



XXVIII. Note relative to the form of the fibres of cotton

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A represents the commencement of the collecting wire coils in connexion with the rotating pointed piece B, dipping into and leaving the mercury C simultaneously with the movement of the collecting coils on the rotating armature of the magnet. A' represents the terminations of the collecting coils in connexion with the rotating disk B', which is always in the mercury C'; D, a copper wire in contact with the mercury C, the point of which is in contact with the wire that carries the pointed piece B. The director wires, E E', are represented as in connexion with each portion of mercury, and of course in connexion with the collecting wire coils. On holding the directors E E' in the wetted hands, a slight continuous thrilling sensation is felt; but if they are brought into contact and then separated, on the moment of their separation a powerful instantaneous shock is felt passing through the arms. The same effect is produced if you remove the pointed piece B. A continued scintillation and combustion of steel wire and surfaces, or of other metals, can be produced by substituting them for the directors E E'.

39, Charles Street, Parliament Street,
January 13, 1835.

EDWARD M. CLARKE.

XXVIII. *Note relative to the Form of the Fibres of Cotton.*

By JAMES THOMSON, Esq., F.R.S.

IN the first volume of the *Bulletin de la Société Industrielle de Mulhausen*, is a memoir by M. Josué Heilman, entitled "Observations microscopiques sur la forme, la finesse, et la force des filamens de Coton," in which he ascribes to the fibres of cotton the precisely same form as that given to them in the drawing of Mr. Bauer, dated February 11, 1822, which accompanies my paper on Mummy Cloth, Lond. & Edin. Phil. Mag. vol. v. p. 355.

Mr. Heilman's "Observations" are accompanied by a drawing by Mr. Edward Koechlin, of these fibres. Whoever will take the trouble to compare the two drawings will detect *internal evidence of the one being derived from the other*. Mr. Heilman's paper being published in 1828, and mine in 1834, renders some explanation necessary.

In 1822 or 1823, Mr. Edward Koechlin was in England, and during a visit he made to Primrose, he saw Mr. Bauer's drawing, and requested permission to copy it, which was granted. It is from this drawing and Mr. Koechlin's communication that Mr. Heilman's "Observations microscopiques" are derived. The paltry fraud of appropriating to

* Communicated by the Author.

himself the observations of others without acknowledgement, might have passed unnoticed by me for ever, had not the friends of Mr. Bauer deemed this explanation necessary.

Primrose, January 31, 1835.

XXIX. *Experimental Researches in Electricity*.—*Eighth Series*. By MICHAEL FARADAY, D.C.L. F.R.S. *Fullerian Prof. Chem. Royal Institution, Corr. Memb. Royal and Imp. Acadd. of Sciences, Paris, Petersburg, Florence, Copenhagen, Berlin, &c. &c.*

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935. **I**N order to put the equal and similar action of acid and alkali to stronger proof, arrangements were made as in (Plate I.) fig. 8.; the glass vessel A contained dilute sulphuric acid, the corresponding glass vessel B solution of potassa, P P was a plate of platina dipping into both solutions, and ZZ two plates of amalgamated zinc connected with a delicate galvanometer. When these were plunged at the same time into the two vessels, there was generally a first feeble effect, and that in favour of the alkali, i. e. the electric current tended to pass through the vessels in the direction of the arrow, being the reverse direction of that which the acid in A would have produced alone: but the effect instantly ceased, and the action of the plates in the vessels was so equal, that, being contrary, because of the contrary position of the plates, no permanent current resulted.

936. Occasionally a zinc plate was substituted for the plate P P, and platina plates for the plates ZZ; but this caused no difference in the results: nor did a further change of the middle plate to copper produce any alteration.

937. As the opposition of electro-motive pairs of plates produces results other than those due to the mere difference of their independent actions (1011. 1045.), I devised another form of apparatus, in which the action of acid and alkali might be more directly compared. A cylindrical glass cup, about two inches deep within, an inch in internal diameter, and at least a quarter of an inch in thickness, was cut down the middle into two halves, fig. 9. A broad brass ring, larger in diameter than the cup, was supplied with a screw at one side; so that when the two halves of the cup were within the ring, and the screw was made to press tightly against the glass, the cup held any fluid put into it. Bibulous paper of different degrees of permeability was then cut into pieces of such a size as to be easily introduced between the loosened halves of the