recommends tenders be called for motor or steam roller weight not exceeding five tons see newspaper engineering 30th November figures 32 and 34 ~~[illegible]~~ or water ballast type manufactured by Barford ~~[illegible]~~ Perkins alternatively four to five ton steam roller from Aveling ~~[illegible]~~ Porter or Wallis ~~[illegible]~~ Stevens (.) Baseley prefers motor roller (.) I suggest desirable that roller ~~[illegible]~~ of weight given be obtained early Heaton message ends

(5)

TELEGRAM.

From : The Colonial Secretary

To : The Crown Agents for the Colonies.

Dispatched : 1st March, *19* 24. *Time.* 12 noon.

Received : ... ... *19* *Time.*

CROWN

LONDON

HEJUMMNEFS MIMMINEAVE OXEYNTAAWL BLUOGGYREF

MYHUPOELZY SIBUFPSAEP UMXYZMUIXO VUGLUTUYUV

RAOWZNIDAC FOSVUYACRX GUJTYVYRUW AMRIPVYSUV

OELZYULXUE UBSIFMAHHA CUAGY BARFORD PERKINS

ALGJAVUBDE FREEIVUGLU TUXMESIBUF PSAEPIAOKU

AVELING PORTER OELZY WALLIS STEVENS IBYTA

BASELEY ONYXEMYHUP PSAEPIBYTA IVYSHERFUG

PSAEPOANNI UMXYZIFSBU BLUGGOAJUJ FAZOI

[redacted]n-HEATON MUMUADYNIE

Meaning:

Following for Middleton Message begins - Neave recommends tenders be called for motor or steam roller weight not exceeding five tons see newspaper Engineering 30th November figures 32 and 34 or water ballast type manufactured by Barford Perkins alternatively 4 to 5 ton steam roller from Aveling Porter or Wallis Stevens. Baseley prefers motor roller. I suggest desirable that roller of weight given be obtained early Heaton Message ends.

Secretary.

(6)

23/24

5th March, 24

Gentlemen,

With reference to the fourth paragraph of your letter No. 144 W/1567 of the 5th of November, 1923, I am directed by the Acting Governor of the Falkland Islands to request that alternative quotations may be obtained from the Parsons Motor Company, Limited, The Globe Pneumatic Engineering Company and Messrs Broom and Wade Limited, for portable oil driven rock drilling plant as already specified by them but capable of working one 1" drill at a time, complete with one drill, 150 feet of hosepipe, one spare drill and three spare sets of drill steels; the contractors being allowed to quote for either paraffin or crude oil engines provided easy starting arrangement is fitted.

I am,

Gentlemen,

Your obedient servant,

G. R. L. Brown.

for Colonial Secretary.

The Crown Agents for the Colonies,

4, Millbank, Westminster,

London, S.W. 1.

(7)

From His Excellency the Governor

to The Honourable the Colonial Secretary.

Yrs as attached.

(1) a letter to Under Secretary of State dated 7th April 1924

(2) a letter from Comm agent (1st April) together with specification + tender from Messrs Barfod + Perkins for a road roller.

2. After receiving your telegram of 1st March about a roller I wrote to Comm agent but they had done nothing up to time when I wrote them on 13th March. I discussed various types of rollers with officers of the Engineering Department and it was considered that the type of roller made by Messrs Barfod & Perkins Majesty would suit us best.

3. Will you please ask Colonial Engineer to get his views. I think a catalogue from the above firm has come out in 1923 or 24.

1 Jan 1924

7a

New Club,

EDINBURGH,

7th April, 1924.

Sir,

In the preliminary report on the improvement of the town of Stanley which was furnished in 1923 by Mr A.A.P. Neave, A.M.I.C.E., Assistant in the Department of the Engineer-in-Chief at the Admiralty, it was recommended that certain plant including a road roller should be purchased.

2. On the 1st of March Mr Henniker Heaton telegraphed to me suggesting that a roller should be ordered but the telegram was mutilated and there is some uncertainty as to the type of roller which is considered most suitable.

3. I have the honour to transmit for your information a copy of a letter from the Crown Agents for the Colonies enclosing the tender of Messrs Barford & Perkins Ltd. for a motor roller and spare parts at a total cost of £613: 3: 2 free on board at a port in England. I understand that motor rollers made by this firm have been supplied to other Colonies and have proved satisfactory.

1st April 1924.

4. On my arrival in the Colony I shall refer the tender to the Colonial Engineer and if he considers that this type of roller is suitable, I propose to telegraph requesting that you will be so good as to authorise the Crown Agents to order a roller from Messrs Barford & Perkins.

I have the honour to be,

Sir,

Your obedient Servant,

The Under Secretary of State,
Colonial Office,
Downing Street,
S.W. 1.

ALL COMMUNICATIONS
TO BE ADDRESSED TO THE
CROWN AGENTS FOR THE COLONIES,
THE DATE OF THIS LETTER BEING QUOTED
AND THE FOLLOWING REFERENCE W/Falkland Is. 1754/1.
TELEGRAMS. "CROWN, LONDON."
TELEPHONE. 7730 VICTORIA.

4, MILLBANK,
WESTMINSTER,
LONDON, S.W. 1.

1st April, 1924.

Sir,

Falkland Islands Reqn No. 1754.
JTHB/WW

With reference to the Colonial Secretary's telegram dated 1st March, your letter dated 7th March and your visit to this office on 13th March, I have the honour to enclose in duplicate the specification and tender of Messrs. Barford & Perkins Ltd. for one standard type "EW" Paraffin Motor Roller, including canopy and side curtains, as well as £30, worth of necessary spare parts, at a total cost f o.b. English Port of £613. 3.-2d.

2. You will observe that the rollers are of steel plate, and not cast iron, and that the rolling width is 4ft. A driving pulley is also fitted, so that, when not rolling, other plant, as for example, a stonebreaker, can be driven by belt from the engine, which develops about 16 B.H.P. on Paraffin, and 20 B.H.P. on Petrol.

3. We shall be glad to have your instructions in the matter.

I have the honour to be,

Sir,

Your obedient Servant,

W. A. Churchhart

For Crown Agents.

J. Middleton Esqr., C.M.G.
Windham Club,
St. James's Square,
London, S.W. 1

9

WE

W/Falkland Islands 1754/1.

Copy of Letter from Messrs. Barford & Perkins Ltd.
to CROWN AGENTS FOR THE COLONIES.

Peterborough.

21st March, 1924.

Gentlemen,

We thank you for your enquiry for Water Ballast Motor Road Roller, to be fitted with paraffin vapouriser, auxiliary brake, awning and side curtains.

We have pleasure in enclosing a quotation for our standard type "EW" Motor Roller, the weight of which is just over four tons, and the maximum weight is 4 tons, 14 cwt.

The conditions in the Colony do not appear to be very different from those in Iceland, to which we have supplied a similar roller to the "EW". We were pleased to receive the following entirely unsolicited report of this machine about six weeks ago:- "The Motor Roller is still working to our entire satisfaction".

Delivery could be given in four weeks from receipt of your valued order.

Yours faithfully,

BARFORD & PERKINS LTD.

(SGD) W. G. Barford.
Director.

COPY.

THE CHIEF ENGINEER,

W

Office of the Crown Agents for the Colonies,
4, Millbank, Westminster, London, S.W. 1.

FALKLAND IS. 1754/1.

The above file mark must be quoted on all communications regarding this contract.

Authority Gov's letter of 7.3.24.

~~*Indent No.*~~

Dated.....

Account

Dept.

To:—
Messrs. Barford & Perkins Ltd.
PETERBOROUGH.

Tender to the Crown Agents for the Colonies for the supply of MOTOR ROAD ROLLERS.

FOR INSTRUCTIONS AS TO TENDERING, SEE BACK OF LAST PAGE.

NO. OF ITEM.	QUANTITY.	DETAILED DESCRIPTION OF ARTICLES.	RATE.	AMOUNT.		
		Unless otherwise stipulated in the Crown Agents' Specification the address must be stencilled or painted on all articles or packages, and a detailed list of the contents enclosed. Paper or Parchment labels are not to be used. Articles which are loose or bundled and are too small to bear the address are to be marked with metal labels securely fastened with wire. The Port of destination must be clearly marked on all packages in letters at least two inches high. It is essential that the full period required for delivery should be stated on the tender and a sufficient margin to cover contingencies should be allowed. Your attention is directed to No. 2 of the General Conditions of Contract on the back of this page.				
1.	1.	(EW size quoted for) Waterballast Motor Road Roller not exceeding 5 tons in weight Fuel to be paraffin. Auxiliary brake is required. Awning for weather protection, with side curtains able to cover in all machinery is to be provided.		665	0	0
1a.	1.	Set of spare parts to value of £30.		30	0	10
		NOTE. The climate of the Colony is somewhat severe. The temperature ranges from 40° to 65° F. in summer and from 30° to 50° in winter. Annual rainfall 25". Snow is frequent. In summer, atmosphere is very dry. There are almost perpetual high westerly winds. The surface is hilly, and the entire country covered by wild moorland interrupted by outcrops of rock. The work is to comply with Crown Agents' Specn. No. 58 dated April 1920. Full particulars of the roller offered, with drawings, illustrations and latest catalogue of spare parts (in duplicated must accompany the tender.				
		Carried forward	£	695	0	10

W. Form 50. 20,000/10/23.

NO. OF ITEM.	QUANTITY.	DETAILED DESCRIPTION OF ARTICLES.	RATE.	AMOUNT.		
		Amount brought forward - - -	£	695	0	10
		Cost of packing for export ...£		32	0	10
		Cost of delivery f.o.b. London...£		included		
		(a) Alternative. cost of packing and postage to Colony... ...£				
		TOTAL £		727	0	10
		Trade and Shipping Allowances 15 per cent. on £ 665. 0. 0. £		99	15	0
		£		627	5	10
		Cash Discount for prompt payment 2½ per cent. on £565. 5. 0. £		14	2	8
		Amount payable (including all charges) on receipt of Bills of Lading or Parcels Receipt ... ... £				
				613	3	2
		(c) Alternative price for delivery f.o.b. at English £ / Port £				

(a) If economy can be effected by so doing, the goods should be sent by Parcel Post, sub-divided if necessary.

(b) Discounts and trade allowances of every kind to be deducted, so as to show the nett amount payable. If no discounts are allowed the tender should be marked nett. The Crown Agents claim to be placed on the footing of the most favoured wholesale shippers, and they will decline to deal a second time with any firm that does not so treat them.

(c) Firms may quote alternatively for delivery at any other port at which they can deliver f.o.b. cheaper than in London.

(b) DEDUCT:—

We hereby agree to supply, in accordance with General Conditions of Contract No. 1, dated November, 1922, on back hereof, the articles above specified, at the price set against each, which includes all charges (see Note), and to deliver the same free on board ship within ~~days~~ four weeks. from the date of order.

To the Crown Agents for the Colonies.

Signature BARFORD & PERKINS LIMITED.

Address Engineers, PETERBOROUGH.

Dated this 21st *day of* March, 1924

NOTE.—Dock and Harbour Dues and Clyde Dues. *See Clause 19 of Conditions of Contract.*

Date of issue 18th March 1924.

THE FOLLOWING SPACE TO BE LEFT BLANK BY FIRM TENDERING.

W/Falkland Is. 1754/1.

COPY OF SPECIFICATION AND TENDER.

from MESSRS. BARFORD & PERKINS LTD.

Engineers. March 21st, 1924.

Peterborough.

to CROWN AGENTS FOR THE COLONIES.

for Barford & Perkins' Patent Water Ballast Motor Roller,

with Engine for Petrol or Paraffin,

Type "EW"

APPROXIMATE WEIGHT EMPTY	:-	4 Tons.
APPROXIMATE WEIGHT FULL	:-	4½ Tons.
E N G I N E	:-	Two-Cylinder, 120 m/m Bore x 140 m/m Stroke, Developing 20 B.H.P., on Petrol at a normal speed of 1000 R.P.M.
WATER CIRCULATION	:-	Thermo Syphon
HIND ROLLER	:-	4' 0" wide x 3' 0" diameter.
FRONT ROLLERS (2)	:-	Total 2'5" wide x 2'3" dia.
ROLLING WIDTH	:-	4' 0"
DRIVING CHAIN	:-	Pitch 2" Breaking Strain 15 Tons.
DRIVING PULLEY	:-	Speed in Fast Gear 475 R.P.M. Speed in Slow Gear 158 R.P.M.

D E S C R I P T I O N O F

BARFORD AND PERKINS'

PATENT

WATER BALLAST MOTOR ROLLER

MOTOR	The roller is driven by an internal combustion engine as specified, designed to run either on petrol alone, or on paraffin by using a vapouriser in addition to the carburettor, and capable of driving it fully loaded up an incline of 1 in 7.
GOVERNORS.	Reliable governors are provided to ensure the engine running at its normal speed, whether lightly or fully loaded.
CYLINDERS.	The cylinders are cast in pairs and are of close grained cast iron, and jacketted, with water cooled heads and valve passages, the water circulation being
WATER CIRCULATION.	on the thermo-syphon principle (except where stated otherwise at the beginning of the specification). All parts are made of the most suitable materials for their respective purposes.
VALVES.	The inlet and exhaust valves, which are interchangeable, are made from high carbon steel, and are case hardened.
CRANKSHAFT & CAMSHAFT.	The crankshaft and camshaft are of special steel of 40 tons tensile strength, being hardened and ground on all journals.
TIMING GEAR	The timing gear is enclosed in the crankshaft case, the wheels being of extra wide surface.
IGNITION, CARBURETTOR & VAPOURISER.	The ignition is by high tension magneto of approved make. The paraffin vapouriser is of an efficient design and is fitted in addition with an approved make of carburettor. When paraffin is not required, the petrol carburettor is used alone.
LUBRICATION.	Forced lubrication is fitted to every bearing in the motor, and an indicator supplied to show its action, which can be checked by the driver.
CLUTCH.	The clutch is of the conical type, faced with "Ferodo".

GEARS & GEAR BOXES. The gear box is a totally enclosed design allowing for thorough lubrication. Ample allowance is made to meet the shocks and strains, which are necessarily much higher than those met with in other machines. All gears are of steel and machine cut to ensure smooth running.
There are 2 forward speeds and 2 reverse speeds as specified.

CHAIN. The chain is of the "Hans Renold" hardened steel "roller" type, with pitch and breaking strain as specified.

STEERING. The machine is steered by a worm and worm wheel with sprocket wheel and chain gear connecting the front roller to the hand steering wheel immediately in front of the driver. This method effectively prevents shocks being transferred to the driver's arm from the rolls, which, being in two parts, answer quickly and readily to the steering wheel.

BRAKES. A foot operated band brake acting on the intermediate shaft is provided for ordinary use, and an auxiliary hand brake acting on a brake drum on the driving roller is also fitted.

FRAME. The frame is of channel section, stiffly braced and provided with suitable cross members for carrying the various parts of the machine. The front of the frame is firmly bolted to the large head casting which consists of our patent spring steering head and bridge, and is arranged to allow considerable oscillations of the front roller, in order that when passing over uneven surfaces the frame remains comparatively steady, and is thus relieved of severe strains.

SPRINGS. Springs are also fitted over the back axle to minimise strain and vibration.

ROLLERS. The front rollers have steel plate rims and cast iron ends. The driving roller is made of mild steel plate, with flanged steel plate ends.

DRIVING PULLEY. A driving pulley is fitted for driving a Stone-breaker or other belt-driven machine.

AWNING. An Awning is provided.

TOOLS. A complete set of tools is provided with each machine including all necessary spanners and wrenches, and an oil can and small wearing parts.

TEST. Before leaving our Works the machine is tested in actual work for at least two days.

W/Falkland Islands 1754/1.

Copy of Spare Part List from Messrs. Barford & Perkins Ltd. Peterborough, TO CROWN AGENTS FOR THE COLONIES.

DUPLICATE WEARING PARTS FOR TYPE "EW" ROLLER.

Dorman Engine with B.T.H. Magneto & Claudel Hobson Carburetter.

1	Piston	161001		2.	10. 0.
6	Valve Cap Washers	6	2d		1. 0.
4	Valves complete	160801/B	9/6	1.	18. 0.
6	Valve Springs	9a	1/-		6. 0.
4	Valve Spring Cups	10	1/3		5. 0.
6	Valve Cotters	11	3d		1. 6
1	Top bush for oil pump drive	68			3. 0.
1	Bottom " " " " "	69			1. 3.
1	Pair of oil glands	3909/10			3. 0.
6	Compression tap washers	1423	1d		6.
6	Piston rings	2827	1/9		10. 6.
4	Grub screws for lock nut	P.45	1d		4.
6	Oil relief valve springs	2335	2d		1. 0.
1	Ball for oil relief valve	2334			3.
1	Standard set of joints				11. 0.
1	Set of carbons and springs (B.T.H.) 2 - D1091 @ 5d = 10d. 1-D870 6d. 1-D876 6d				1. 10.
1	Carburetter Float (Claudel Hobson)				4. 6.
1	Contact Breaker complete (B.T.H.)			1.	5. 3.
2	Valve presser adjusting screws	90	9d		1. 6.
1	Standard set of bolts, nuts etc			1,	4. 6.
1	Main jet for Carburetter				6. 9.
1	Pair of rear Crankshaft bearings	38/9			8. 6.
1	" " front " "	34/5			7. 6.
2	" " big end bearings	31/2	9/-		18. 0.
6	Sparking plugs (Lodge C31)		3/6	1.	1. 0.
ROLLER DETAILS.					
1	19T Double pinion	1288		1.	10. 0.
1	25T pinion	1531		3.	0. 0.
2	Rubber connections with 2 clips each		2/6		5. 0.
6	Clutch Springs	182B	6d		3. 0.
4	Nests back axle springs	A212	10/-	2.	0. 0.
4	Front head springs	A247	7/6	1.	10. 0.
1	Cranked link for 2" driving chain No. 12.13/6117.				14. 0.
3	Governor Springs	2036	8d		2. 0.
4	Con-rod bolts	27	2/4		9. 4.
2	Main axle bearings		17/6	1.	15. 0.
1	Declutching fork	10312			6. 0.
1	Starting handle bracket				5. 0.
1	Bottom gear box spindle			2.	0. 0.
1	Clutch centre	3287		3.	10. 0.
2	Stay Rod brackets		6/6		13. 0.
5	Grease cups. 2-L8, 2-L10, 1-D3				6. 0.
2	S13 Lubricators		1/1		2. 2.
1	SL4 "		3/-		3. 0.
1	572 Flexible grease connection				5. 6.
1	10040 Sprocket for steering				7. 0.
1	941. foot brake drum				11. 0.
				32.	8. 8.
	5%			1.	12. 5.
				30.	16. 3.
	2½%				15. 5
	NETT CASH			£30.	0. 10.

March 21st 1924.

CONDITIONS OF TENDER.

GENERAL — Tenders are only made subject to clients' credit being approved, and on the distinct understanding that the following provisions shall apply to all orders given to and accepted by us.

ILLUSTRATIONS &c. — Photographs and other illustrations or advertisement matter supplied represent generally the goods specified therein, but shall not be taken as necessarily representing the goods the subject of the tender, and shall not form part of the contract.

TIME OF DELIVERY. — Whilst we undertake to do our best to execute every order within the promised time, we do not accept responsibility for any direct or indirect losses which may arise if the completion is retarded by faulty castings or forgings, strikes, lock-outs, non-delivery of material or parts by other manufacturers, or any other unforeseen circumstances, as no provision against same is made in our price.

DELIVERY. — ENGLAND SCOTLAND & WALES. Where a tender includes delivery, this is to be interpreted as being free on rails at the nearest railway station at which the machines can be unloaded.

GUARANTEE. — In lieu of any warranty implied by law, we guarantee that the materials employed in the manufacture of our machinery shall be of suitable quality of their respective kinds, but should any breakage occur within twelve months from delivery which can be proved to be the result of defective material or workmanship, we will supply a new part free of charge, provided the broken part be immediately returned, carriage paid, to us,

means of chain controlled by the large hand wheel on the vertical shaft shown. Band brakes are furnished to each part of the back axle and can be applied either by lever or by hand wheel. Three speeds forward and reverse are available, and water ballast can be used in all rolls.

In the upkeep of modern roads tar-spraying and gritting play an important part. Many of the large rollers are fitted with spraying and brushing gear of some form. The tendency is more and more, however, to use some special machine for this work and several of these were shown at the exhibition. One of the most popular of these is the Barnes tar-spraying and road brushing machine which is illustrated in Fig. 35, on page 675. This machine has now been in successful use for some time. It is larger than some, but it is undoubtedly extremely effective. The machine is constructed by Messrs. F. G. Barnes, Ockford Engineering Works, Godalming, and consists of a large tar tank carried on channel frames and mounted on four wide-tread road wheels. The tank is heated by steam coil fed by flexible pipe from the boiler of the tractor behind which the machine is drawn over the road. At the rear end is a frame forming vertical guides for a brush frame, which can be adjusted as regards height by a hand wheel and worm. The brush frame carries three sets of brushes covering an area 6 ft. long by 5 ft. wide. The brushes are made up of 2 ft. lengths, and are mounted on springs. They can adjust themselves to the camber, while pressure can be applied by lowering the frame. Mounted on this frame above the brushes is an horizontal longitudinal shaft with three crank throws, spaced apart. The latter, by means of connecting rods, are coupled to the brushes, which are caused to move in guides to and fro' across the road as the whole travels forward. The crank is rotated by bevels and chain and sprocket drive taken off the rear axle, on which a clutch is provided. The heated tar is fed in front of the brushes by gravity from a spray pipe which is made to oscillate sideways so that the tar is well distributed. Different widths can be treated by means of plungers in the spray pipe. The oscillation of the spray and the following brushes, spreads the tar very evenly over the surface and ensures covering every spot. The tanks are made to contain up to 1,000 gallons, and being steam heated all risk of fire is avoided. The machine will tar at a steady rate of about 2 m.p.h. A 1,000-gallon tank can be heated to 200 deg. F. in 3½ hours. The quantity of tar used is adjustable. A simple winch and cradle are fitted for working tar barrels up a ramp to the top of the tank.

A much lighter machine of the horse-drawn variety was exhibited in the Coleman "Flapper" tar sprayer. This was fully illustrated recently in ENGINEERING,* and we need not therefore deal with it at length. The principle on which the machine works is unusual in that brushes are not employed, the tar being beaten down in the form of a spray, on to the road surface, by rapidly revolving blades. It is constructed by Messrs. Thomas Coleman and Sons, Limited, Alfreton-road, Derby.

A bitumen sprayer was exhibited by Messrs. Builders and Contractors Plant, Ltd., 51, Tothill-street, S.W. 1, provided with an oil burner in order to secure the high temperature required for bitumen, and an engine-driven pump for forcing the fluid material through the spray pipe fitted with ten jets. This plant is fitted up as a portable (trailer). A neat barrel hoist is arranged for lifting the barrels from ground level to the top of the tank.

A large 1,000-gallon tar-spraying machine was shown by Messrs. W. and J. Glossop, Hipperholme, Halifax. The vehicle in this case is an Atkinson 6-ton steamer, on the chassis of which is placed the large steam-heated tar tank. Arranged across the frame to the rear of this is a horizontal duplex steam pump delivering to two sprayers which provide a row of altogether 10 jets across the track. The sprayers are shrouded with a metal hood, and are hinged so that the height from the ground can be easily adjusted. The pump can be used for filling the tank. The vehicle is a self-contained unit and is as easily handled and manœuvred as the ordinary lorry. The tar pipes can be cleared by hot gases or steam. The firm also exhibited a bitumen sprayer

* See page 142, *ante*.

MOTOR ROLLERS AT THE PUBLIC WORKS EXHIBITION.

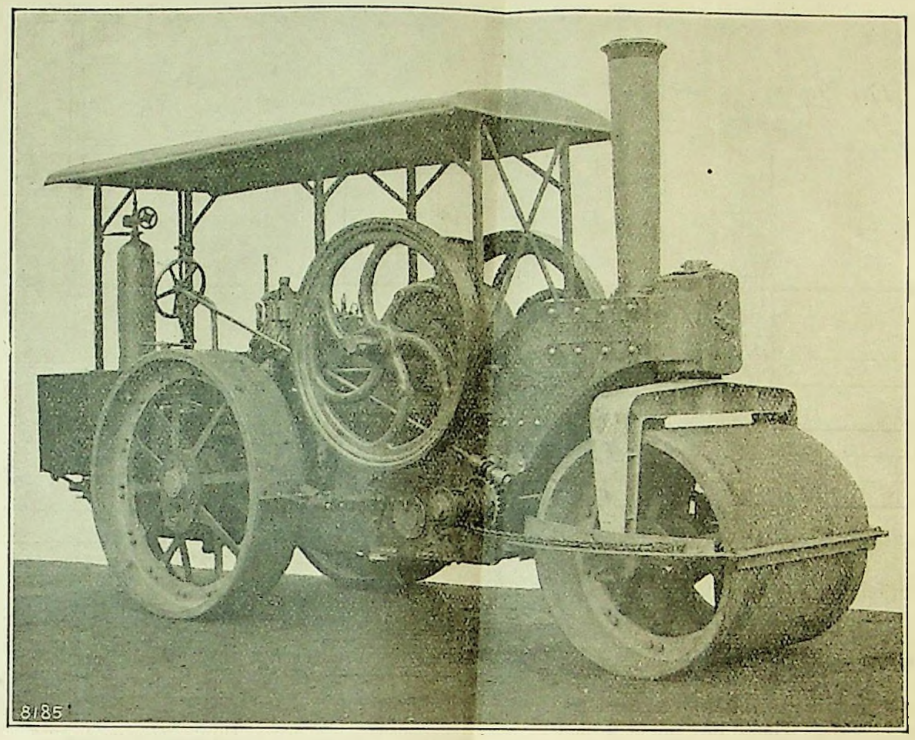


FIG. 32. SINGLE-CYLINDER MOTOR ROLLER; MESSRS. AVELING AND PORTER, LIMITED, ROCHESTER.

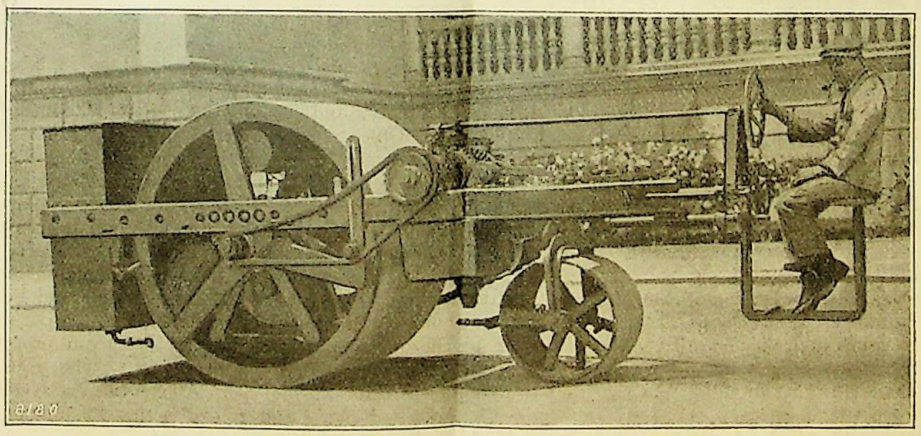


FIG. 33. 2-TON MOTOR ROLLER; MESSRS. BUILDERS AND CONTRACTORS PLANT, LIMITED, LONDON.

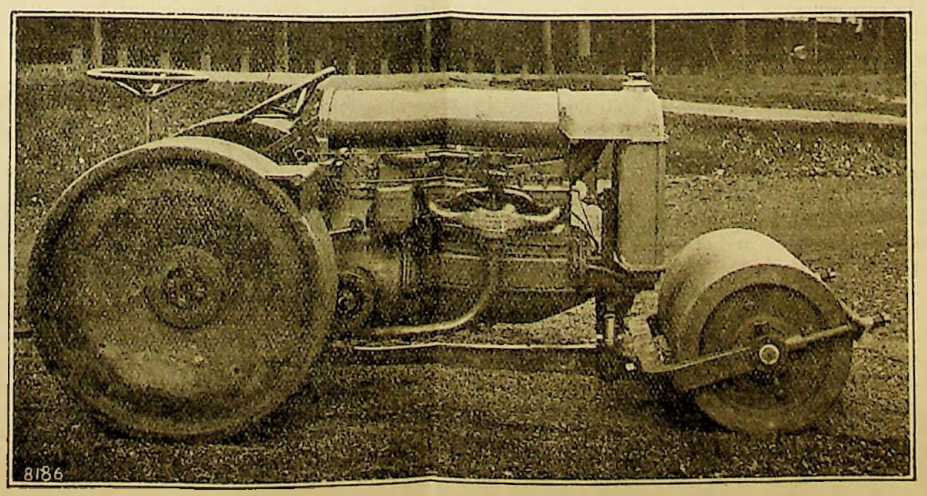


FIG. 34. 4-TON MOTOR ROLLER; THE CHASESIDE MOTOR COMPANY, LIMITED, ENFIELD.

DETAILS OF MOTOR ROLLER AT THE PUBLIC WORKS EXHIBITION.

CONSTRUCTED BY MESSRS. RUSTON AND HORNSBY, LIMITED, ENGINEERS, LINCOLN.

Fig. 29.

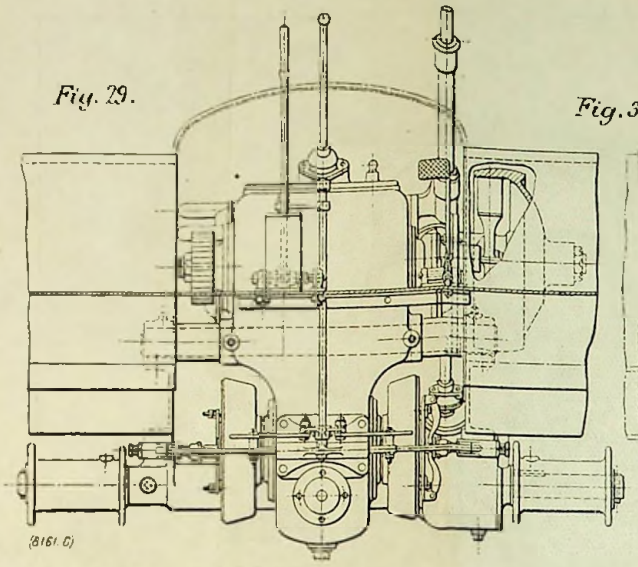
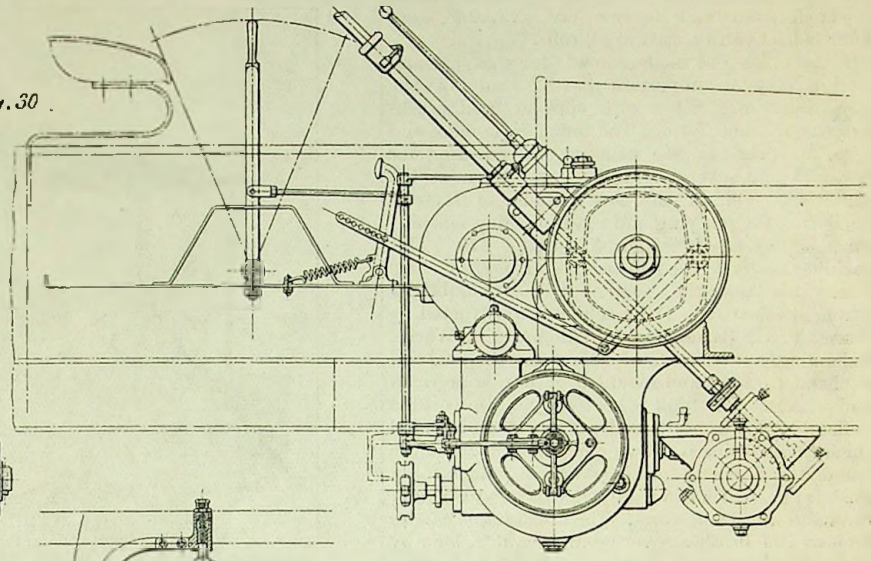


Fig. 30.

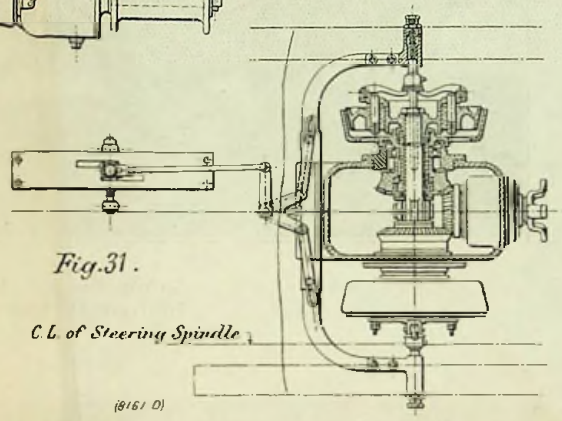


revolutions per minute 1,000. The front rolls are 3 ft. 9 in. in diameter and together of 4 ft. 1 in. width. The back rollers are 5 ft. 3 in. diameter and of 1 ft. 6 in. width, the total width rolled being 6 ft. 3 in. All are arranged for water ballast. The frame is of rolled sections and deep steel plates. The clutch is of the flat plate type lined with Ferodo. The three speeds range between 1¾ m.p.h. and 3¾ m.p.h., and are available both for forward and reverse, the reversing gear being of the epicyclic type. The front rollers are fitted in a swivelling fork on ball bearings and spring mounted. The gear-box is also fitted with roller bearings. Messrs. Fowler also showed a steam roller as well as their latest type of convertible steam tractor and roller which can be rapidly converted from one use to the other. As a tractor this machine complies with the Light Locomotives Act; all wheels are fitted with solid rubber tyres. In a couple of hours the change to an 8-ton roller can be made, by the driver assisted by one man, with the need of a jack only for the hind wheels.

Messrs. Thomas Green and Son, Limited, Smithfield Ironworks, Leeds, showed two machines, one a 10-ton compound steam roller and the other a 7½-ton motor tandem roller. The latter had rolled steel channel frames brought in at the front to take the forecarriage casting. A Dorman engine is mounted in this design across the frame just behind the forecarriage, driving a chain sprocket through a single reduction gear from the gear-box. The drive to the back roller is by roller chain. The back axle is carried in bearings in horn cheeks, and is spring mounted. A large water tank is carried over the rear roller.

Messrs. Barford and Perkins, Limited, Peterborough, showed several of their well-known motor machines. One of these was the three-wheel water ballast roller which we illustrated and described in our issue of December 30, 1921 (page 884). A new model to be shown for the first time was a machine known as the firm's FS8 type. This is a tandem machine with rollers 4 ft. wide. The front roll is double. The frames are of 6 in. by 3 in. channel section and the engine and gear-box unit is mounted transversely on the frame. The drive from the gear-box is taken through a wide toothed reduction train to a cross-shaft which, on the near side of the machine, drives by chain and sprockets to the back roll. The back roller bearings are carried in spring-mounted axle boxes, and fitted with radius bars. The front head is also spring mounted. Two speeds are provided both for forward gear and reverse, and two brakes, one a band-brake fitted on the main drive cross-shaft, and the other a band-brake working on a drum on the offside of the rear roller. The engine has four cylinders, works on paraffin, and develops 28 b.h.p. at 1,000 r.p.m. It is made by the Albion Motor Car Company, and is similar to that fitted to their War Office subsidy lorry. The clutch is of the plate type. The machine weighs 8 tons. A 140 gallon large water-sprinkling tank is fitted behind.

Fig. 31.



In contrast with the type of motor roller with small high-speed engine and channel frames were to be seen one or two examples of deep slab frames mounted with slow-speed horizontal-type engines. One such, by Messrs. Aveling and Porter, Limited, Rochester, is shown in Fig. 32, page 674. This machine approaches to the steam prototype much more closely than most. The roller is of the three-wheel type. Above the deep vertical frames of plates and rolled sections, is mounted a single cylinder Blackstone engine suitable for any fuel from petrol to crude oil. Two heavy large diameter flywheels are fitted. The machine has two speeds forward and two for reverse, the change of direction being by clutch. The drive is by gear throughout. The crank and engine gear is totally enclosed. A compressed air bottle is fitted for starting. The drivers' footplate is arranged in the position usual with steam rollers, while an exhaust uptake is provided in the position and closely resembling the conventional chimney. The front fork is a very light ribbed steel casting. The firm also showed a compound steam roller.

A machine on somewhat similar lines to the foregoing was shown by Messrs. Clayton and Shuttleworth, Limited, Lincoln. This was a 12-ton roller driven by a single-cylinder crude oil engine of the hot bulb type, started with a lamp or air bottle, and working on the two-cycle principle. A single flywheel is fitted and a centrifugal spring-loaded governor. The main frame is of heavy rolled steel sections, with cross-members of channel with end strips welded on and afterwards machined. The horn plates have steel strips welded on and afterwards machined. The engine is mounted direct on the main frame. At the front end the frame ends in a roller head of cast iron and the silencer is arranged at this end of the machine in communication with a chimney type uptake. The front fork and stem are one casting. The gears provide two speeds forward (1½ m.p.h. and 3½ m.p.h.) and one reverse. One brake operates by hand wheel on the hind axle and a second on the second motion shaft, by lever; either is sufficient to hold the machine on a steep gradient. The foot-plate is of ample size and allows the driver plenty of room for attending to the controls. A fuel tank is carried at the rear, and underneath at this end is a large cooling water tank.

The roller exhibited by the Builders and Contractors Plant, Limited, 51, Tothill-street, S.W.1, is a departure from all conventional design. The machine shown was a 2-ton model only, though larger patterns are built. The 2-ton model has an overall length of 14 ft., and width of 4 ft. 6 in. It is fitted with a 4½-h.p. engine. It is illustrated in Fig. 33, page 674, and has one large roller, 4 ft. 6 in. in diameter and 4 ft. wide, and one small swivelling roller 2 ft. in diameter and 2 ft. wide. The framing is of rolled steel sections. The engine is hung inside the large roller. It is of the vertical high-speed petrol type with pump circulation, and is fitted with sun and planet gears, the pinion of which works on the same axis as the roller and transmits the drive to a sprocket outside carried by the main frame on the near side of the machine. This sprocket transmits the drive by chain to a cross-shaft just behind the main roller, and at the other end of this is a bevel reversing clutch and two-speed gear, driving another longitudinal shaft from which the larger roller is driven by worm. The fuel and oil tanks are carried inside the roller on the engine mounting. A 60-gallon circulating and sprinkling tank is arranged at the front end, connected with the engine water jacket by means of piping passing through the roller axis on the off-side of the machine. A "reaper" type seat is provided, and all controls are brought back to this. Steering is by hand wheel, and worm and worm wheel, which controls the small swivelling back roller. This consists of two rolls so that dragging of the surface is avoided. This roller swivels on a ball bearing. The machine can turn in little more than its own length. The clutch is of the expanding ring metal-to-metal type.

Another small motor (4 tons 15 cwt.), which is a departure from usual practice, is shown by the Chaseside Motor Company, Limited, Chase Side, Enfield. This machine is illustrated in Fig. 34, page 674, and the main component will be recognised as a Fordson tractor unit. In fact, a tractor of this pattern is easily convertible into a roller at very small cost. The front roller has a track of 3 ft. 7 in., made up of two rolls. The back rollers give a total track width of 5 ft. 8 in. The wheel base is 7 ft. 1 in., and the length overall slightly more than 10 ft. The front roller is carried in a nearly horizontal fork, which is pivoted under the radiator and is provided with a long tail extending back to behind the rear axle. Here steering is effected by

9

COLONIAL SECRETARY'S OFFICE
- 3 JUL. 1924
FALKLAND IS.

ALL COMMUNICATIONS
TO BE ADDRESSED TO THE
CROWN AGENTS FOR THE COLONIES,
THE DATE OF THIS LETTER BEING QUOTED
AND THE FOLLOWING REFERENCE 6.5 W/Falk.Is.1607
TELEGRAMS. "CROWN, LONDON."
TELEPHONE, 7730 VICTORIA.

4, MILLBANK,
WESTMINSTER,
LONDON. S.W. 1.

19th May, 1924.

Sir,

Requisition No.1667
Indent No. 237.

I have the honour to acknowledge the receipt of your letter No. 23/24 dated 5th March asking for alternative quotations for a portable oil driven rock drilling plant of smaller size than those submitted with our letter of 9th November.

2. Further quotations have been obtained from the Parsons Motor Company, Globe Pneumatic Engineering Company, and Messrs. Broom & Wade, also quotations from Messrs. Peter Brotherhood, Dorman & Company, and the Aster Engineering Company. A schedule is attached giving the prices and leading particulars of these plants.

3. In the event of one of these tenders being accepted please return it to us, together with any papers attached thereto, as no copies have been retained in this Office.

I have the honour to be,

Sir,

Your obedient Servant,

H. Bradshaw

for Crown Agents.

The Colonial Secretary,
FALKLAND ISLANDS.

H HH

W/FALKLAND IS.1687/2. PORTABLE ROCK DRILLING PLANT. 16th May 1924.

FIRM	TYPE OF PLANT	CAPACITY OF PLANT CU.FT FREE AIR PER MINUTE	PRESSURE LBS. PER SQ.INCH.	COST OF PLANT	1" DRILL TYPE OFFERED	1" DRILL COST INCLUDING 150' HOSE	TOTAL COST INCLUDING SPARES.
Parsons	14 hp Parsons engine coupled to 2-cyl. Reavell compressor through reducing gear.	40	100	£343 plus £16 for steel roof and curtains if required.	"M" type Tindall rock drill.	£34.0.0.	£444.18.0
Broom & Wade.	Petter crude oil engine direct coupled to Broom & Wade compressor	58	100	£300	Hardy Simplex type "B.6".	£38.10.0	£389. 0.6.
Alternative	"Broomaster"with engine & compressor cylinders cast in one block.	96	100	£300	-do-	-do-	
Globe Pneu.Co.	10 BHP 4 cyl. engine driving single cyl.type SB3 compressor through pinion & spur gearing.	35	100	£285	Type A.3	£35. 5.6	£361.18.0.
Peter Bro.Ltd.	Brotherhood vertical 2 cyl.engine driving through gearing Brotherhood vertical single stage air compressor.	45	100		Consolidated self rotating rock drill.		£476. 0.0.
W.H.Dorman Ltd.	Combined engine air compressor set for use on petrol only.	75	100		Hardy drill		£415. 0.0.
Aster Engg.	"Broomaster" portable compressor set.	94	100	£300	Hardy Simplex hammer drill	£38.10.0.	£389.0.0.