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# MADRAS RECORD OFFICE

## Government of Madras

*Public works* DEPARTMENT

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| G.O. No. | 1303 | Press   |
| B.P. No. |      | Mis.    |
| 123-124. |      |         |
| Dated    | 9. 5 | 18 193. |

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,  
9th May 1873.*

No. 123. Read the following docket from the Government of India, Public Works Department, No. 226-I. :—

Despatch from the Government of India, Public Works Department, (Irrigation,) to His Grace the Right Honourable the DUKE of ARGYLL, K. T., Secretary of State for India, dated Fort William, 9th April 1873, No. 45.

THE Government of Madras having favoured us with copies of the correspondence (including Mr. Parkes' Report) on the relative advantages of M. V. de Michéle's and Adie's machines for testing cement, concluding with its despatch to your Grace, No. 20 of the 18th September last, we transmitted them to the Governments of Bengal and the North-Western Provinces for information.

2. The latter Government has forwarded, in reply, a note by its Chief Engineer for Irrigation, Colonel Brownlow, R. E., on the subject, and is desirous that one of Michéle's instruments, warranted to test up to 1,000 lbs., may be obtained and forwarded for its use. An indent submitted for it is accordingly enclosed herewith for compliance.

3. Colonel Brownlow's note accompanies for your Grace's information and will also be communicated to the Government of Madras.

Copy of Colonel Brownlow's note, together with above despatch, forwarded to the Government of Madras in the Public Works Department, Irrigation Branch, for information, with reference to the correspondence received with its despatch to Secretary of State, No. 20 of 18th September last.

(Signed) C. DICKENS, Colonel, R. A.,  
*Secretary to the Government of India.*

Note by the Officiating Chief Engineer for Irrigation, North-Western Provinces, dated Camp via Cawnpore, 26th February 1873, No. 502-I. C.

With reference to a note of mine recommending the adoption of a direct test of the cohesive strength of cements and mortars in preference to the "needle test" of which M. Dejoux seemed at first inclined to use, the Secretary to the Government of India forwarded a note by Mr. Parkes, C. E., on the relative merits of M. V. de Michéle's and Mr. Adie's machines for testing the strength of cement, and the Secretary to the Government of Bengal forwarded a letter from M. Dejoux requesting my opinion on an apparatus proposed by him for the same purpose.

2. M. Dejoux's apparatus consists simply of a set of shear legs, from which is suspended the sample of cement or mortar which he wishes to test, weights being on to a clip at the lower end of the sample until it is torn in two (see lithographed sketch put up). The apparatus is simple enough and perhaps a self-evident method of applying the required test. It is also very cheap, costing only about 40 according to M. Dejoux; but is rather a cumbrous arrangement, and accurate testing by means of it would be very tedious work.

3. Adie's (or as it is often called Grant's) machine for testing cement is an excellent one; but the great drawback to it is its cost, £40 in England to the best of my recollection.

4. Michéle's testing machine is advertised as cheap, accurate, and portable; the price of a machine to exert a tensile strain not greater than 1,000 lbs. is given in accompanying description advertisement at £24 in England.

5. No plan or description of it accompanied the letter on the subject from the Government of India, and I was consequently unable to form any idea of its merits. Indeed, Mr. Parkes

report being on the whole unfavourable to its adoption, my respect for that gentleman's opinion led me to look upon it in an unfavourable light too; but having now had the opportunity of seeing the accompanying sketch and description of it, I am strongly in favour of its being given a trial.

6. Mr. Parkes states in his report, "I have seen experiments with this machine, but I am not aware that it is in practical use except (probably) at the works of Messrs. Francis with whom the inventor is connected.

"It appears to have several *prima facie* objections, which might, however, be partially or wholly removed by special arrangements; if, on other grounds, it has any special advantages over Adie's machine, some of these are—

(1.) "The endless screw working in the segment gives a cross strain on the latter which would be communicated to the test block to its advantage.

(2.) "The strain is not brought on the block by an uniform rate of increase. It comes rapidly at first and very slowly at last, as the movement of the weight becomes almost vertical. This is in favour of weak and against strong samples.

(3.) "The moment the test block breaks, the weight must fall, having no record of the strain applied so that a reading may be easily lost. This, however, might be remedied by the addition of a clip on the scale to be left behind when the weight falls.

(4.) "The sudden fall of the weight must shake and jar every part of the machine.

"In all these points this machine is inferior to Adie's. It is more compact than Adie's, but compactness is obtained at the cost of nicety, a short lever and heavy weight being substituted for a long lever and light weight. An Adie's machine with a lever the same length as this and therefore equally compact would still be better than this machine.

"I do not know what are the relative prices asked, but I can see no reason why Adie's should not be made as cheaply as this. Its construction is simpler.

"If the tests at Madras are intended to be applied to Portland cement from England, the use of a machine not generally recognized by manufacturers in this country would be an additional reason for their discrediting such tests if unfavourable; but the tests made in this country on shipment are undoubtedly the only ones on which questions with manufacturers should be based.

"Though I consider this machine inferior to Adie's in principle, I yet think it would be useful and sufficiently trustworthy if on other grounds it be preferred. In the event of the Government giving further consideration to it, I shall be happy to inspect its working and report more in detail."

7. Mr. Parkes' incidental objections that the machine is not in general practical use is one which would naturally attach itself to any new invention; and if, as stated in the advertisement, it is used by two such eminent Engineers, as General Scott, R. E., and Sir John Coode, I do not think any valid objections could be raised to the results obtained from it. However, I am coming every day to see more clearly that there is no necessity in this country of our going to England for our cements; so we need only suit our convenience and pay no need to the opinions of manufacturers at home.

8. Taking Mr. Parkes' objections in the reverse order to that in which they are stated, Nos. 3 and 4 have been obviated since he saw the machine, as an index pointed marks the exact number of lbs. which broke the sample, and a suitable arrangement prevents the lever bar falling more than half an inch after block has broken, so that no jar will occur from that cause.

9. Mr. Parkes' objection too holds good as regards rate of increase with which strain is brought to bear, i. e., rapidly at first and then slowly. But I do not agree in his deductions considering that the rapidity with which the lower strains are brought to bear is against the weaker samples of cement or mortar, not in favour of them, and as I shall not be sorry to see weak mortars summarily put out of court, I think it is a point rather in favour of the machine.

10. Neither can I see the force of Mr Parkes' first objection for presuming the length of the short arm of the lever and of the radius of the quadrant to be the same, the pull on the block would always be true and in the same direction.

11. I have seen it urged somewhere in favour of Adie's machine that it tests the resistance to crushing as well as the adhesive strength of cement, but need hardly point out that his machine for the former is quite distinct from that for the latter purpose.

12. As we shall hardly ever require in this country to apply a testing strain greater than 1,000 lbs., I recommend that a copy of this note be forwarded to the Government of India with a request that one of Michéle's machines, warranted to test up to 1,000 lbs., may be sent out to this Government as soon as can conveniently be managed, copy may also go to the Government of Bengal in reply to Secretary's letter.

(Signed) H. A. BROWNLOW, Lieut.-Colonel, R. E.,  
Offg. Chief Engineer for Irrigation, N. W. Provinces.

No. 124.

ORDER THEREON, 9th May 1873, No. 1,303.

ACCOUNT, No. 7.

COMMUNICATED to the Chief Engineer for Irrigation, with reference to G. O., No. 2,187, dated 14th September 1872.

(True Extract.)

(Signed) G. W. WALKER, Colonel, R. E.,  
Secretary to Government.

To the Chief Engineer for Irrigation, with copy of G. O. No. 2,187 of 1872.

Dated Camp via Bannpoor the 26<sup>th</sup> Feby 1873  
 Note by the Off<sup>r</sup> Chief Engineer J. W. A. W. P.

With reference to a Note of mine recommending the adoption of a direct test of the cohesive strength of cements and mortars in preference to the "needle test" of Vicat which M. Dejoue seemed at first inclined to use, the Secretary to Government of India forwarded a note by Mr. Parkes L.E. on the relative merits of M. V. de Micheles and Mr. Adies machines for testing the strength of cement, and the Secretary to Government of Bengal forwarded a letter from M. Dejoue requesting my opinion on an apparatus proposed by him for the same purpose.

2. M. Dejoue's apparatus consists simply of a set of shear legs from which is suspended the sample of cement or mortars which he wishes to test, weights being on to a clip at the lower end of the sample until it is torn in two (see lithographed sketch put up). The apparatus is simple enough and perhaps a self evident method of applying the required test. It is also very cheap, costing only about 40/. according to M. Dejoue. But is rather a cumbrous arrangement and accurate -

accurate testing by means of it would be very tedious work.

3. Adies (or as it is often called Grants) machine for testing cement is an excellent one but the great drawback to it is its cost, £40/- in England to the best of my recollection.

4. Micheles testing machine is advertised as cheap, accurate and portable; the price of a machine to exert a tensile strain not greater than 1000 lbs is given in accompanying description advertisement at £24 in England.

5. No plan or description of it accompanied the letter on the subject from the Govt of India and I was consequently unable to form any idea of its merits. Indeed Mr. Parkes' report being on the whole unfavorable to its adoption my respect for that gentleman's opinion led me to look upon it in an unfavorable light too. But having now had the opportunity of seeing the accompanying sketch and description of it I am strongly in favor of its being given a trial.

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1. "The endless screw working in the segment gives a cross strain on the latter which would be communicated to the test block to its advantage.  
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"In all these points this machine is inferior to Adies. It is more compact than Adies but compactness is obtained at the cost of ~~nicety~~ a short lever and heavy weight being substituted for a long lever and light weight. "An Adies" machine with a lever the same length as this and therefore equally compact would still be better than this machine."

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much

Letter to the Secy. of State for India  
Dated 18 Sept/72

11. 1873 Department

Copy. *No 2522.*

GOVERNMENT OF INDIA.  
PUBLIC WORKS DEPARTMENT.  
IRRIGATION.

To  
THE RIGHT HON'BLE  
THE SECY. OF STATE FOR INDIA.

No. 45 PUBLIC WORKS.

Dated April 9, 1873.

Received *— 23 —*

Encl. 1.

Forwards for compliance, an indent from  
the North Western Provinces Government for  
one of M. V de Michèle's cement testing machines.

P. W. D. Press—9-4-73—5.

*Chief Secy for India*

*with copy of G.O. No 2187 of 1872*

*Chief Secy 14-5-73*

*Communicated to the Chief Engineer for irrigation  
with reference to G.O. No. 2187 dated 14 Sept 1872*

*by*

*123-24*

*11-3*

M. 2522

Govt. of 1873 Madras.

PUBLIC WORKS.

The Chief Eng<sup>r</sup> for  
Irrigation

Date

Recd.

Vol. 1

G. S. Jellay<sup>1873</sup>, No. 1303.

No. 123 & 124

Cement testing machine.

Packet from the Govt of  
India forwarding copy  
of a note by Capt.

Brownlow R.E. on  
the Cement testing ma-  
chines. Comd. W. the Chief  
Eng<sup>r</sup> for Irrigation.

123-24

123 May