

MADRAS RECORD OFFICE.

Government of Madras.

Financial DEPARTMENT.

G.O. No. 301

Press
MIS.

Dated

15. 5.

1858

B. No. 1-2

Not to be folded or roughly handled

No. 1. From J. MAYER, Esq., Professor of Chemistry, &c.; to the Chief Secretary to Government, Fort St. George, dated 26th April 1858.

SIR,

I have the honor to report my arrival in Her Majesty's Gun Vessel "Assurance" and beg to forward the accompanying report of my proceedings while on board the "Chesapeake," from which it will be evident that the instrument I employed was unequal to the emergency and would be so again should any future case arise, calling for intensity of galvanic action. This can scarcely be regarded as a satisfactory state of things, and I therefore beg leave to suggest, for the consideration of Government, the propriety and advantage of having an efficient instrument made up, with as little delay as possible.

Should the suggestion I have now offered meet with approval, it will afford me pleasure to superintend the manufacture of the instrument required, the cost of which will be altogether trivial, if measured by its utility.

Being fully aware that the Battery I took with me, was in an imperfect state, 8 of the Zinc plates having been made away with in some way, it is supposed by the Coolies attached to the Medical College, or by their connivance, I endeavoured to remedy these defects by obtaining from the Arsenal some Sheet Zinc wherewith to make new plates. This Zinc was however so thin that the plates were obliged to be made double, two being joined together by Zinc pins, 6 of these new plates did not however add much to the power of the Battery, the 8 plates of Cast Zinc (the old ones) seeming to afford an equal degree of intensity to that obtained by employing the whole number of mixed plates. Previous to ascertaining this however, I spent several days in thoroughly cleaning both plates and cells all of which from disuse and perhaps laboratory fumes and vapours as well as from damp had got into a very dirty and corroded state.

After having cleaned plates and cells the next step was to amalgamate the whole of the plates, and to clean out the small Copper cups by means of which (with their contents, Mercury,) metallic contact was ensured between the Zinc of the one cell and the Copper of the next. This last operation by reason of the absurd formation and very small size of the cups, was an extremely tedious and troublesome operation, it was however at last accomplished, not however until recourse was had to the cleansing action of moderately strong Sulphuric Acid, which with tow and a stiff piece of Copper wire, produced clean internal surfaces: the connecting wires were now bent into position. The leathern bags employed to act as porous cells, had all been found more or less rotten, they were therefore cast aside, and replaced by stout and close new canvass made into bags, these bags could not of course act as well as the leathern bags, the interstices of the former being larger than was needed, and not entirely equal; thus, for the quasi-endosmotic action that should have taken place, was substituted something more analagous to purely mechanical action; however nothing better was at hand and therefore the two rapid and unequal permeation of the canvass could not be helped.

Having made all the foregoing arrangements the saturated solutions of Sal Ammoniac and Sulphate of Copper were poured, the former into the canvass bags and in immediate contact with the Zinc amalgamated surfaces, while the latter was poured into the Copper cells: when the filling was completed; the couples were connected by means of the wires, the cups having been filled with Mercury. The wires from the last Zinc and first Copper being of sufficient length were brought round to the front of the Battery, and bent into 2 large wooden cups of Mercury about 6 inches apart. On making metallic contact between the two polar wires by a three cornered file, it burnt rapidly with beautiful scintillations, on substituting a tolerably thick Platinum wire it became white hot almost immediately and then fused at the points of contact. These and other proofs of the quantity of electricity set in motion were so far satisfactory, but the intensity of the current had yet to be tested, now the intensity of this force diminishes like others, according to the square of the distance, it was therefore necessary to ascertain at what distance the Battery would heat platinum wires of various degrees of thickness, this was found to be scarcely beyond seventy feet, which was not considered a safe working distance every expedient was resorted to; to increase the power of the Battery, but without effect, the most remarkable feature observed in relation to the action of the instrument was, that the thin auxilliary plates of Zinc scarcely made

Fort Saint George, Financial Consultation, 11th May 1858.

any difference in the intensity of the Battery, this was proved by the separate action of the eight old Cast Zinc plates which were able to heat the platinum wire at as great a distance as when united with the thin 6 auxilliary plates.

Two experiments on deck at 70 feet distance were conducted so far successfully that both the charges of powder were exploded; the 1st experiment was made without passing the conducting wires under water. In the 2nd, the charge and part of conducting wires were under water, in both instances about 2 minutes elapsed before the connecting platinum wire which was within the charge of powder secured near the extremity of either conducting wire became hot enough to ignite the charge, the conducting wires were about half an inch or rather less apart. Such precautions were taken that it was not possible the wires could communicate otherwise than by the platinum connecting wire.

Two attempts to explode charges of powder placed in the lower deck of the wreck of the "Ava" entirely failed. One of these attempts was made with conducting wires 150 feet long. Another with wires 100 feet long, but in neither instance was it found possible to heat the connecting wire sufficiently to cause ignition and explosion of the charge of powder. The intensity of the Battery was unequal to the increased distance although advantage was taken of every possible chance that increased time would afford. The action of the Battery having been kept up on the second occasion 40 minutes and on the first for near half an hour. Increased time however was found to be no compensation for increased distance, and the diminution of intensity dependent on it.

The wires used in the series of experiments above noticed were of the very best construction, being twisted wires coated with Guttapercha such as are used in the Telegraph Department, from which through the liberality of the Gentleman in charge they were obtained.

(Signed) JOHN MAYER,
Professor of Chemistry, &c.

No. 2.

ORDER THEREON, No. 301; dated 5th May 1858.

The Government observe that Dr. Mayer appears to have used every exertion to remedy the defects in the Galvanic Apparatus, which he took with him from Madras, for service in the blowing up of the wreck of the "Ava."

2. Commodore R. B. Watson, in a recent letter, copy of which will be furnished to Dr. Mayer, has borne testimony to his energy and zeal in furtherance of the purpose of his deputation.

3. The Government concur with Dr. Mayer, that it is very desirable that a Galvanic Battery should be made up with as little delay as possible, of power fully sufficient to meet all ordinary demands upon it, and they willingly accept his obliging offer to superintend its construction. They would, however, wish in the first instance, to know what would be the approximate cost of such an instrument, including the connecting wires; within what time it could be made up; and after it has been constructed, where it should be kept; and under what arrangements, to prevent its falling into the state of the Battery, on which Dr. Mayer was so indefatigably, though unsuccessfully, employed in his late deputation to Trincomallee.

(Signed) T. PYCROFT,
Chief Secretary.

Exd. J. A. Wilson.

Financial Department.

No. 301

Extract from the Minutes of Consultation.

Dated 5th May 1858.

Read the following letter from Surgeon J. Mayer, Professor of Chemistry:

(Here entered 26th April 1858 No. 301)

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To Dr. Mayer

with copy of
Commodore Watson's letter

Dispo 62

JF

W. B. Hall

