Gilbert Letter to Prof Hare of Ontario Agricultural College, Canada - 1000th Acre Rain Gauge

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Rothamsted Research

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GIL. 6 1

Harpenden
St Albans
July 10. 1883

Dear Sir,

I am sorry that owing to my very full engagements I have not been able to reply to yours of May 17 earlier.

As described at p.p. 2-3 of our paper our large rain-gauge collector consists of a wooden frame lined with lead, with a vertical rim of plate glass 3 inches deep and 3/8 inch thick, with a bevel outwards, thus – . The angles are also bevelled or mitred, and cemented; and the rim is further held in place by an angle fillet of wood outside.

The wooden frame is however liable to swell and warp, and we sometimes find lead in the rain water.

If it were practicable it would be better if the whole collector could be made of glass. But there would not only be great difficulty in first construction, but great liability to accident. The question is whether copper, [illegible] though expensive in the first instance would not be the best ~~or better~~ [illegible]

As to the gauge cylinders, I send you herewith a sketch (side view) as you will see by an amateur hand, of one, with ~~its~~ its fittings, dimensions, &c. I enclose also the lower end of a broken gauge-tube, showing the graduation. The tube should have about the length ungraduated below as in pattern, & about the same length plain, at top above the mark ·50. As shown, the tube fits into a piece of ~~angle~~ elbow iron gas piping fixed quite at the bottom of the cylinder. It is fitted with a brass ring, or rim, screw-threaded, outside. On the flat top of this ring (which has an orifice to receive the tube about 1/4 inch wider than the outside measure of the tube) is placed a thick caoutchouc washer, then a flat ring of brass with orifice 1/8 inch larger than the tube, and then the cap, with female screw to fit the outside screw of the ring, is screwed on, the glass tube having been first properly placed. The cap has also a hole to receive the tube large enough to allow of play, the caoutchouc washer making the joint.

[The bore of the iron pipe is I believe 1¼ inch]

All being fitted, and the cylinder placed perfectly level, 11 lbs 5 ozs of water at 60°F is poured in, and the height marked on the glass, and this mark represents 0·05 inch on the 1/1000 acre area. 11 lbs 5 ozs more water is then put in, & the point marked, and so on until 10 lots have been put in, the amount then representing 0·50 or 1/2 inch. With these land marks, the tube is then graduated. The main divisions each representing 0·01 or 1/100 inch; these are subdivided into 5, and as the water can be read to half a division, 1/1000 inch can be read. All quantities below 0·05 are drawn out by the tap and measured in a small cylinder constructed to measure 0·10 in; of dimensions given on the plan, & the tube is graduated to 0·001.

I send you by this post 4 copies of the Memoranda for 1883 – one for the President, one for Professor Brown, one

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for yourself, and one for the Library. We hope to send very soon several other papers, including the one given at Montreal last year, and an address of mine as President of the Chemical Society.

With kindest remembrances to President and Mrs Mills, and to Professor Brown,

I am, Dear Sir
Yours Sincerely
J. H. Gilbert

To
Professor R. B. Hare
Ontario Agt. College.

* The cylinders should have moveable lids with a short funnel cripel: there should be 4 or 5 cylinders connected & overflow connection into some other vessel