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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

P.W.D. DEPARTMENT

G.O. No. 559- W. Press.
B.P. No: Mis.

Dated 10 - 3 - 1885 -198 .

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Archives I--10,006 I -80.

559
1

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Account.

READ—the following papers:—

From Messrs. P. ORR AND SONS, to the Secretary to Government, Public Works Department, dated Madras, 28th January 1885.

When the Government of India, about two years since, announced its intention to encourage by all means in its power the production in India of stores and supplies for Government use, instead of sending indents to England, and when the Government of Madras resolved, in harmony with that policy, to close, at least partially, the Public Works workshops at Madras, we decided upon developing that part of our workshops in which the manufacture and repair of levelling and other instruments were carried on, so as to be able efficiently to undertake any kind of instrument work that might be entrusted to us.

2. About eighteen months ago we received a number of levels and theodolites, &c., from the Public Works Department for repair, and we believe that those repairs were at least fairly executed; but we know that a report was sent in to Government which reflected in some degree upon the character of our work, and we have since received no work from the Public Works Department of Madras. We have, however, some reason for saying that the work was quite equal to any that has been turned out in Madras at the Public Works workshops for many years past.

3. However that may be, we now desire to bring to your notice that the instrument branch of our workshops has gained much in experience and organisation during the last eighteen months, and we have also engaged the services of a practical and clever mechanic, who is just arriving from England. We are now manufacturing throughout a large number of Mr. Winter's electric clock instruments, and have undertaken repairs for the Mysore and Travancore Governments, for the Mysore Railway, various companies and private customers.

4. Under these circumstances, we have confidence in venturing to ask you to support our efforts to localise new branches of work and industry, as we feel sure that we can, with credit to our name and satisfaction to our customers, turn out any work that may be required of us. The rumour has reached us that it is proposed to send instruments to Calcutta from Madras, but we trust that no such course will be adopted until our failure to cope with the work has been proved beyond all question.

Letter from the Superintending Engineer, V Circle, dated 14th February 1885, No. 4260.

ORDER—dated 10th March 1885, No. 559 W., Public Works.

The Government would be glad to see a well established local firm prepared to execute repairs of mathematical instruments in a satisfactory manner at reasonable rates; and they desire that the firm of Messrs. P. Orr and Sons be entrusted with the execution of such work for the State so far as practicable.

2. The Superintending Engineer will, in due course, report on the character of the work and its cost, as compared with that executed at the Public Works workshops.

3. The Government can hold out no hope of closing the Government mathematical workshops in favor of local trade until the character and price of the work turned out by the latter are placed on a secure and satisfactory footing.

(True Extract.)

Major, R.E.,
Under Secy. to Govt., P.W.D.

To the Superintending Engineer, V Circle.
To Messrs. P. Orr and Sons.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ACCOUNT.

Govt. of [1885] Madras.

PUBLIC WORKS.

Dated March, 10th.

Rcvd. *Encl.*

G.O., 10th March 1885, No. 559 W.

MARCH.

Mathematical Instruments

Orders on letter from Messrs. P. Orr and Sons requesting that they may be entrusted with the repair of —.

-3-

GOVERNMENT OF MADRAS.

FINANCIAL DEPARTMENT.

READ—the following paper:—

Despatch from the Most Honorable the MARQUIS OF HARTINGTON, Secretary of State for India, to His Excellency the Most Honorable the Governor-General of India in Council, dated India Office, London, 15th December 1881, No. 423 (Military).

I have considered in Council your Military letter, No. 260, of the 22nd July 1881, in which you represent that your attention has been drawn to the heavy expenditure annually incurred by your Government on account of stores imported from England, and to the question of the best means of developing such branches of local manufactures as may tend to reduce this expenditure.

2. Your Government entertain the expectation that, if you publicly express your willingness to accept articles of local manufacture in preference to those obtainable from home, private enterprise in many branches of manufacture will be prepared to undertake the supplies needed by the several Departments of the State. You do not anticipate that locally-manufactured articles can, at the outset, be equal to importations, but you see no reason to doubt their durability in many cases, and you hope, by offering every encouragement to local industry, to obtain articles at rates equivalent to, if not less than, those paid by the Store Department of this Office.

3. You proceed to remark that these observations have arisen in consequence of a question recently submitted to you regarding the supply of cloth for the uniform of the Army. At present no cloth suitable for British troops is manufactured in India, but you believe that the fabrication of such cloths in India is by no means impossible, and you, therefore, desire to be informed whether there is any objection on the part of Her Majesty's Government to accept for British troops returning home clothing made of any other material save that bearing the Pimlico mark, at the full value of English clothing, if it be of equally good quality.

4. Fully sharing the views of your Government as to the importance of developing to the utmost local industries and manufactures, and of rendering India as independent as possible of home supplies, I caused an inquiry to be addressed to the War Office on the subject of your present letter.

5. You will observe from the reply received from the War Office,* copy of which is enclosed for your information, that the Secretary of State for War states that, although he is not at present in a position to give an unqualified assent to this proposition, inasmuch as no experience has yet been gained as to whether cloth made in India would be equal in quality, color, and general durability to that manufactured in this country, he will be prepared to give the subject fair consideration when the occasion arises.

* No. 8796 of 19th November 1881.

6. It will now rest with your Government to adopt such measures as you may deem most conducive to stimulate the growth and development of local manufactures essential to the needs of the State in its several Departments, and you may rely on my hearty co-operation in any steps which your Government may take with the object of dispensing with supplies from home.

Order No 1797 W dt

Recorded

(True Extract)

(sd) A S Russell
under Secy to Govt
PWD

To The Genl Supt PWD

5

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Account.

Read—the following letter from Colonel H. L. PRENDERGAST, R.E., President of Committee, Public Works Workshops and Stores, to the Chief Engineer, Public Works Department, dated Madras, 5th May 1884, No. 14:—

I have the honor to forward the report of the Committee appointed in G.O., No. 360 W., of the 9th February 1884, to investigate questions respecting the Public Works Workshops and Stores. The papers sent with the Government order are returned.

Enclosure.

Proceedings of the Committee appointed in G.O., No. 360 W., dated 9th February 1884, to report on the Public Works Workshops and Stores.

The effects of the restrictive orders, No. 2488 W., dated 25th September 1882, have been that the value of the out-turn of work has decreased thus—

	RS.
In 1879-80 ...	2,16,876
„ 1880-81 ...	2,08,889
„ 1881-82 ...	1,44,221
„ 1882-83 ...	1,39,937
„ 1883-84 (estimated) ...	1,00,000

In the last two years, the extra charges have been—

In 1882-83 38 per cent. on the actual outturn.

„ 1883-84 45 per cent.

The percentages of financial and general liabilities, on the capital have been 17·2 and 20·4 in the two years; and against these, the percentages of extra charges on the capital have been 16·1 and 17·4.

The loss in these years has been Rs. 2,928 and Rs. 5,278.

The loss in the three preceding years was Rs. 6,833, Rs. 22,160, and Rs. 18,201.

2. The Superintending Engineer of the I Circle writes that the department has not availed itself of outside agency, because there are extensive workshops at Dowlaishweram.

The Superintending Engineer of the II Circle says he gets all work done at the Bezváda Workshops, except castings and repair of scientific instruments, or any exceptionally heavy work, otherwise they are independent of the Madras Workshops.

The Superintending Engineer of the III Circle states that the requirements have been but few, and there has been little necessity for resorting to private agency.

The Executive Engineer of Bellary speaks unfavorably of some small force-pumps purchased from Messrs. Massey and Company, as not turned out in a workmanlike manner and useless as force-pumps.

The Executive Engineer of Bellary proposes to obtain iron-work of any special nature from Bombay, although the rates may prove somewhat high.

From the IV Circle, the Executive Engineer, Nílgiri division, sends two lists showing that stores to the value of Rs. 4,683 were obtained from May to December 1883 from Messrs. Richardson and Cruddas, Bombay; and that stores to the value of Rs. 7,900 were obtained from the Public Work Workshops from September 1882 to February 1884. The Executive Engineer remarks that no comparison of quality can be made between the two lists; and that articles, when available at Madras, can be procured much quicker than from Bombay.

The Executive Engineer of the Coimbatore division sends a statement showing that iron-work to the value of Rs. 16,415 has been obtained from private agency since September 1882, and another statement showing the cost of work done previously at the Public Works Workshops. The Executive Engineer says that as regards time of execution and cost of work there is very little to choose between the private firms and the Workshops; but in the quality of the work he is inclined to give the preference to the Public Works Workshops, as the work is generally of a more substantial character.

The Committee observe that for iron-work for screw gear shutters Messrs. Massey and Company have charged 4¼, 5¼, and 7¼ annas per lb., though explanation has been asked for by the Executive Engineer regarding this latter rate. The rate for similar work at the Public Works Workshops has been from 4 annas 2 pies to 5 annas 11 pies.

In the V Circle, the Executive Engineer of the Buckingham Canal has given orders to the Dowlaishweram Workshops, not to local firms.

The Executive Engineer of the Presidency division has abstained from applying to the Public Works Workshops for anything procurable in the market, believing that the Workshops prices are prohibitive. He generally gets tools and plant from the Workshops, and had a cooking range set up at the General Hospital through the Public Works Workshops, not being able to spare any one to superintend the work.

The Executive Engineer of South Arcot has given only one order to Messrs. Massey and Company except for petty work; and in this case the charge was Rs. 310 for each shutter with screw gearing, while the estimate of the Public Works Workshops was Rs 250. Thus Messrs. Massey added 24 per cent. to the Workshops price.

The Superintending Engineer of the VI Circle agrees with the Executive Engineers that Messrs. Massey and Company execute work fairly and expeditiously; but that their charges are excessive. Messrs. Massey tendered for corrugated iron roofing for the Madura district but the supply was obtained from Bombay at a considerable saving.

The Executive Engineer of Tanjore (on the Committee) considers that all sorts of work of a simple description can be done cheaper by outside agency, but when machinery and highly skilled labor have to be employed, the rates at the Public Works Workshops are much lower than elsewhere.

For the Tanjore jail barred doors are being made up locally at a cheap rate. The iron might be somewhat better at the Public Works Workshops; but the price would be higher and the workmanship not better.

A lightning conductor has been supplied by Messrs. Massey for a powder magazine at Tanjore; the Executive Engineer would expect to have the work done cheaper and better at the Public Works Workshops.

The Executive Engineer has found that the cost of wood-work at Dowlaishweram is much less than at the Public Works Workshops, but that the rate for iron-work is much the same. Messrs. Massey and Company tendered last August for shutters for the Nattar head works; and their rate for iron-work was 5 annas 9 pies per lb., against 3 annas 7 pies charged at Dowlaishweram.

The Executive Engineer thinks it may be assumed that for work of this class nearly 50 per cent. will have to be added to former prices if the Workshops be closed.

The Executive Engineer of Tinnevelly reports that Messrs. Massey have turned out good work, fairly expeditiously; but that he gave up sending them orders on account of their high prices. For the screw gearing for shutters, they asked 5½ annas for iron-work, while the Public Works Workshops supply the same for 3¼ annas per lb.

The Executive Engineer of Negapatam writes that so little iron-work has been done that no comparison can be made as to cost; but in regard to time, the cheapness of local labor hardly compensates for the delay, especially if the loss of time be taken to account in personally overlooking the most simple details, where there is no workshop or trained supervision.

The Engineer of the Madras Harbour Works states that he has no means of comparing the work done at the Public Works Workshops with that executed by private agency, because all his mechanical work is done either on the spot or at the Public Works Workshops.

The Consulting Architect observes that the work done by the Public Works Workshops is almost always better than that done by private firms; and on the whole the price is much the same. On one occasion, lately, iron girders made by Messrs. Massey and Company failed when tested. Wood-work from the Public Works Workshops is better than from elsewhere, and the price about the same.

3. The Committee have inquired of the heads of the principal Government departments whether inconvenience would be felt by the closing of the Public Works Workshops.

The Revenue Board say, in reply, that so far as the demands of the Revenue Department are concerned, it is perfectly immaterial whether the Public Works Workshops are closed or not.

The Commissary-General writes that the restriction has not inconvenienced his department; that supplies can be got more expeditiously and cheaply by private agency than by the Public Works Workshops.

The Inspector-General of Ordnance and the Inspector-General of Police write to the same effect.

The Master Attendant, however, considers that the Marine Department derived advantage from the Public Works Workshops and ought to be able to get work done there if only to check a disposition to exorbitancy on the part of private firms.

4. The Superintendent of the Madras Survey states that he is unable to compare the work and charges of Messrs. P. Orr and Sons in repairing instruments with the repairs which have been well done by the Public Works Workshops. He is of opinion that it would be very advantageous to maintain the Government Workshops establishment, inasmuch as the Surveyor-General cannot undertake the repairs, and it would be tedious and costly to send instruments to England.

5. The General Superintendent of the Public Works Workshops sends a statement showing that eleven orders from State Railways have been carried out from April 1882 to February 1884. He states that when the Mysore Railway was under construction articles received from England were frequently damaged, and it was important that the Workshops could execute repairs. He considers that when the State Railways have established their own workshops, they will often require repairs to be done at the presidency.

On the other hand, the Superintending Engineer of the Bellary-Kistna State Railway says that the presidency shops would probably not be of use; and the Engineer-in-Chief of the Cuddapah-Nellore State Railway does not anticipate being able to utilise the Public Works Workshops at Madras to any appreciable extent, except for the repairs of surveying instruments.

6. From the evidence given, the Committee find that for State Railways and for Government departments generally, other than that of Public Works, there is no need of maintaining the Public Works Workshops; but for the Public Works Department the majority of the Committee (four members) are of opinion that the Workshops should be re-established on their former footing, because work is likely to be done better and at not higher prices than it would be if undertaken by outside agency.

7. Offers have been made in a general way by Mr. Wallace, dated 3rd March 1884, and by Messrs. Massey and Company, dated 8th April 1884, to undertake the work hitherto done by the Public Works Workshops. Upon the decision arrived at above, the Committee do not recommend that either of these offers be entertained.

8. The Committee are of opinion that the mathematical instruments department should be maintained; and that it is not advisable to limit its operations by attempting to get the work done by private agency.

9. The Committee consider that the appointment of General Superintendent of the Public Works Workshops should not be of the special nature that it has been hitherto, but that the Workshop with its kindred branches, stores, &c., should be treated as a Public Works division, and its staff regulated accordingly.

5th May 1884.

(Signed) H. L. PRENDERGAST, Colonel, R.E.
(„) W. HUGHES.
(„) D. C. GORDON.
(„) C. BOWEN, Major, R.E.
(„) R. R. E. DRAKE-BROCKMAN, Major, R.E.

ORDER—dated 16th June 1884, No. 1494 W., Public Works.

In G.O., No. 360 W., dated 9th February 1884, the recent papers bearing on the position and operations of the Public Works Workshops and Stores at Madras were reviewed at length, and a Committee was appointed to consider the effect of the restrictive order, dated 25th September 1882, No. 2488 W., and to report upon the status to be assigned in future to the shops as well as to the stores, with which the shops are intimately connected. After careful consideration of the papers and of all available evidence, the Committee have arrived at the conclusion that, so far as the Public Works Department is concerned, the shops should be re-established on their former footing, inasmuch as work is likely to be done better and at prices not higher than if undertaken by private agency.

As regards the execution of work for State Railways and for Government departments generally, the evidence goes to show that the Public Works Workshops are not essential.

The retention of the mathematical instruments shops for the execution of all Government work is recommended; and it is finally recommended that the Workshops and Stores should in future be constituted an ordinary Public Works division, the staff being regulated accordingly.

2. After careful consideration of the papers, His Excellency the Governor in Council is not satisfied that the experiment of restricting the operations of the Workshops has lasted sufficiently long to allow of healthy private competition. It should therefore be continued for the present. Meanwhile, inquiry will be made, through the Military Department, whether the Gun Carriage Factory is in a position to undertake the more important work of the department, such as cannot apparently be properly and economically executed in the local market.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D

To the Superintending Engineer, V Circle.
To other Superintending Engineers.
To the General Superintendent, Public Works Stores and Workshops.
" Chief Engineer for Irrigation.
" Consulting Engineer for Railways.
" Engineers-in-Chief, State Railways.
" Consulting Architect to Government.
" Superintendent, Madras Harbour Works.
" Examiner, Public Works Accounts.
" Financial, &c., Departments.
" Revenue Department.
" Military "

Exd. E. Fernandez.
Spare Copies

GENERAL.
ACCOUNT.

Govt. of {1884} Madras.

PUBLIC WORKS.

Dated June, 16th.

Recd. *Encl.*

G.O., 16th June 1884, No. 1494 W.

JUNE.

Presidency Public Works Workshops and Stores

Passing orders on the report of the Committee appointed to consider the effect of the order restricting the operations of the — and the status to be assigned to them in future.

17TH FEBRUARY 1882, No. 238, FINANCIAL.

GOVERNMENT OF MADRAS.

FINANCIAL DEPARTMENT.

READ—the following Proceedings of the Government of India in the Department of Finance and Commerce (Stores), dated Calcutta, 10th February 1882, No. 806:—

Read—again the undermentioned papers regarding the supply of Stores required for the public service in India—

Financial Resolution, No. 3574, dated 3rd November 1880.
" " No. 953, dated 10th June 1881.
" Circular No. 220, dated 28th April 1881.
" " No. 621, dated 14th May 1881.

Read—also communications from the Public Works Department—

No. 414—A.G., dated 11th November 1881.
No. 420—A.G., dated 16th " "
forwarding returns showing European Stores purchased locally during the last two years.

Resolution—from the returns forwarded by the Public Works Department, a list has been prepared and is appended to this Resolution, showing the articles which, in future, should be obtained of Indian manufacture, the procedure to be adopted being that laid down in the Resolutions published in the *Gazette of India* since 23rd July 1881.

Ordered, that the foregoing Resolution be communicated to the Public Works Department and to all Local Governments and Administrations for information and guidance; and that it be published in the *Gazette of India* for general information.

(Signed) J. E. O'CONOR,
Asst. Secy. to the Govt. of India.

List of Articles referred to in Resolution, No. 806, dated 10th February 1882.

NAMES OF ARTICLES.	Rate.	1879-80. Number or Quantity.	1879-80. Total Cost.	1880-81. Rate.	1880-81. Number or Quantity.	1880-81. Total Cost.	TOTAL. Number or Quantity.	TOTAL. Total Cost.
			Rs. A. P.			Rs. A. P.		Rs. A. P.
P. W. Stores, Madras.								
Bolt, leather, 4", single	....	200 feet ..	106 11 6					106 11 6
Canvas, No. 2 ..	....	9 bolts ..	259 14 0					259 14 0
Do. „ 1 ..	....	5 „ ..	144 6 0					144 6 0
Do. „ 4 ..	....	8 „ ..	206 4 0					206 4 0
Cement, Portland ..	....	1 cwt. ..	3 0 0					3 0 0
Do. do. ..	....	....	....					....
Chains, iron, galvanized, measuring 66', with arrows.	....	2 No. ..	14 0 0					14 0 0
Chains, iron, galvanized, 1"	....	300 feet ..	81 0 0					81 0 0
Do. do. 1½"	....	152 „ ..	168 13 0					168 13 0
Do. do. 2"	....	....	....					....
Do. do. do.	....	6154 feet ..	210 5 0					210 5 0
Cock, brass, 1½" (delivery)	....	....	....					....
Hides, English ..	....	2 No. ..	244 6 0					244 6 0
House line (chains 31) ..	....	50 lb. ..	37 8 0					37 8 0
Leather delivery hose, 3", in 40' lengths ..	....	160 feet ..	360 6 0					360 6 0
Rattline (coils 6) ..	....	396 lb. ..	190 11 0					190 11 0
Do. (do.) ..	....	7 „ ..	2 4 0					2 4 0
Rivets, iron, 1½" × ½" ..	....	....	....					....
Rope, Manilla, 6" ..	....	2 coils ..	498 10 6					498 10 6
Do. do. 4½" ..	....	1 „ ..	171 13 0					171 13 0
Do. do. 3½" ..	....	1 „ ..	149 9 0					149 9 0
Do. do. 3" ..	....	2 „ ..	173 13 0					173 13 0
Do. do. 2½" ..	....	2 „ ..	340 1 6					340 1 6
Do. do. 2" ..	....	3 „ ..	167 8 0					167 8 0
Do. do. 1½" ..	....	2 „ ..	114 8 0					114 8 0
Do. do. 1¼" ..	....	3 „ ..	91 0 0					91 0 0
Do. do. 1" ..	....	4 „ ..	123 13 0					123 13 0
Do. do. ¾" ..	....	8 „ ..	121 13 0					121 13 0
Do. do. ½" ..	....	1 „ ..	226 15 0					226 15 0
Do. hemp, tarred, 6" ..	....	1 „ ..	173 13 0					173 13 0
Do. do. 4" ..	....	1 „ ..	158 13 0					158 13 0
Do. do. 3½" ..	....	1 „ ..	312 2 0					312 2 0
Do. do. 3" ..	....	3 „ ..	387 12 0					387 12 0
Do. do. 2½" ..	....	5 „ ..	88 0 0					88 0 0
Do. do. 2" ..	....	1 „ ..	321 0 0					321 0 0
Do. do. 1½" ..	....	6 „ ..	116 1 6					116 1 6
Do. do. 1" ..	....	3 „ ..	40 3 6					40 3 6
Do. do. ¾" ..	....	1 „ ..	153 12 0					153 12 0
Spun yarn, dax ..	....	123 lb. ..	65 8 0					65 8 0
Do. do. ..	....	127 „ ..	....					....
Tape, white fuse ..	....	....	....					....
Twine, jadeit ..	....	....	....					....
....	....	200 coils ..	101 4 0					101 4 0
....	....	2 skeins ..	31 4 0					31 4 0

List of Articles referred to in Resolution, No. 806, dated 10th February 1882.—(Continued).

NAMES OF ARTICLES.	Rate.	1879-80. Number or Quantity.	1879-80. Total Cost.	1880-81. Rate.	1880-81. Number or Quantity.	1880-81. Total Cost.	TOTAL. Number or Quantity.	TOTAL. Total Cost.
			Rs. A. P.			Rs. A. P.		Rs. A. P.
P. W. Workshop, Madras.								
Acid, muriatic ..	0 0 5 per oz.	1 oz. ..	0 0 5	....	20½ lb. ..	20 4 6		20 4 6
Do. nitric ..	0 11 0 per lb.	23 lb. ..	15 15 0	....	89 „ ..	83 7 0		83 7 0
Do. hydrochloric ..	0 15 0 „	33 „ ..	30 15 0					
Do. sulphuric ..	0 4 1 „	3 „ ..	0 13 3	....	20 gals..	226 0 0		226 0 0
Alcohol ..	11 4 0 per gal.	10 gals ..	112 8 0	....				
Do. absolute ..	0 1 0 per oz.	1 pint ..	0 2 0					
Ammonia ..		2 oz. ..		....	5 yards..	13 14 0		
Baize, blue ..		....						
Do. green ..	3 0 0 a yard	4 yards ..	12 0 0					
Bolts, door, iron, round, 6"	0 4 0 each	7 No. ..	1 12 0					
Do. do. do. 5"		....						
Do. do. do. 10"		....						
Do. do. do. 12"		....						
Do. do. do. 18"		....						
Do. pinah, brass 3"		12 No. ..	1 12 0					
Do. do. do. 4"	0 2 6 each	....						
Do. do. do. 6"	0 4 8 „	6 „ ..	1 4 0					
Do. iron, 3" ..	0 1 0 „	4 „ ..	0 4 0					
Borax ..	0 4 10 per lb.	20 lb. ..	6 0 0					
Cement, Portland ..	8 8 0 a barrel	5 barrels ..	42 8 0					
Chains, iron, 1" ..	0 8 0 a yard	75 yards ..	37 8 0					
Do. do. 1¼" ..	0 2 0 a foot	150 feet ..	93 12 0					
Do. do. 1" ..	0 4 0 per lb.	64 lb. ..	16 0 0					
Do. do. ¾" ..	0 4 0 „	297 „ ..	74 4 0					
Do. do. ½" ..	8 12 0 each	12 Nos. ..	108 0 0					
Do. iron, galvanized, measuring 66' ..	0 0 3 per lb.	45 lb. ..	0 11 3					
Chalk ..	0 2 0 a foot	66 feet ..	8 4 0					
Cloth, duck ..		....			4 No. ..	1 5 3		
Do. sheeting ..	0 12 0 each	4 No. ..	3 0 0					
Commotio pans ..		....						
Crucibles ..	3 0 0 each	24 No. ..	73 0 0					
Forks, digging ..	0 12 0 a bottle	30 bottles ..	26 0 0					
French polish ..	0 6 0 per lb.	31 lb. ..	11 10 0					
Glue ..	0 2 6 each	18 No. ..	2 13 0					
Handles, brass, 4" ..	0 13 8 per lb.	29 lb. ..	27 12 8					
Hemp, ball ..	2 14 0 „	165 „ ..	474 8 0					
Hides, Europe ..	6 0 2 each	36 No. ..	0 11 0					
Hinges, brass, 1" ..	0 0 8 „	26 „ ..	1 5 0					
Do. do. 2" ..	0 1 9 „	72 „ ..	7 12 0					
Do. do. 2½" ..	0 2 0 „	125 „ ..	13 10 0					
Do. do. 3" ..	0 1 3 „	67 „ ..	4 7 3					
Do. iron, 3" ..								

List of Articles referred to in Resolution, No. 806, dated 10th February 1882—(Continued).

Names of Articles.	1879-80. Rate.	1879-80. Number or Quantity.	1879-80. Total Cost.	1880-81. Rate.	1880-81. Number or Quantity.	1880-81. Total Cost.	Total. Rate.	Total. Number or Quantity.	Total. Total Cost.
P. W. Workshop, Madras—(Continued).	Rs. A. P.		Rs. A. P.	Rs. A. P.		Rs. A. P.			Rs. A. P.
Hinges, iron, 3½″	....	....	....	0 1 6 each	6 No.	0 9 0			
Do. do. butt, 4″	....	....	....	0 4 0 „	44 „	11 0 0			
Hooks, brass, 1″	....	....	....	0 1 2 „	12 „	0 14 0			
Do. do. 2″	....	....	....	0 3 0 „	2 „	0 6 0			
Lamp black „	0 4 0 per lb.	2 lb.	0 8 0						
Leather, belt, 1½″	....	....	....	0 6 0 per foot	66 feet	21 0 0			
Do. do. 2½″	....	....	....	0 8 0 „	46 „	23 0 0			
Do. do. 2⅝″	....	....	....	0 10 0 „	122 „	76 4 0			
Do. do. single, 3″	....	....	....	0 12 0 „	140 „	105 0 0			
Do. do. do. 4″	1 7 0 per foot	256 feet	359 8 0						
Do. do. do. 4½″	....	....	....	0 10 7 „	70 „	45 10 10			
Do. do. double, 5″	1 7 0 per foot	306 feet	439 14 0						
Do. do. do. 6″	2 14 3 „	250 „	722 10 6	1 2 0 per foot	32 „	58 8 0	....	302 feet	781 2 6
Do. do. do. 8″	....	....	....	1 10 0 „	128 „	208 0 0			
Do. do. do. 5″	....	....	....	2 6 8 „	274 „	658 4 4			
Do. delivery hose, 2½″	....	....	....	2 2 9 „	23 „	47 12 6			
Locks, brass, drawer, 2″	....	....	....	2 4 0 each	1 No.	2 4 0			
Do. do. do. 2½″	1 6 8 each	2 No.	2 13 4	....	....	....			
Do. iron do. 2½″	....	....	....	2 8 0 each	3 No.	7 8 0			
Do. pad, iron, 2″	0 6 0 each	11 No.	4 2 6	0 5 0 „	3 „	1 2 0	....	14 No.	5 4 6
Do. do. do. 2½″	0 6 0 „	4 „	1 8 0	0 7 9 „	4 „	1 12 0	....	8 „	3 4 0
Do. brass, admiral, 9″	....	....	....	2 8 0 „	2 „	5 0 0			
Do. do. do. 3″	2 5 6 each	7 No.	18 6 6						
Do. do. do. 3½″	2 8 0 „	1 „	2 8 0						
Long cloth	....	....	....	....	1 yard	0 4 6			
Nitrate of copper	....	....	....	0 6 6 per lb.	16 lb.	6 8 0			
Nuts, hexagon, ¼″	0 2 9 per lb.	112 lb.	19 4 0	0 0 6 each	560 No.	17 8 0			
Do. do. ⅜″	0 2 9 „	112 „	19 4 0	0 0 6 „	560 „	17 8 0			
Do. do. ½	0 2 9 „	224 „	38 8 0	0 1 6 „	560 „	35 0 0			
Oil, linseed, boiled	0 7 2 a bottle	390 bottles	174 11 0	0 7 2 per bottle	361 bottles	161 11 2	....	751 bottles	336 6 2
„ „ raw	0 3 9 „	6 „	1 6 6						
„ kerosine	....	....	....	0 2 6 per bottle	18 bottles	2 13 0			
Paper, sand	0 0 3 each	696 No.	10 14 0	0 0 4 each	630 No.	13 2 0	....	1,326 No.	24 0 0
Do. blotting	0 0 7 „	2 quires	1 13 0	0 10 0 a quire	2½ quires	1 9 0	....	4½ quires	3 5 0
Do. cartridge	....	....	....	0 10 0 „	85 „	50 0 0			
Do. yellow	....	....	....	0 4 0 „	10 „	2 8 0			
Do. pink	....	....	....	0 5 0 „	5 „	1 9 0			
Do. green	....	....	....	0 5 0 „	5 „	1 9 0			
Planes, smooth	2 2 6 each	16 No.	34 8 0						
Do. jack	2 7 6 „	24 „	65 4 0						

List of Articles referred to in Resolution, No. 806, dated 10th February 1882—(Continued).

Names of Articles.	1879-80. Rate.	1879-80. Number or Quantity.	1879-80. Total Cost.	1880-81. Rate.	1880-81. Number or Quantity.	1880-81. Total Cost.	Total. Rate.	Total. Number or Quantity.	Total. Total Cost.
P. W. Workshop, Madras—(Continued).	Rs. A. P.		Rs. A. P.	Rs. A. P.		Rs. A. P.			Rs. A. P.
Rings, brass, 1½″	0 1 0 each	4 No.	0 4 0						
Do. do. 1″	0 0 9 „	66 „	3 1 6	0 0 2 each	2 No.	0 0 4	....	68 No.	3 1 10
Do. do. ⅜″	0 0 9 „	7 „	0 5 3	0 1 0 „	14 „	0 14 0	....	21 „	1 3 3
Rivets, iron, 2½″ × ½″	0 2 2 per lb.	1,120 lb.	150 10 0	0 2 2 per lb.	843 lb.	114 2 6	....	1,963 lb.	264 12 6
Do. do. 6″ × ⅜″	0 3 0 „	560 „	106 0 0						
Do. do. galvanised	0 2 3 „	60 „	8 7 0						
Do. do. 1″ × ⅜″	0 2 9 „	560 „	96 4 0						
Do. do. 1¼″ × ⅜″	0 2 9 „	560 „	96 4 0						
Do. do. 1½″ × ⅜″	0 2 9 „	560 „	96 4 0						
Do. do. 1¾″ × ⅜″	0 2 9 „	560 „	96 4 0						
Do. do. 1½″ × ⅜″	0 2 9 „	56 „	9 10 9						
Do. do. 1″ × ⅜″	0 2 9 „	56 „	9 10 9						
Do. do. ½″ × ⅜″	0 2 9 „	224 „	38 8 0						
Do. do. ¼″ × ⅜″	0 2 9 „	224 „	38 8 0						
Do. do. 3″ × ⅜″	....	....	....	0 2 9 per lb.	153 lb.	26 4 2			
Rope, Manilla	0 6 0 per lb.	26 lb.	9 12 0	0 6 0 „	296 „	111 0 0	....	322 lb.	120 12 0
Sal Ammoniac	0 2 6 „	41 „	6 8 6	0 2 6 „	85 „	13 4 6	....	126 „	19 11 0
Screw-driver, 6″	1 7 0 each	2 No.	2 14 0						
Do. do. 8″	2 0 0 „	2 „	4 0 0						
Do. do. 10″	2 10 0 „	2 „	5 4 0						
Seed lac	....	....	....	0 6 0 per lb.	7 lb.	2 10 0			
Shell-lac	....	....	....	0 5 0 „	3 „	0 15 0			
Shovels	1 2 0 each	90 No.	101 4 0						
Soap, Windsor	0 0 6 per lb.	48 lb.	1 8 0	....	24 No.	0 6 0			
Spades	1 6 0 each	30 No.	41 4 0						
Spirits of wine	....	....	....	1 1 4 per bottle	19 bottles	20 7 9			
Do. methylated	....	....	....	0 15 0 „	43 „	40 5 0			
Stone, grinding, 36″ × 7″	40 2 0 each	3 No.	120 6 0						
Tanks, water	....	....	....	45 0 0 each	2 No.	90 0 0			
Tape, red	0 1 0 per yard	115 yards	7 3 0						
Tin sheets, double	....	....	....	0 3 0 each	98 No.	18 6 0			
Do. do. single	....	....	....	0 1 6 „	42 „	3 15 0			
Do. block	0 11 3 per lb.	87 lb.	61 2 9	0 11 3 per lb.	384 lb.	270 0 0	....	471 lb.	331 2 9
Turpentine	0 6 6 per bottle	50 bottles	20 5 0	0 6 6 per bottle	26 bottles	10 9 0	....	76 bottles	30 14 0
Twine, Europe	0 15 0 per lb.	150 lb.	140 10 0	0 15 0 per lb.	46 lb.	43 2 0	....	196 lb.	183 12 0
Varnish, Copal	0 11 0 per bottle	68 bottles	3 14 4	0 11 0 per bottle	2 bottles	1 6 0	....	70 bottles	5 4 4
Do. Japan	....	....	....	1 2 0 „	64 „	72 0 0			
Vices, bench, 5″	....	....	....	2 0 0 each	9 No.	18 0 0			
Do. hand	2 0 0 each	4 No.	8 0 0						
Wicks, cotton, large, 2⅜″	....	....	....	0 12 0 a yard	1,258 yards	943 8 0			
Do. do. small, 1½″	....	....	....	0 10 0 „	351 „	219 6 0			

List of Articles referred to in Resolution, No. 806, dated 10th February 1882—(Continued).

Names of Articles.	1879-80. Rate.	1879-80. Number or Quantity.	1879-80. Total Cost.	1880-81. Rate.	1880-81. Number or Quantity.	1880-81. Total Cost.	Total. Rate.	Total. Number or Quantity.	Total. Total Cost.
							Rs. A. P.		Rs. A. P.
Madras Harbour Works.									
Acid, carbolic	....	....	....	....	....	....	2 8 0 a quart	2 qrts	5 0 0
Anchors, of sizes	....	....	....	....	....	....	24 8 0 per cwt.	15 No.	304 11 6
Axes, pick	....	....	....	....	....	....	0 8 6 each	20 ,,	10 10 0
Do. carpenter's	....	....	....	....	....	....	5 4 0 ,,	2 ,,	10 8 0
Basin, porcelain	....	....	....	....	....	....	....	1 ,,	2 0 0
Blocks, single and double, of sizes	....	....	....	....	....	....	0 12 0 to Re. 1 each	20 ,,	16 12 0
Bolts, thumb, brass, 3"	....	....	....	....	....	....	0 4 0 each	2 ,,	0 8 0
Do. tower, iron, 18"	....	....	....	....	....	....	....	1 ,,	0 12 0
Brad-awls	....	....	....	....	....	....	0 3 0 each	2 ,,	0 6 0
Brown and white duck	....	....	....	....	....	....	0 10 0 to Re. 1 per yard.	154 yds.	134 7 0
Buckets, iron, galvanized, of sizes	....	....	....	....	....	....	1 0 0 to 1-12 each	17 No.	27 0 0
Bunting of colors, assorted	....	....	....	....	....	....	0 9 0 to 12 per yard.	445¾ yds.	276 13 6
Candles, sperm	....	....	....	....	....	....	0 8 0 per lb.	61 lb.	30 8 0
Canvas, No. 2	....	....	....	....	....	....	0 11 0 per yard	88 yds.	60 8 0
Chains, iron, of sizes	....	....	....	....	....	....	20 0 0 to 40 per cwt.	Ton 1-2-3-5	238 10 7
Do. galvanized, ¼" & ⅜"	....	....	....	....	....	....	32 0 0 to 38 ,,	Cwt. 16-2-24.	554 3 11
Do. brass, ¼" & ⅜"	....	....	....	....	....	....	0 4 1 per foot	77 feet	19 13 0
Clip hooks, iron	....	....	....	....	....	....	1 10 5 each	6 No.	10 0 0
Cloth, turkey-red	....	....	....	....	....	....	0 9 0 per yard	38 yds.	21 6 0
Compasses	....	....	....	....	....	....	8 0 0 each	2 No.	16 0 0
Do.	....	....	....	....	....	....	....	1 ,,	3 0 0
Felt, sheets	....	....	....	....	....	....	0 8 0 to 9 each	96 ,,	51 12 0
Flag, line	....	....	....	....	....	....	0 8 0 per lb.	15½ lb.	6 12 0
Flannel, white	....	....	....	....	....	....	1 10 0 per yard	122½ yds.	199 1 0
Glue	....	....	....	....	....	....	0 12 0 per lb.	16 lb.	12 0 0
Grapnels, of sizes	....	....	....	....	....	....	24 8 0 to 30 per cwt.	2 No.	47 0 0
Hammer, hand	....	....	....	....	....	....	....	1 ,,	1 0 0
Do. wrench	....	....	....	....	....	....	....	1 ,,	3 8 0
Hatchets	....	....	....	....	....	....	1 8 0 and Rs. 2 each.	2 ,,	3 8 0
Hemp line	....	....	....	....	....	....	1 4 0 per lb.	10 lb.	12 8 0
Hide, Europe	....	....	....	....	....	....	0 10 4 ,,	48 ,,	41 0 0
Hinges, stop, brass, of sizes	....	....	....	....	....	....	0 5 0 to 6 per pair	7 pairs	2 5 0
Do. brass, of sizes	....	....	....	....	....	....	0 7 0 to 12 ,,	48 ,,	25 4 0
Do. iron, 18"	....	....	....	....	....	....	1 0 0 to 1-8 ,,	18 ,,	24 0 0
Do. do. 1½" to 3"	....	....	....	....	....	....	0 2 6 to 3 per pair	13 ,,	2 12 6
House line	....	....	....	....	....	....	....	28½ lb.	20 12 0
Ink bottle, glass	....	....	....	....	....	....	....	1 No.	0 5 0
Knives, sheath	....	....	....	....	....	....	0 10 0 to 12 each	5 ,,	3 6 0
Lamp black	....	....	....	....	....	....	0 5 0 per lb.	14 lb.	4 6 0

List of Articles referred to in Resolution, No. 806, dated 10th February 1882—(Continued).

Names of Articles.	1879-80. Rate.	1879-80. Number or Quantity.	1879-80. Total Cost.	1880-81. Rate.	1880-81. Number or Quantity.	1880-81. Total Cost.	Total. Rate.	Total. Number or Quantity.	Total. Total Cost.
							Rs. A. P.		Rs. A. P.
Madras Harbour Works—(Continued).									
Lantern, Bull's eye	....	....	....	....	....	....	2 0 0 and 4-8 each	2 No.	6 8 0
Locks, brass, for boxes, of sizes	....	....	....	....	....	....	0 12 0 to Rs. 1-4 each.	4 ,,	3 11 0
Locks, brass, for drawer and almirah	....	....	....	....	....	....	0 14 0 to ,, 3-8 ,,	9 ,,	13 7 0
Locks, iron, drawer	....	....	....	....	....	....	0 6 0 each	2 ,,	0 12 0
Locks, pad, iron, of sizes	....	....	....	....	....	....	0 9 0 to Rs. 1-8 each.	40 ,,	34 5 0
Log line	....	....	....	....	....	....	0 12 0 per lb.	33¾ lb.	25 5 0
Night-caps, woollen	....	....	....	....	....	....	0 6 0 each	36 No.	13 8 0
Oil feeders, patent	....	....	....	....	....	....	2 0 0 ,,	5 ,,	10 0 0
Do. Kerosine	....	....	....	....	....	....	0 2 0 to 3-2 per lb.	900 lb.	121 8 0
Do. Rangoon	....	....	....	....	....	....	0 2 9 per lb.	140 ,,	24 0 0
Pincers, 9"	....	....	....	....	....	....	....	1 No.	3 0 0
Pipes, gas	....	....	....	....	....	....	0 5 0 to 6 per foot	140½ feet	47 6 9
Planes, iron, double, 10"	....	....	....	....	....	....	10 8 0 per dozen	12 No.	10 8 0
Pliers, assorted	....	....	....	....	....	....	1 0 0 to Rs. 2 each	4 ,,	6 12 0
Rings, brass	....	....	....	....	....	....	0 0 6 each	2 ,,	0 1 0
Roofing, iron, galvanized	....	....	....	....	....	....	3 10 3 ,,	18 shts.	65 3 3
Rope, cotton	....	....	....	....	....	....	0 10 0 per lb.	11¾ lb.	7 5 6
Do. galvanized iron wire, 2" & 2½"	....	....	....	....	....	....	35 0 0 per cwt.	cwt. 12-2-0	437 8 0
Do. hemp, tarred, 5"	....	....	....	....	....	....	20 0 0 ,,	,, 14-0-19	283 8 0
Do. Manilla, 2"	....	....	....	....	....	....	32 0 0 ,,	,, 3-1-14	128 4 0
Rules, 2 feet, fourfold	....	....	....	....	....	....	1 0 0 to 1-12 each	13 No.	19 2 0
Sal Ammoniac	....	....	....	....	....	....	1 4 0 to Rs. 2 per lb.	9 lb.	17 13 0
Sand-paper	....	....	....	....	....	....	0 5 0 to 6 a dozen	18½ doz.	6 1 0
Scales with pans and weights, ¼ oz. to 7 lb.	....	....	....	....	....	....	....	1 set	12 0 0
Scissors, assorted	....	....	....	....	....	....	0 2 0 to Re. 1 each	5 No.	1 8 0
Shirting, bleached	....	....	....	....	....	....	....	1 yard	0 5 0
Soap, Europe	....	....	....	....	....	....	0 8 0 each	82 bars	41 0 0
Do. Windsor, brown	....	....	....	....	....	....	....	1 bar	2 0 0
Soda, washing	....	....	....	....	....	....	0 3 0 to 3.6 per lb.	252 lb.	50 12 0
Spun-yarn, flax	....	....	....	....	....	....	0 8 0 to Re. 1-2 per lb.	231 ,,	188 8 0
Do. tarred	....	....	....	....	....	....	35 0 0 to Rs. 38-8 per cwt.	cwt. 2-0-20	80 2 0
Sulphur	....	....	....	....	....	....	0 8 0 per lb.	35 lb.	17 8 0
Tape, measuring 100	....	....	....	....	....	....	....	1 No.	2 8 0
Do. red	....	....	....	....	....	....	0 1 0 per yard	3 yards	0 3 0
Thimbles, iron	....	....	....	....	....	....	0 3 10 each	12 No.	2 14 0
Thread, sewing (colors assorted)	....	....	....	....	....	....	0 0 6 to 9 pies each	49 cards	1 11 0
Tin sheets, double, 17" × 12"	....	....	....	....	....	....	0 10 0 each	3 No.	1 14 0
Towels, honey-comb	....	....	....	....	....	....	3 0 0 per dozen	2 doz.	6 0 0
Trowel, bricklayers'	....	....	....	....	....	....	....	1 No.	0 8 0

List of Articles referred to in Resolution, No. 806, dated 10th February 1882—(Continued).

Names of Articles.	1879-80. Rate.	1879-80. Number or Quantity.	1879-80. Total Cost.	1880-81. Rate.	1880-81. Number or Quantity.	1880-81. Total Cost.	Total. Rate.	Total. Number or Quantity.	Total. Total Cost.
Madras Harbour Works—(Continued).			Rs. A. P.	Rs. A. P.		Rs. A. P.	Rs. A. P.		Rs. A. P.
Tweezers	....	....	..	....	....	....	1 4 0 each	2 No.	2 8 0
Twine, sewing, hemp	....	....	..	....	....	....	1 2 0 per lb.	148¾ lb.	167 5 6
Twist, cotton	....	....	..	....	....	....	0 10 0 to 12 per lb.	76½ ,,	49 1 0
Varnish, black	....	....	....	....	....	....	3 4 0 to 4 per gal.	20 gals.	73 12 0
Do. bright	....	....	....	....	....	....	3 8 0 to 4 ,,	38½ ,,	135 0 0
Do. copal	....	....	....	....	....	....	10 0 0 to 10½ ,,	8 ,,	83 8 0
Wick for kerosine lamps	....	....	....	....	....	....	0 1 8 to 5-4 per yard.	288 yards	43 14 0
Public Works Department, Port Blair.									
Acid, muriatic	....	....	....	0 6 0 per lb.	2 lb.	0 12 0			
Do. sulphuric	....	....	....	0 3 0 ,,	2 ,,	0 6 0			
Axes, carpenter's	....	....	....	2 12 0 each	2 ,,	5 8 0			
Do. felling	....	....	....	2 12 0 ,,	300 No.	825 0 0			
Belting, leather	....	....	....	5 3 2 per foot	10 feet	52 0 0			
Blocks, wooden, large	....	....	....	18 0 0 each	3 ,,	54 0 0			
Brick-kiln	....	....	....	485 9 4 ,,	1 No.	485 9 4			
Buckets, iron, galvanized	....	....	....	1 3 4 ,,	6 ,,	7 4 0			
Canvas	24 0 0 per bolt	2 bolts	48 0 0	0 12 0 per yard	53 yards	39 12 0			
Case, packing	....	....	....	5 0 0 each	1 No.	5 0 0			
Cement, Portland	....	....	....	0 0 6 per lb.	450 lb.	14 1 0			
Chalk	1 8 0 per cwt.	6 cwt.	9 0 0	0 0 6 ,,	150 ,,	4 11 0	....	Cwt. qr. lb. 7 1 10	13 11 0
Do. French, packing	....	....	....	1 12 0 ,,	7¾ ,,	12 11 0			
Cloth, American	....	....	....	0 4 8 per yard	40 yards	11 11 6			
Do. black	....	....	....	0 5 3 ,,	22½ ,,	7 6 8			
Do. muslin	....	....	....	0 6 0 ,,	2 ,,	0 12 0			
Compass	....	....	....	1 12 0 each	1 No.	1 12 0			
French polish	8 8 0 per gal.	4 gals.	34 0 0	0 14 0 per lb.	2 lb.	1 12 0			
Hammers, stone	....	....	....	1 2 0 each	124 No.	139 8 0			
Do. sledge	....	....	....	3 6 7 ,,	54 ,,	184 4 0			
Hands, punkah, brass	....	....	....	0 8 0 ,,	4 ,,	2 0 0			
Hinges, brass	....	....	....	0 5 0 ,,	1 ,,	0 5 0			
Do. butt T., 3" and 4"	2 8 0 and 3-8 a doz.	250 pairs	60 6 8						
Do. iron, of sizes	....	....	....	0 1 9 each	398 ,,	42 1 0			
Do. do. T, 10"	6 0 0 a doz.	60 pairs	30 0 0						
Locks, pad, iron	....	....	....	0 7 0 each	10 ,,	4 6 0			
Log-line, English	0 7 0 per lb.	56 lb.	24 8 0						
Long-cloth	....	....	....	0 3 9 per yard	33¾ yards	7 15 6			
Nuts, iron, of sizes	26 0 0 to 29 per cwt.	Cwt. 7-2-3	211 0 0	0 2 0 each	600 No.	80 2 0			

List of Articles referred to in Resolution, No. 803, dated 10th February 1882—(Continued).

Names of Articles.	1879-80. Rate.	1879-80. Number or Quantity.	1879-80. Total Cost.	1880-81. Rate.	1880-81. Number or Quantity.	1880-81. Total Cost.	Total. Rate.	Total. Number or Quantity.	Total. Total Cost.
Public Works Department, Port Blair—(Continued).	Rs. A. P.		Rs. A. P.	Rs. A. P.		Rs. A. P.			
Oakum	....	....	....	3 6 0 per lb.	4 lb.	0 14 0			
Oil, kerosine	....	....	....	3 0 0 per tin	1 tin	3 0 0			
Do. linseed, boiled	....	....	....	0 4 1 per lb.	185 lb.	47 6 7			
Do. do. raw	....	....	....	0 4 3 ,,	267 ,,	70 14 9			
Pincers	....	....	....	0 1 10 each	1 No.	1 10 0			
Planes, plough, with bits	....	....	....	13 0 0 ,,	1 ,,	13 0 0			
Powder, disinfecting	....	....	....	0 3 0 per lb.	10 lb.	1 14 0			
Rope, Europe	....	....	....	0 4 5 ,,	346 ,,	94 8 0			
Do. Manilla	....	....	....	0 5 6 per foot	600 ft.	2 0 6			
Rules, foot	....	....	....	1 2 0 each	12 No.	21 6 0			
Sand-paper	....	....	....	0 0 8 per sheet	12 sheets	0 8 0			
Scales, copper, small	....	....	....	11 0 0 each	1 No.	11 0 0			
Spade, English	....	....	....	1 8 0 ,,	1 ,,	1 8 0			
Spirits of wine	....	....	....	1 8 0 per lb.	1 lb.	1 8 0			
Tape, white	....	....	....	0 1 5 per yard	34 yards	3 0 0			
Taps and dies	....	....	....	100 0 0 per set	1 set	100 0 0			
Thread, reels	....	....	....	0 0 9 each	4 No.	0 3 0			
Trowels	....	....	....	0 11 0 ,,	24 ,,	16 8 0			
Turpentine	....	....	....	0 3 9 per lb.	146 lb.	34 3 6			
Twine, Europe	....	....	....	0 8 6 ,,	32 ,,	17 0 0			
Varnish	....	....	....	0 14 0 ,,	1½ ,,	1 5 0			
Vice, bench	....	....	....	1 10 8 each	1 No.	1 10 8			
Washers, iron	....	....	....	4 10 2 per cent.	600 ,,	27 13 0			
Weights, iron	....	....	....	0 12 8 each	12 ,,	9 8 0			
Wheel, punkah, brass	....	....	....	3 0 0 ,,	1 ,,	3 0 0			
Wrenches	....	....	....	6 8 0 ,,	2 ,,	13 0 0			
For the Telegraph Department.									
Acid, carbolic	....	....	....	15·375 a gal.	2 gals.	30·75			
Adzes	1·23 each	7 No.	8·62						
Axes, pick		....	....	1·125 each	50 No.	56·25			
Belts, holster, for revolver	·6 ,,	7 No.	4·2	..	..	..			
Bill-hooks	3·25 ,,	8 ,,	26	..	..	..			
Bolts, brass, flush	·273 ,,	32 ,,	8·75	..	..	..			
Call-bell	....	....	....	6·75 each	2 No.	13·5			
Candle-stands	....	....	....	2·25 ,,	3 ,,	6·75			
Canvas, Europe	·54 a yard	566 yards	195	·62 a yard	35 yards	21·75	....	395 yards	216·75
Cement, Portland	9·65 per barrel	16 barrels	164·38	9·16 per barrel	16 barrels	146·5	....	32 barrels.	300·88
Cloth bunting	·43 a yard	40 yards	17·5	·26 a yard	437½ yards	116·45	....	477½ yards	133·95

List of Articles referred to in Resolution, No. 806, dated 10th February 1882—(Continued).

NAMES OF ARTICLES.	1879-80. Rate.	1879-80. Number or Quantity.	1879-80. Total Cost.	1880-81. Rate.	1880-81. Number or Quantity.	1880-81. Total Cost.	TOTAL. Rate.	TOTAL. Number or Quantity.	TOTAL. Total Cost.
For the Telegraph Department—(Contd.)	RS.		RS.	RS.		RS.			RS.
Cloth, broad	1·61 a yard	57½ yards	92·56	1·7 a yard	38⅝ yards	65·84	....	96½ yards	158·4
Do. black	·14 „	252 „	35·44						
Do. blue	·2 „	24 „	4·88						
Do. green	·14 „	252 „	35·44						
Do. grey shirting	·216 „	36 „	7·78	·175 a yard	146½ yards	23·09	....	182½ yards	30·87
Do. red	·16 „	172 „	26·87						
Coach screws, for brackets	·25 a lb.	55 lb.	13·75						
Cocks, brass	12·5 each	2 No.	25	15 each	1 No.	15	....	3 No.	40
Felt	·758 „	49 „	37·16	·87 „	50 „	43·75	....	99 „	80·9
Filters	20 „	2 „	40	13 „	2 „	26	....	4 „	66
Firebricks	10·33 per cent.	1,958 „	109·3	10·21 per cent.	1,400 „	143	....	2,458 „	252·3
Grindstones	....	....	....	58 each	3 „	174			
Hammers, claw	1·375 each	10 No.	13·75						
Do. hand, heavy	1·59 „	77 „	122·38	1·63 each	111 No.	181·13	....	188 No.	303·51
Do. sledge	2·75 „	4 „	11						
Do. wrench	3·765 „	48 „	180·75	3·72 each	136 „	506·62	....	184 No.	687·37
Handles, brass, for boxes	·508 „	217 „	110·12	·5 „	26 „	13	....	243 „	123·12
Hemp, twine	·406 per lb.	Tons 4-3-3-21	3,819·56	·406 per lb.	Tons 2-15-1-14	2,519·55	....	Tons 6-19-1-7.	6,339·11
Hinges, brass, 2″	·078 each	192 No.	15	·098 each	44 No.	4·31	....	236 No.	19·31
Do. do. 2½″	·109 „	124 „	13·56	·107 „	472 „	50·78	....	596 „	64·34
Do. iron, 1½″	....	....	....	·2 „	48 „	9·5			
Do. do. 2½″	....	....	....	·19 „	52 „	9·87			
Iron bolts, ⅛″	6·74 per cwt.	Cwt. 1-3-9	12·34	7 per cwt.	Cwt. 6-2-0	45·5	....	Cwt. 8-1-9	57·84
Do. do. ⅝″	....	....	....	6 „ „	Tons 2	240			
Do. do. with nuts, galvanized	4 per gross	1 gross	4						
Jars, stoneware	2·92 each	6 No.	17·5	1·75 each	1 No.	1·75	....	7 No.	19·25
Jugs, porcelain	2·37 „	4 „	9·5						
Lamps, candles	....	....	....	3·59 each	8 „	28·75			
Do. kerosine, hanging	11·83 each	3 No.	35·5						
Do. do. hurricane	30 „	1 „	30						
Do. do. complete	....	....	....	18·24 each	66 No.	1,203·84			
Do. wall, kerosine, complete	10·623 each	33 No.	350·56	7·96 „	12 „	103·5	....	46 No.	454·06
Lanterns, hand	3·125 „	8 „	25	3·34 „	14 „	46·75	....	22 „	71·75
Do. with reading shades	7·25 „	1 „	7·25						
Do. hurricane	....	....	....	3·276 each	19 „	62·25			
Locks, brass, for almirahs	·75 each	3 No.	2·25	·75 „	6 „	4·5	....	9 No.	6·75
Do. do. do. boxes, 1⅝″	·92 „	344 „	315·74	·833 „	222 „	185	....	566 „	500·74
Do. do. do. do. 2½″	·75 „	135 „	101·25						
Do. do. for boxes, 3″	1 „	36 „	36						
Do. do. for do. 3½″	2·22 „	11 „	24·41						
Do. do. for desks, 3″	·89 „	6 „	5·37						

List of Articles referred to in Resolution, No. 806, dated 10th February 1882—(Continued).

NAMES OF ARTICLES.	1879-80. Rate.	1879-80. Number or Quantity.	1879-80. Total Cost.	1880-81. Rate.	1880-81. Number or Quantity.	1880-81. Total Cost.	TOTAL. Rate.	TOTAL. Number or Quantity.	TOTAL. Total Cost.
For the Telegraph Department—(Contd.)	RS.		RS.	RS.		RS.			RS.
Locks, brass, for drawers	1 each	4 No.	4	·97 each	11 No.	10·69		15 No.	14·69
Do. iron, for boxes	·29 „	50 „	14·58	·29 „	26 „	7·56	....	76 „	22·14
Do. pad, iron	·57 „	108 „	61·25						
Do. pad, brass, ordinary	....	....	....	1·75 „	5 „	8·75			
Oil, kerosine	·6 per gal.	590 gals.	355·06	·55 per gal.	695 gals.	381	....	1,285 gals.	736·06
Oxide of iron	·09 per lb.	155 lb.	14·69						
Pans for commodes	1·5 each	2 No.	3	1·54 each	9 No.	13·87	....	11 No.	16·87
Pincers	1·15 „	20 „	23						
Pipes, brass	1·19 per lb	4⅜ „	5·19						
Do. gas, ⅜″	·25 per foot	87 feet	21·75	·28 per foot	47 feet	13·12	....	134 feet	34·87
Do. do. 1½″	·41 „	13½ „	5·59						
Do. do. ½″	....	....	....	·34 per foot	234½ feet	78·67			
Do. do. ¾″	....	....	....	1·25 „	51½ „	64·37			
Do. do. 1″	....	....	....	·14 „	23⅝ „	3·3			
Do. do. 1½″	....	....	....	·47 „	429⅝ „	203·2			
Planes, iron	4·36 per dozen	5½ dozens	24	5·75 per dozen	2 dozens	11·5	....	7½ dozens	35·6
Do. jack	3·13 each	26 No.	81·5						
Planks, deal	87 per 1,000 sq. ft.	83,485 feet.	7,263·48	84·63 per 1,000 sq. ft.	104,351 feet.	8,831·85	....	187,836 feet.	16,095·31
Pliers, cutting	2·39 each	302 No.	722·32	2·72 each	231 No.	629·05	....	533 No.	1,351·38
Powder, disinfecting	·12 per lb.	Cwt. 1-2-14	21·84	12·41 per cwt.	Cwt. 6-2-16	82·44	....	Cwt. 8-1-2	104·28
Quinine pills	·75 per dozen	12 dozens	9						
Do. powder	....	....	....	7·846 per oz.	6½ oz.	51			
Rope, hemp, tarred, 2″	24 per cwt.	Cwt. 1-0-7	25·5	24·98 per cwt.	Qr. 1-26	12·05	....	Cwt. 1-2-5	37·55
Do. do. do. 3″	....	....	....	25·27 „ „	Cwt. 1-0-2	26·84			
Do. Manilla, ¾″	·38 per lb.	Qr. 1-9	14·36						
Do. do. ⅞″	43·5 per cwt	5 lb.	1·94						
Do. do. 1½″	38·47 „	26 „	8·93						
Do. do. 1¾″	30·88 „	Cwt. 9-0-7	279·89	31·22 per cwt.	Cwt. 7-0-18	223·55	....	Cwt. 16-0-25	503·44
Do. do. 2″	32·23 „	„ 16-1-16	335·02	31·46 „	„ 10-3-15	342·43	....	„ 21-1-3	677·45
Do. do. 2½″	31·77 „	„ 16-0-9	510·93	31·24 „	Tons 1-2-3-21	716·75	....	Tons 1-19-0-2	1,227·68
Do. do. 3″	29·25 „	„ 3-2-14	106·04	30·33 „	Cwt. 8-3-17	269·95	....	Cwt. 12-2-3	375·99
Do. do. 3½″	31·5 „	„ 2-0-14	66·94	30·49 „	„ 2-1	68·62	....	„ 4-1-14	135·56
Do. do. 4″	30 „	„ 1-1-10	40·17	30·49 „	„ 1-0-26	37·58	....	„ 2-2-8	77·75
Rules, 2 feet, common	·66 each	4 No.	2·5	·75 each	12 No.	9	....	16 No.	11·5
Sand-paper	....	....	....	·375 per dozen	35 dozens	13·12			
Scales, with weights	20 each	1 No.	20	32·5 each	1 No.	32·5	....	2 No.	52·5
Do. do.	....	....	....	17 „	1 „	17			
Do. do.	....	....	....	52 „	1 „	52			
Scissors, bent	....	....	....	3·5 „	2 „	7			
Screws, coach, 2½″	·07 each	20 No.	1·45						
Do. do. 4″	1·05 per dozen	13¼ dozens	13·96						

List of Articles referred to in Resolution, No. 806, dated 10th February 1883—(Continued).

Names of Articles.	1879-80.			1880-81.			Total.	
	Rate.	Number or Quantity.	Total Cost.	Rate.	Number or Quantity.	Total Cost.	Number or Quantity.	Total Cost.
			Rs.	Rs.		Rs.		Rs.
For the Telegraph Department—(Contd.)								
Screws, coach, 5" ..	....	....	....	1·75 per dozen ..	2 dozens ..	3·5	....	....
Do. do. 6" ..	....	....	....	·166 each ..	50 No. ..	8·3	....	....
Screw-drivers ..	....	....	....	·71 ,, ..	12 ,, ..	8·5	....	....
Do. ..	....	....	....	·42 ,, ..	35 ,, ..	15	....	....
Do. ..	....	....	....	....	....	....	....	....
Sieves, brass ..	....	....	....	4·37 each ..	3 No. ..	14·6	....	....
Shades for candlesticks ..	....	....	....	1·21 ,, ..	3 ,, ..	3·6	....	....
Soap, bar ..	....	....	....	·37 ,, ..	15 pieces ..	5·6	....	....
Stones, grinding ..	....	....	....	38·4 ,, ..	1 No. ..	38·4	....	....
Sulphur ..	....	....	....	10·13 per cwt. ..	Cwt. 7-3 ..	78·5	....	....
Tank, iron, 400 gallons ..	....	....	....	....	....	....	....	....
Tap, brass, for tank ..	....	....	....	....	....	....	....	....
Thread, bunting ..	....	....	....	·28 per skein ..	12 skeins ..	3·36	....	....
Do. sewing ..	....	....	....	·03 per reel ..	276 reels ..	7·88	....	....
Do. packing ..	....	....	....	....	....	....	....	....
Timber, mahogany ..	....	....	....	·47 per square foot ..	834 sq. ft. ..	390·94	....	....
Tin, sheet, double ..	....	....	....	·256 per sheet ..	1,290 sheets. ..	307·75	....	....
Turpentine ..	....	....	....	·31 per lb. ..	Cwt. 1-3-25 ..	67·62	....	....
Twine, English ..	....	....	....	....	....	....	....	....
Varnish ..	....	....	....	6·25 per gallon ..	½ gals. ..	12·5	....	....
Wires, hard ..	....	....	....	1·88 each ..	3 No. ..	5·63	....	....
Do. with jaws, 4" standing ..	....	....	....	14·9 ,, ..	5 ,, ..	74·5	....	....
Vinegar ..	....	....	....	·46 per bottle ..	6 bottles ..	2·75	....	....
Weights, brass, for letter scales ..	....	....	....	....	....	....	....	....
Wicks for kerosine lamps ..	....	....	....	7·31 per gross ..	10¾ gross ..	78·05	....	....
Do. for Osler's lamps ..	....	....	....	1 ,, ..	2 ,, ..	2	....	....
Do. thread for lanterns ..	....	....	....	·41 per lb. ..	11 lb. ..	4·47	....	....
Do. for lamps, Hrak's Duplex ..	....	....	....	....	....	....	....	....
Stationery Stores.								
Gum-pots, with gum ..	....	....	....	·221 each ..	48 No. ..	10·63	96 No. ..	20·13
Holders of steel-pens ..	....	....	....	3·125 per cent. ..	494 ,, ..	15·44	1,069 ,, ..	31·16
Ink, black, fluid ..	....	....	....	·69 per bottle ..	48 bottles ..	33	96 bottles.	66
Do. blue, do. ..	....	....	....	1·43 ,, ..	38 ,, ..	54·44	100 ,, ..	138·69
Inkstands, pewter ..	....	....	....	....	....	....	....	....
Paper, blotting ..	....	....	....	25 per ream ..	Ream 1-6 ..	30	Reams 2-4 ..	52·75
Ruler, ebony ..	....	....	....	2 each ..	1 No. ..	2	....	....
Tape, cotton, red ..	....	....	....	....	....	....	....	....
....	....	....	....	·1 per bundle ..	400 bundles.	41·68	....	....

T. C. HOPE, *Secy. to the Govt. of India.*

ORDER—dated 17th February 1882, No. 238, Financial.

Communicated to the Public Works Department.

(True Extract.)

R. DAVIDSON,
Chief Secretary.

To the Public Works Department.

Exd. T. O'Connor.

Govt. of [1882] Madras.

FINANCIAL.

No. 1272 W dt 23d May/82

3082 R.

Communicated
to the General Supt
P. Wo W & Stores & the Supt
Mr. R. Works.
(True Extract)
Signed Ross Thompson
Lt Col RE
Agnde. Secy to Govt
P. Wo D.

Order, dated 17th February 1882, No. 238.

Stores—Communicating Resolution of Government of India directing that certain articles shall, in future, be procured of Indian manufacture.

To
The Govt. Supt. P. W. W. Stores
The Supt. Mr. R. Works.
Dated
28/5/82

with order.

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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Account.

No. 192.

READ—the following letter from Colonel H. L. PRENDERGAST, R.E., Superintending Engineer, V Circle, to the Chief Engineer, Public Works Department, dated Madras, 13th September 1882, No. 2161 :—

I have the honor to inform you that I have discussed with the General Superintendent of the Public Works Workshop your memorandum, No. 628, of the 24th ultimo, and Lieutenant Baddeley has given me the enclosed papers on the subject of closing the workshops.

Letter, No. 1447, dated 7th September 1882.
" " 1090, " 8th " "
Lists A, B, C, and D.
One Block Plan.

2. The first step has been taken, in the refusal to accept work except for the Public Works Department and with the exception of work in the instrument department. I have also recommended, in my letter, No. 2118, of the 9th instant, that no work should be done after the 30th November for other departments.

3. The next point (paragraph 9 of Lieutenant Baddeley's letter) is that Public Works officers should refrain from giving orders to the workshop. But I would say nothing about the cost of work, when the workshops are closed the market prices must be accepted, and I would call upon departmental officers to abstain from applying to the workshop generally, or unless they cannot get their requirements elsewhere. There may be some trouble, some delay and extra cost, but these drawbacks are inevitable.

4. There is work now in hand in the workshop, but as it will gradually fall off there can be a reduction made in the number of workmen, while at the same time the machinery can be kept in order. Lieutenant Baddeley considers that it is of much importance that the shops should not be altogether closed; so that on inspection it may be evident that the machinery is in working order.

5. The maintenance of a small workshop will (paragraph 10) be expensive in comparison with the small amount of work to be done. The details will require careful consideration, for it appears to me that when work is generally transferred elsewhere the rest may likewise follow. Still a small workshop will not cause any heavy expense : while at the same time it cannot be expected to be self-supporting. In paragraph 17, Lieutenant Baddeley represents the need of an instrument-maker and a shop for him to carry out repairs. I consider this is highly desirable : but yet in working out the principle of abolition, if the Revenue Survey Department can get

their instruments repaired elsewhere, the Public Works Department can do so also. There may, however, be a small instrument department maintained with a small working shop without much expense.

6. As to reduction of establishment: this should be carried out on the general principle of reduction, such as took place in the Public Works Department recently, transfers being made where practicable. Care should be taken that in all cases three months' notice to quit should be given in good time. In fact, as a precaution, this had better be given to all employed in the workshops.

7. The list of buildings, A, gives the total cost of construction, Rs. 2,07,910. No allowance is made in these figures for depreciation. The value as a selling price will have to be considered before tenders for purchase or rent may be received.

List B is a valuation statement of machinery and plan, amounting to Rs. 81,464. This is the last valuation made nearly five years ago, and must therefore be considered as higher than the present price. It has also been stated lately by the General Superintendent that much of the machinery is old, so that it compares unfavorably in both make and cost with modern machinery. I allude to the reference made by the Superintending Engineer of the II Circle as to defective parts and high cost of articles sent to the Kistna. Hence it must be expected that there will be offers of much less than book value.

List C gives a description of the nature of work done in the workshops: the value is entered in paper D.

The paper D is a draft notice, inviting tenders for purchase or hire of the shops.

8. A serious difficulty arises in the question of the future location of the stores and such minor working shop as may be retained. The machine shop and office rooms are in the main building, the instruments and valuable small stores are in the upper-storey; while the heavy stores are in the separate building, called the store-shed on the block plan, and the State Railway stores are in the store-yard. The machine shop must go with the work-sheds, and it is not possible to divide the main building so that a part might be kept for the Government Stores Department. Hence, if an offer for the whole premises be accepted, the Government property will have to be removed and another place must be found. There are no Government buildings available, and therefore they must be built.

But in the event of no suitable offer being made, the present work-yard and buildings will remain on the hands of the Government, and as this cannot be considered an impossible contingency it will not do to incur the expense of constructing new buildings beforehand. I can only suggest that plans and estimates be made at once for future requirements, and that it be notified in the call for tenders that the premises can be taken over at a future date, say, after the 30th June or from such date as will allow of four months' interval for the construction of the buildings.

9. The Public Works Stores must, it is presumed, be kept up (paragraph 13 to 15) and will require a store-shed, there must be an enclosed yard for heavy stores and the State Railway stores, there must be an instrument shop and workshop. The Government machinery stores can be left where they now are in a part of the old Mint premises. It is desirable that Sub-Engineer Francis should be available to look after the machinery at the General Hospital and the Guindy Water Works, and he might do so as a sub-divisional officer under the Presidency Executive Engineer, having also charge of the repair shop.

10. For the present I would ask for orders on the following points:—

I. Will orders be given to Public Works officers to abstain from making demands on the workshop? Paragraph 3 above.

II. Shall there be a small workshop maintained?
III. And an instrument-maker's shop? } Paragraph 5 above.

IV. Shall the General Superintendent make a list of establishment to be kept for II and III and for the stores? Paragraph 6 above.

V. Is it contemplated that there should be a new set of buildings, and estimates prepared, as suggested in paragraph 8 above?

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Enclosure.

From Lieutenant W. L. C. BADDELEY, R.E., General Superintendent, Public Works Stores and Workshops, to the Superintending Engineer, V Circle, dated Madras, 7th September 1882, No. 1447 W.

With reference to your No. 1952 of 28th August 1882, I have the honor to submit my proposals for carrying into effect the orders of Government in No. 2064 W. of 12th August 1882.

Map.
List of Buildings.
" of Works.
" of Machinery, &c.
" Draft Circular.
Chief Engineer's letter, No. 628 E., of 24th August 1882.

2. The General Superintendent of the Public Works Stores and Workshops is in charge of the following:—

1. Public Works Stores and Mathematical Instrument Department.
2. Public Works Workshops.
3. State Railway Stores.
4. Government Machinery Stores.
5. Machinery at the General Hospital for working the punkahs, and Water Works at Guindy.

3. The Public Works Stores and the Public Works Workshops occupy the same buildings, all office work connected with State Railway stores is conducted in the Public Works Stores office, and all State Railway stores in the custody of the General Superintendent are stacked in the Public Works store-yard.

4. The mathematical instrument department is usually considered as part of the workshops, but it is now necessary to recognize the difference, for the repair of instruments is totally distinct from repairs to machinery, and it does not follow that because Government wish to close the workshops they should also wish to abolish the mathematical instrument department.

5. The Government machinery stores are situated in a portion of the old Mint which is adjacent to the Public Works Stores and Workshops.

6. The machinery at the General Hospital and the Guindy Water Works is worked by employés of the workshops, and all office work is carried on in the office of the Public Works Workshops.

7. As matters now stand, the iron and heavy goods belonging to the Public Works Stores are kept in the shed marked on plan as "store-shed," while the instruments and other valuable articles are kept in a portion of the upper-storey of the "main building," and the repair of instruments is carried on in a portion of the lower-storey of the same building.

It is impossible to reserve any portion of the present building for the Public Works Stores and mathematical instrument department, for the only building suitable for the purpose is the main building, and this must be given up to the firm which takes over the workshop, for it contains the machine shop and all the office-rooms.

It is difficult in a short letter to anticipate all the suggestions that, from an inspection of the plan, might appear feasible for setting aside a portion of the building for the Public Works Stores and mathematical instrument department; but after careful consideration I am confident that such an arrangement would be impracticable.

8. When the buildings now occupied by the Public Works Stores and Workshops have been sold or leased, it will be necessary for Government to arrange for the custody of the stores, and the performance of the duties connected with—

1. Public Works Stores and Mathematical Instrument Department;
2. State Railway Stores;
3. Government Machinery Stores;
4. Machinery at the General Hospital and Guindy Water Works,

and therefore, when I have submitted my proposals for the abolition of the Public Works Workshops, I shall offer certain suggestions which, I trust, will be found of some value in arranging for carrying on the work detailed above.

9. At present the Public Works Workshop executes a considerable amount of work for *all* departments of Government, and obviously therefore the first step towards reduction is the refusal of all work except for the Public Works Department, and this step has already been taken except in the mathematical instrument department.

Secondly, I would propose sending a circular to every Superintending Engineer for distribution, pointing out the necessity of encouraging private enterprise, and requesting that no work of any kind be sent to the workshop if it can be carried out at a reasonable rate by a private firm.

The result of this will be that a considerable reduction can be made in the number of workmen employed, and yet, as work will not be entirely stopped, the machinery and plant can be kept in working order, so that as soon as a firm comes forward to purchase or rent the concern it can be handed over ready for immediate use.

This is, in my opinion, a most important point, for if the shops were totally closed and the machinery left idle for six months, the depreciation in this climate would be so great that a large portion would become unserviceable, and it requires no argument to prove that an intending purchaser of a large concern like the Public Works Workshops would be more inclined to make a liberal offer for an establishment in working order than for one which had been idle for some time.

10. As regards the maintenance of a small Government shop, except for repairs to mathematical instruments and work of that nature, I am of opinion that it will not be needed, for when once a private firm is established in the workshop buildings, it can easily execute every bit of work, down to the smallest repair; also it must be remembered that a shop which is only to be used by the Department of Public Works for repairs and trifling manufacture must be a most expensive one, for the cost of supervision and the outlay on machinery will be distributed over a very small quantity of work; for example the most trifling repairs will require castings of iron and brass, screws to be cut, surfaces to be planed, and various other processes which are continually in progress in a large shop, all of which will require steam-power, machinery, skilled-labor and supervision.

11. While the operations of the workshops are being steadily reduced in the manner described, the accompanying circular might be distributed in whatever manner Government think best.

12. Assuming that the publication of the views of Government leads to the transfer of the workshop to a private firm, it remains to be considered what is to become of the establishment, and my views on this are—

(1.) Mr. Francis, the Sub-Engineer, should be attached to the Presidency District where his services will be of the greatest value in looking after the machinery at the General Hospital and Guindy Water Works, he will also be available for any work in other districts which may require an experienced Mechanical Engineer.

(2.) Mr. Willis, the Overseer, who is a carpenter by trade, should be posted, if possible, to one of the workshops in the north of the Presidency, if not his services should be utilized whenever a foreman carpenter is required.

(3.) The Maistries are divided into two classes, one consisting of men who have served Government for a large number of years, and the other of men who have only been promoted within the last few years; the former class will probably retire from work when the workshop is transferred, and the latter will find ready employment under the new state of things.

(4.) The workmen, as a rule, will be employed by the firm which takes over the workshop, but there are some who, from length of service or by reason of injuries received while in Government employ, may be entitled to special consideration.

(5.) The clerks, who are not entitled to pensions, will, I hope, be absorbed into other Government offices, as vacancies occur.

13. I have now, I trust, shown how the workshops can be gradually reduced, and eventually handed over to private enterprise with the least inconvenience to the Public Works Department, the least loss to Government, and the least distress to the large number of men who now earn their living in the workshops, and I will therefore proceed to discuss the Public Works Stores.

It is unadvisable to do away with the Public Works Stores, for there must be a central depôt for preparing indents, receiving supplies, storing them, issuing as required, and performing the various duties connected therewith; also in combination with the stores it is absolutely essential that there should be a mathematical instrument department, where every instrument, &c., can be examined before issue, and repaired when necessary.

It will be impossible to reserve any portion of the present building for the Public Works Stores and the mathematical instrument department, and it will therefore be necessary to locate them elsewhere, bearing in mind the following conditions:—

(1.) The store-sheds must be of fairly strong construction, viz., brick in mortar with corrugated iron roof.

(2.) There should be a suitable room for the instrument shop.

(3.) There should be an enclosed yard for storing heavy machines and goods.

(4.) The stores should be as near as possible to the pier.

14. The question as to whether the Public Works Stores are to continue to carry on the work of landing and despatching all State Railway stores which are sent through Madras, will require consideration; in my opinion there is no more economical arrangement than to place the Public Works stores, State Railway stores, and mathematical instrument department under one officer.

15. The Government machinery stores should, I think, be handed over to the Ordnance Department, but if Government are of opinion that the Public Works Department should continue to have charge of all spare machinery belonging to the different departments of Government, this appointment should be combined with that of the Public Works Stores, &c.

16. The machinery at the General Hospital and the Guindy Water Works should be placed in charge of the Executive Engineer, Presidency.

17. I must now revert to the question of keeping up a Government mathematical instrument department in connection with the Public Works Stores, either exclusively for the use of the Public Works Department or for the benefit of all Government departments. At present every instrument issued by the Public Works Stores is first passed through the mathematical instrument department, where it is examined and repaired if necessary; in like manner every instrument returned to store is examined in the mathematical instrument department and classed as "serviceable," "repairable" or "unserviceable." If the mathematical instrument department is abolished it will still be necessary for a mathematical instrument-maker to be attached to the Public Works Stores, but his services will never be fully utilized unless he has a shop in which he can carry out repairs. The mathematical instrument department now repairs all instruments, and executes a great variety of work for all departments of Government, and it is impossible, in my opinion, to propose any better or more economical arrangement than (in connection with the Public Works Stores) to maintain an instrument department for the repair of all Government levels, theodolites, &c., and for the manufacture of scales, seals, badges, weights, measures, &c., and the various other articles which are continually required by all departments of Government.

No. 193.

Order—dated 25th September 1882, No. 2488 W., Public Works.

With the letter above recorded the Superintending Engineer, V Circle, submits proposals for giving effect to the decision of Government, recorded in G.O., No. 2064 W., dated 12th August 1882, for restricting the operations of the Public Works Workshops at Madras to the execution of such repairs and trifling manufacture as may be required by the Public Works Department and cannot be executed in the open market, and for disposing of the buildings and plant which would thus become available.

2. It is explained that the first step for the accomplishment of the object in view has already been taken in the refusal to accept work except that required by the Public Works Department and in the instrument shops.

3. These arrangements are approved. Officers of the Public Works Department will now be directed to abstain as far as practicable from giving orders for work at the shops, and no new work for other departments should be accepted after the end of the present year.

4. A small workshop will thus still be required for departmental purposes, and the nucleus of this may, for the present, be organized within the present shops. Tenders will meanwhile be invited for the purchase of the existing buildings and available plant, and as soon as they have been received and decided on, the reduced Government establishment may, if necessary, be removed elsewhere.

5. It may be practicable to have the mathematical instrument work of the department executed in Calcutta, should local firms be unable to take it up. The Surveyor-General will be communicated with on the subject.

6. As regards the disposal of the existing establishment, many of the workmen will no doubt find employment with the firms which will take over the work which the Government are now surrendering, and the others will be absorbed gradually. In any case no immediate action seems necessary, and the details of the process may well be left to be worked out by the Superintending Engineer as circumstances admit.

7. It is premature to issue any definite orders as to erection of new buildings at present. There will be ample time for decision on this question after tenders for taking over existing block and plant have been considered. Tenders may be received up to the 1st February next, and the interval should be utilized in printing and circulating lists, which should be accompanied by a lithograph block plan of the buildings, on a somewhat smaller scale than that sent up, and a small index map of Madras on the same sheet. The index map should show the situation of the shops with reference to a few of the most important places, *e.g.*, the harbour, railway stations, fort, &c.

8. The notices should be published in the *Fort St. George Gazette*, the *Bombay Gazette*, and the *Gazette of India*.

9. The General Superintendent of the Workshops will take the requisite action for giving effect to these orders, submitting drafts of notifications for insertion in the Gazettes outside the Presidency.

(Here enter No. 2489 W., dated 25th September 1882.)

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the General Superintendent, Public Works Workshops, with enclosures.
To Superintending Engineers.
To the Consulting Architect to Government.
" Chief Engineer for Irrigation.
" Consulting Engineer for Railways.
" Examiner, Public Works Accounts.
" Revenue Department.
" Military "
" Public, &c., Departments.

Exd. E. Fernandez.

GENERAL.
ACCOUNT.

Govt. of 1882 Madras.

PUBLIC WORKS.

Dated September, 25th.

Recd. *Encl.*

G.O., 25th Sept. 1882, No. 2488 W.

SEPTEMBER.

Public Works Workshops at Madras

Orders on proposals of the Superintending Engineer, V Circle, for restricting the operations of the Public Works Workshops at Madras to the execution of such repairs and trifling manufacture as may be required by the Public Works Department and which cannot be done in the market.

19?

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Account.

Read—the following papers:—

G.O., No. 3081 W., dated 12th December 1881.
Memorandum No. 220, dated 26th January 1882.
G.O., No. 2064 W., dated 12th August 1882.
Memorandum No. 628 E., dated 24th August 1882.
G.O., No. 2434 W., dated 19th September 1882.
" " 2488 W., " 25th " "
" " 2489 W., " 25th " "
" " 3183 W., " 4th December "
" " 250-51 C., " 23rd January 1883.
Memorandum No. 567, dated 9th March 1883.
G.O., No. 922 W., dated 21st March 1883.
From Superintending Engineer, I Circle, No. 3107 G.D., dated 21st March 1883.
From " " II " " 3 G.L., " 4th April "
From " " III " " 154, dated 13th April 1883.
From " " IV " " 139 " 5th " "
From " " V " " 54 " 4th " "
From " " VI " " 172 T.J., dated 24th April 1883.
From the Consulting Architect to Government, No. 29, dated 9th April 1883.
Memorandum No. 1041 C., dated 31st May 1883.
From the General Superintendent, Public Works Workshops, No. 320 W., dated 8th June 1883.
Memorandum No. 1538 C., dated 15th August 1883.
From the General Superintendent, Public Works Workshops, No. 632 W., dated 20th August 1883.
From Messrs. Massey and Co., dated 31st August 1883.
From the Consulting Architect to Government, No. 679, dated 13th September 1883.
Office note from the General Superintendent, Public Works Workshops, No. 804 W., dated 9th October 1883.
Office note from the General Superintendent, Public Works Workshops, No. 867 W., dated 31st October 1883.
From Messrs. P. Orr and Sons, Madras, dated 29th March 1883.
Memorandum No. 716 C., dated 30th March 1883.
From the General Superintendent, Public Works Workshops, No. 16 W., dated 4th April 1883.
Memorandum No. 805 C., dated 14th April 1883.
From Messrs. P. Orr and Sons, Madras, dated 15th June 1883.
Memorandum No. 167 E., dated 18th June 1883.
From the General Superintendent, Public Works Workshops, No. 414 W., dated 29th June 1883.
Memorandum No. 203 E., dated 6th July 1883.
From Messrs. P. Orr and Sons, dated 17th August 1883.
Memorandum No. 297 E., dated 21st August 1883.
From Messrs. P. Orr and Sons, dated 12th September 1883.
Memorandum No. 2310 C., dated 23rd November 1883.
From the General Superintendent, Public Works Workshops, No. 1016 W., dated 1st December 1883.
Memorandum by Lieutenant Baddeley, dated 23rd January 1884.

ORDER—dated 9th February 1884, No. 360 W., Public Works.

The foregoing papers relate to the question of restricting the operations of the Presidency Public Works Workshops in view to their eventual abolition.

2. The subject came prominently under the notice of Government in September 1881, when the Examiner of Public Works Accounts, submitted his annual review of the financial operations of the workshops for the year 1880-81. That report showed that the outturn during the few preceding years had been steadily decreasing, and that from a commercial point of view, the result to be looked for was the entailment of an annual loss on Government. In G.O., No. 3081 W., dated 12th December 1881, Colonel Prendergast, R.E., Superintending Engineer, V Circle, who, as President of the Public Works Stores Committee, had acquired much information in regard to the working of the shops, was requested to report his conclusions on the general question raised as to the future of the workshops, and the best arrangements for execution of work should their closure be decided on.

3. The results of the inquiry which followed are summarised in the printed précis attached to Proceedings of Government, No. 2064 W., dated 12th August 1882, and the Chief Engineer, Public Works Department, in a note printed therewith summed up in favor of abolishing the workshops for the following reasons:—

First.—As being in a condition of chronic deficit;

Second.—As directly interfering with private enterprise; and

Third.—As presenting insuperable difficulties in the way of providing for their proper and continuous supervision by a thoroughly trained mechanical engineer.

The Chief Engineer was further of opinion that one of the following three courses seemed open to Government:—

(1). To maintain the shops on much the same footing as at present, though relieved as much as possible of certain items standing against the capital account, so as to admit of their having a better chance in future of working to show a profit,

(2). To get rid of all buildings and plant, and retain only those portions which may be required for the execution of such repairs and trifling matters of manufacture as Executive Engineers cannot have locally executed,

(3). To dispose of the whole concern, and trust to the open market for all manufactures and repairs;

and, as it was feared that much inconvenience might result from such a drastic measure as the immediate closure of the shops, the Government, on the recommendation of the Chief Engineer, resolved to adopt the second of the alternatives thus placed before them, and called for proposals for carrying it into effect.

4. Those proposals which were submitted in the papers printed with Proceedings of Government, No. 2488 W., dated 25th September 1882, and generally approved by Government for gradual adoption, may be briefly summarised as follows:—

(*a*) All work to be refused except that required by the Public Works Department, and in the instrument shops.

(*b*) Officers of the Public Works Department to abstain as far as practicable from giving orders for work at the shops.

(*c*) The nucleus of a small workshop for departmental purposes to be organized within the present shops.

(*d*) Tenders to be invited for the purchase of the existing buildings and available plant; and if any such be accepted, the reduced establishment to be removed elsewhere.

(*e*) Inquiries to be made as to whether the mathematical instrument work of the department could be executed at Calcutta.

(*f*) The gradual reduction of the existing establishment.

5. The steps which have since been taken to carry out these measures may thus be briefly stated. Immediate effect was given to (*a*), and, at present, except in special cases, no work is undertaken outside the Public Works Department.

With regard to (*b*), Superintending Engineers were called upon in the Chief Engineer's Circular No. 567 C., dated 9th March 1883, or nearly six months subsequent to the issue of the restrictive orders, to report how far the intentions of Government had been carried out and the result which had thereby accrued, with special reference to the following points:—

1st.—To what extent work previously done by the Public Works Workshops had been carried out by other agency.

2nd.—Whether any difficulty, either in the shape of increased prices, of delay, or of difficulty in getting work done, had been experienced in carrying out the change.

3rd.—If any such difficulty had been experienced, whether it could be removed, and by what means.

4th.—If no steps had been taken towards the reduction of demands upon the workshops, what had prevented such steps from being taken.

The majority of the replies to that circular were meagre, but they showed generally that little work had been given to the presidency workshops during the period in question; that officers of the department anticipated no difficulty or delay in getting work done by private agency; and that sufficient time had not elapsed for any reliable opinion to be formed as to the full effect of the restrictive orders.

As regards (*c*), nothing definite has apparently yet been done beyond reducing the number of workmen and restricting work.

With respect to (*d*), the contemplated sale of the buildings, &c., completely fell through, not one reasonable offer having been received in reply to advertisements for tenders published throughout India.

With reference to (*e*), an inquiry addressed to the Surveyor General, Calcutta, elicited the reply that the mathematical instrument department there was not in a position to undertake the repair of the mathematical instruments of the Madras Public Works Department, and it was consequently decided, in Proceedings of Government, No. 3183 W., dated 4th December 1882, that the closing of the Madras instrument shop would be premature. It was therefore ordered to be maintained for the present, for the execution of Government work; the establishment to be regulated solely with reference to the amount of such work likely to be required, and the execution of private work to be discouraged. Subsequently, Messrs. Orr and Sons undertook to repair Government mathematical instruments, and a certain number were sent to them for treatment; but the result, as reported by Captain Baddeley, was not altogether satisfactory with respect both to quality of work and to price. Messrs. Orr and Sons however maintain that, if a continuity of work were supplied to them, they are confident of overcoming defects due to inexperience, and of ultimately giving entire satisfaction.

With regard to (*f*), some reduction of establishment has taken place; the apprentices under training to be foremen mechanics have been transferred to the Madras Railway workshops; and the General Superintendent has submitted statements showing the existing permanent establishment, the number of workmen employed, the duties performed by each man, and the scale of establishment he would recommend for the maintenance of a small workshop for purposes purely departmental.

6. The Government consider that the time has now come when some definite settlement should be arrived at as to the future of the workshops, and they accordingly resolve to appoint a Committee composed of—

Colonel H. L. PRENDERGAST, R.E., Superintending Engineer, V Circle, as President, and

Major C. BOWEN, R.E., Deputy Chief Engineer and Under Secretary to Government, Public Works Department.

D. C. GORDON, Esq., Examiner, Public Works Accounts,

Major R. R. E. DRAKE-BROCKMAN, R.E., Executive Engineer, and

W. HUGHES, Esq., B.A., Executive Engineer,

as members, to investigate and report on the questions now pending respecting the Public Works Workshops and Stores. The attention of the Committee will be specially directed to the following points:—

I.—The effects of the restrictive order No. 2488 W., dated 25th September 1882, on the financial position of the workshops.

II.—The extent to which the department has, since the issue of the above quoted order, availed itself of outside agency to meet requirements, and the manner in which work has been executed by such agency.

III.—The extent to which the conditions under which that order was issued have been modified by the commencement of the lines of railway recently sanctioned.

IV.—The inferences to be drawn from the results of the above inquiries, as to the policy to be now pursued, *i.e.*, whether the establishments should be still further reduced, or the shops be closed altogether or re-established, and if so, on what footing.

V.—The circumstances of the mathematical instrument department, and the possibility of limiting its operations.

VI.—The staff to be in future entertained in connection with the Public Works Workshops, and its kindred branches, the Public Works Stores, State Railway Stores, Government Machinery Department, &c.

7. The papers recorded at the head of these Proceedings will be forwarded in original to the Committee, who will be requested to submit the results of their deliberations to Government as early as practicable. Any information required by the Committee will be furnished to them by the officers concerned.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To Colonel H. L. Prendergast, R.E.
„ Major C. Bowen, R.E.
„ D. C. Gordon, Esq.
„ Major R. R. E. Drake-Brockman, R.E.
„ W. Hughes, Esq., B.A.
To the General Superintendent, Public Works Stores and Workshops.
To Superintending Engineers.

Exd. A. Aubert.
Spare Copies

21

GENERAL.
ACCOUNT.

Govt. of {1884} Madras.

PUBLIC WORKS.

Dated February, 9th.

Recd. *Encl.*

G.O., 9th Feb. 1884, No. 360 W.

FEBRUARY.

Public Works Workshops and Stores

Appointing a Committee to investigate and report on the questions now pending respecting the —.

P. ORR & SONS,
MADRAS.

Madras 28th January 1885

To,
The Secretary to Government
Public Works Department
Madras.

Sir,

When the Government of India, about two years since, announced its intention to encourage by all means in its power the production in India of Stores and Supplies for Government use, instead of sending indents to England, and when the Government of Madras resolved, in harmony with that policy, to close at least partially, the Public Works Workshops at Madras, we decided upon developing that part of our workshops in which the manufacture and repair of levelling and other instruments were carried on, so as to be able efficiently to undertake any kind of instrument work that might be intrusted to us.

About 18 months ago we received a number of levels and theodolites for from the Public Works Department for repair, and we believe that those repairs were at least fairly executed, but we know that a report was sent in to Government which reflected in some degree upon the character of our work, and we have since received no work from

from the Public Works Department of Madras. We have however some reason for saying that the work is quite equal to any that has been turned out in Madras at the Public Works Workshops for many years past.

However that may be, we must desire to bring to your notice, that the instrument Branch of our Workshops has gained much in efficiency & organization during the last 18 months and we have also engaged the services of a practical and clever mechanic who is just arriving from England. We are now manufacturing, throughout a large number of Mr. Winter's Electric Block instruments and have undertaken repairs for the Mysore and Travancore Governments, for the Mysore Railway, various Companies and private Customers.

Under these Circumstances we have confidence in venturing to ask you to support our efforts to localise new branches of work and industry, as we feel sure that we can with credit to our name and satisfaction to our Customers turn out any work that may be required of us. The memorialist has perished us that it is proposed to send instruments to Calcutta from Madras, but we trust that no such course will be adopted until our failure to cope with the work has been proved beyond all

all question.

We are,
Sir,
Your Obedient Servants

Burkett

GENERAL.
ACCOUNT.

Govt. of {1884} Madras

No 5598
4-2-85

Chepauk
No. 272 D. 4th Febry/85

Referred to the
Superintending Engineer
V Circle for remarks.

C. Davies Major R.E.
in Lt Secy to Govt
P. W. D.

No.
To 7-2-85
the Supdg Engr V Circle in
original - to be returned

Cmc: 6/3/85

P. ORR & SONS.
MADRAS.

Madras 16th June 1883

95

Col R. H. Sankey C.B.
Chief Secretary to Govt.
P.W. Department
Ootacamund.

Sir

With reference to previous Correspondence, we have the pleasure to report that some weeks ago we received several Levels, Theodolites, &c. from the Superintendent P.W. Stores; and now most of them have been returned, repaired.

We trust that our work has been done to your satisfaction; and we shall be glad to have an expression of your opinion on the same.

We have not yet received the Lathes that we have ordered from England; so that we have been longer over these instruments than we otherwise should have been; but as soon as possible to be in a position to turn out work more quickly.

In a few days we shall have completed the repairs to the remainder of the instruments, and shall then be at a standstill; so we trust to receive more work from you at an early date.

We are, Sir,
Your Obedient Servants
P Orr & Sons

[illegible]

[illegible]

No. 167 E of 18 June

Copy of the above forwarded to the General Supdt. P.W. Stores for report as to the quality of the work, and the cost as compared with English prices

(Sd) R.H. Sankey Col.
Chf Engr. PWD

18/81
No 1164 W of 16 [illegible]

To,
The Genl Supdt P.W. Stores
[illegible] 19/6

PRESIDENCY PUBLIC WORKS WORKSHOPS,
Madras, 29th June 1883.

No. 414 W.

From
THE GENERAL SUPERINTENDENT,
PUBLIC WORKS WORKSHOPS,

To
THE Chief Engineer
P. W. D.
Chepauk

-96-

SIR,

Enclosures.

[Margin: + No. 667 / ⊖ not at [illegible] probably in the C series.]

With reference to your memo No. 167 E+ of 18th June 1883 I have the honor to report that out of the instruments detailed in my No. 16 W⊖ of 4th April 1883 I have received back from Messrs. Orr & Sons

8 Planimeters
11 Clinometers
9 Prismatic compasses
8 Y Levels
1 Dumpy level

2 Messrs. Orr & Sons also returned 2 Theodolites but these I have been obliged twice to send back to them for more careful repair, they are still with Messrs. Orr & Sons.

3 The bill for the instruments amounts to Rupees (590) Five hundred & ninety and I estimate that the same work would have cost in this Workshop under Rupees (450) Four hundred & fifty including the Workshop profit of 100 per cent.

4 It is impossible to draw a fair comparison between the cost of the repairs executed in England, and the prices charged by Messrs Orr & Sons, for no instruments are sent to England unless they are so seriously damaged that it would be impossible to repair them locally, and as a matter of fact a large number of the instruments sent are always condemned in England as not worth repair.

5 The quality of the English work is very superior, and the instruments received back as repaired, are almost as good as new.

6 For ordinary repairs the cheapest & best work will always be obtained from this Workshop, and for extensive repairs it is advisable to send the instruments to England.

7 As I have before reported it will be a great help to the P. W. Mathematical Instrument shop if Messrs Orr & Sons or any local firm can execute ordinary repairs efficiently at reasonable rates & without excessive delay. I propose therefore as soon as Messrs Orr & Sons have returned the remainder of the instruments, to send them a further order.

I have the honor to be
Sir
Your most Obedt. Servant
W C Baddeley
Lieut R.E.

Public Works Workshops.

P.W.C. No. 5520

From
THE GENERAL SUPERINTENDENT,
P. W. WORKSHOPS,
MADRAS.

To The Chief Engineer
D.P.W.
Madras

No. 416 W.

Dated 29 June 1883
Despd.
Recd. 2/7/83

No. of Enclosures.

No. 203 Cap 6th July 1883

Subject

Reports as to the quality of repairs executed by Messrs Orr & Sons to the Math. & Scientific Instruments sent to them & these workshops with their respective valuations

No. 203 Cap 6th July

No. 2310 C dated 23rd Nov/83

P.W.D.

P. ORR & SONS.
MADRAS.

Madras 17th August 1883

Col R.H. Sankey C.B.
Chief Secretary to Govt.
P.W. Department
Ootacamund

Sir

On the 15th June we had the pleasure of writing to you regarding the Surveying Instruments we were repairing for the P.W. Departt., and we hoped to receive an expression of your opinion as to the quality of our work. We have spared no expense in providing ourselves with a supply of lathes &c, specially for this work, and we have spared no expense in doing the work itself, so that we might turn it out to your satisfaction; in which we trust we have succeeded.

All the work has been completed & delivered.

We shall be glad to receive more.

We are, Sir,
Your Obedt. Servants
P. Orr & Sons

P.W.C. No. 5520

No. 2316 C dated 23rd Nov./83 P.W.D.

No. 297 E d/ August 21st 1883

No. 187 E d/ 15.6.83
" 203 E d/ 6.7.83

To,
Messrs Orr & Sons,
Madras.

Sirs,

On receipt of yr letter of the 15th June in regard to Instruments repaired at yr Workshops – the Genl Supdt. P.W. Workshops was called on to report as to the quality and cost of the work. I have now the honor to forward for yr information a copy of that officer's reply.

I have &c.
(Sd) R.H. Sankey, Major Gl R.E.
Chf Engr P.W.D.

(I.) R.S. 21/8

No. 116 94 d/ 17.6.84

Despd. 21/8

CAW

I was under the impression we had sent Messrs Orr & Co a copy of Capt. Baddeley's report ?

13.8.83

od 24.8

or 3/7

20/6

Lieut R.E.
Genl. Supdt. P. W. Workshops

P. ORR & SONS.
MADRAS.

Madras 12th September 1883

Major General R. H. Sankey
Chief Engineer, P.W.D.
Ootacamund.

Sir,

Your letter of 21st August 83 with its enclosure (the Report of the General Superintendent P.W. Workshops dated 29th June 83) reached us in due course.

1 That report closes with the remark that the General Superintendent intends to send no more instruments for repair; but although it is now nearly 3 months since we reported we were nearly ready to go on with more work, and nearly 4 weeks since we delivered the last of the instruments given us, we have received no more instruments for repair.

2. We cannot help expressing our great disappointment at the whole tone of the Report.

3. You are aware, that owing to the action of Government in taking upon themselves the repairs of surveying instruments, (and thus preventing our getting work) that for many years past our experience of this kind of work has been very small, so small, that we may almost speak of it as a new business to us.

4. This being the case, two consequences follow,

A

would

A. That until we have got well into the run of work, it must take us longer to do, and therefore cost more, than the same work would cost when our men are well up to it.

B. That experience alone can make us perfect in quality of work.

5. We know that we did improve as we went on, for after we had done some 6 or 7 levels we saw that the first 3 were ~~XX~~ not done so well as the last, and we therefore did them entirely over again.

6 It will be noticed that the only part of the Report that speak of the quality of our work is Para 2 . . . and that is in order to find fault.

7. Two theodolites were returned for correction. The report says "I have been obliged, twice," to send them back for a more careful repair"

8. Theodolites are not easy instruments to put together; and therefore it is scarcely surprising that those who are almost new to the work, should not be perfect with the very first theodolites they put together.

9. These two theodolites as stated were sent back to us twice. The first time the corrections took us about an hour or so to do, and if we had understood a certain correction that the General Superintendent wanted, there would have been no occasion to send them back a second time. Our letter when returning the theodolites the first time plainly showed that we thought we had done them correctly and therefore that we did not understand what was wanted. The second time it took us a day or two to get the material ~~prepared~~ [required], and then the alteration was done in a few minutes. It is therefore making the worst of the matter to say "I ~~had~~ [have] been *obliged* *twice*" to send them back for more careful repair.

10 We ~~detached~~ [detailed] some of our own men and engaged others specially for this work; and for no other.

In para 4 we suggested that as our men got accustomed to the work so we might be expected to do it quicker and therefore cheaper, but it is plain, that if the men are to be kept only half employed, that not only are we put to loss, but it will go greatly against our being able to work at a lower price. It is also clear that if men are kept constantly at the same work, they are more likely to excel in it than if they do it only occasionally.

11 We consider that we continued to improve in the quality of our work as we went on, and we are satisfied, that taken as a whole, no lot of work has ever been turned out in Madras, superior to it.

12. We have put ourselves to some considerable expense in preparing to do this work for Government; and we have certainly tried our best to give satisfaction.

13. Considering the circumstances under which we took the work, we thought a little consideration might have

would

No. 3/7

P.W.C. No. 5520

Public Works Workshops.

No. 167 Ext 18.6.83

P.W.C. No. 8296

have been shown to us for a time, but the Report has certainly not erred on the side of liberality.

We are, Sir
Your Obedt. Servants

P. J. ... Sons

Recd 26/9/83

S. a. W.

Lieut. Sankey handed me over before he left.
I should like to see the Report referred to by Mem. C.W. & the file connected therewith. — C.S.
; 2519

No. 1163 Recd 16.6.83

8296

S. a. W.

The file on this subject was put up with C. No. 7158 and is marked "S. a. W. 21-8-83".
There is no further disposal and it is thought the papers are at present with D.P.W. — S.P.
26/9/83.

would

P.W.C. No. 5520

Public Works Workshops.

No. 1167 Engd 18.6.83

96

S.A.W.

Please draft a memo to Capt Holdsby asking him to report the number of hands at present employed by him in the Instrument Dept and to let me have a statement of the work turned out by this branch in 82–83.

C.S.
17/11

Gent. Suptt. P. W. Workshops

No. 2310 dated 23 Nov./83 P.W.D.

Memo 3 D

The Genl Supt P.W. Workshops is requested to report the number of hands at present employed in the Instrument Dept., & to submit a statement showing the work turned out by that dept in 1882–83.

C.S.
10/11

To the Genl Supt P.W.D.
23/11

would

No. 4260

SUPERINTENDING ENGINEER'S OFFICE,
V CIRCLE, MADRAS,
Chepák, 14th February 1885.

From

THE SUPERINTENDING ENGINEER,
V CIRCLE,

To

THE *Chief Engineer*
P. W. D.

SIR,

Enclosures. / In returning your Endorsement No. 272 D. dated the 4th instant, I have the honor to observe, that Messrs. P. Orr & Sons, assume, that the Government ought to support them, until their failure to repair instruments is has been proved beyond all doubt.

What we require is, that a private firm should first establish its capability of doing the work better and more economically than the Government Workshops can do, and has done it; and then the Government would

2310 C of 23rd Nov 1883

would be able to encourage the firms by letting them have orders from the Government Departments.

2. It is shewn in para 5 of G. O. No. 366 D/ dated the 9th February 1884, that a certain number of mathematical instruments were sent to Messrs Orr & Sons for treatment; but the result was not satisfactory as to quality of work and price.

In para 6 of the Committees report, printed in G. O. No. 1494 D/ of the 16th June 1884, the retention of the Mathematical Instrument Department at the Government Workshop is recommended. The Surveyor General with the Government of India would not undertake to do the work for Madras, and it was found to be tedious and costly to send instruments to England

3. It may be foreseen that if Messrs Orr & Sons were to take over this branch of the Workshops work, they would have a monopoly of that class of work, and they would then be in a position to raise their prices as they pleased

4. If the Government think fit, they may make another trial, and see if Messrs Orr and Sons Establishment are now better able to deal with instruments, than they were, two years ago. But, I think it should be clearly understood, that the orders to Messrs Orr & Sons, should be merely to carry out certain repairs for the P. D. Workshops, without any engagement

to

to the effect that the Govern-
-ment are to give all their
orders, or any more orders, to
Messrs Orr & Sons in
future.

I have the honor to be
Sir
Your Most Obedt Servt

(Sd.) W. H. Prendergast
Coll. R.E.
Superintg Engr
5th Circle

35

From

THE SUPERINTENDING ENGINEER,

5TH CIRCLE,

To

THE Chief Engineer
D.C.W.

Dated 14th February 1885.
Recd.

ENCLOSURES. /

No. 4260.

Mathematical
Instruments—

Reserves that
Messrs P. Orr & Sons
assume that the Go-
vernment ought to
support them until
their failure to re-
pair ——— has been
proved beyond all
doubt.

No. 238 d/17.2.82
" 1799 d/15.9.82
" 2488 W d/25.9.82
" 2489 W d/25.9.82
" 3183 W d/4.12.82
" 360 W d/9.2.84
" 1494 W d/16.6.81
" 167 E d/18.6.83
" 203 E d/6.7.83
" 297 E d/11.8.83
" 2310 C d/23.11.83

Circ: 6/5/85

No. 559. W

P.W. Department

Proceedings of the Madras government. 36

Under date the 18th March/85

Read the following:—

Letter from Messrs Orr & Sons
Madras- W.O. No. — d/28 January/85

Letter from S.E. 5th Circle — " — 4260 d/14 July/85.

The Government would be glad to see a well established local firm prepared to execute repairs of mathematical instruments in a satisfactory manner, at reasonable rates, and they desire that

P. Orr & Sons be ~~encouraged~~ intrusted with the execution ~~by Government work as~~ of such work for the State, so far as practicable.

No. 2
" 17 2. The Supdg. Engineer
" 24
" 240 will in due course report
" 310
" 36 on the character of the
" 149
" 167 work, and ~~the~~ its cost, as
" 203
" 297 compared with ~~workshop~~ that executed at the P. W.
" 231 ~~rates~~ workshops

3. The Government can hold out no hope of closing the Government mathematical workshops in favor of local trade until the character and price of the work turned out by the latter

Rec: 6/3/85

'doub

... placed on a secure satisfactory footing.

C.J.
17.2.85

37

[illegible]
5.3.85

S. E. V. Circle
Messrs P. Orr & Sons

5599

Govt. of [1885] Madras.

PUBLIC WORKS.

Press
12-3-85

Dated

Recd.

Encl.

G.O., 10 May 1885, No. 557

Mathematical Instru[illegible]

ments

[illegible] an [illegible] from

[illegible] P. [illegible] [illegible]

[illegible] that they may

[illegible]

78

40
3