CHARACTER.—They have been called a jealous, cruel, and revengeful people,—much given to theft; but, in my opinion, very unjustly. I would rather term them, in their ordinary mode of life, a mild, inoffensive, and effeminate race; yet of astonishing resolution and perseverance when once roused to action. Of all the slaves brought from the coast of Africa, those of Congo are accounted the most refractory and determined on ship-board.

As an instance of their probity and honour;—Captain Coufflin, when sailing up the river, run his ship upon a sunk rock. He was obliged to unload the whole cargo whilst the vessel was refitting; and, although the goods remained in their huts all that time, not a single article was missing.

To the spontaneous productions of nature, and to the climate which causes them to spring up so luxuriantly and in such profusion, must be ascribed the effeminacy of the Congoese, not to any inherent defect in the constitution of a race, whose outward appearance, time and situation have so altered. The Negro, in his native land, is, comparatively speaking, in a great measure exempt from toil; he enjoys life to the full, and, by a little tuition, can think as acutely and act as justly as the man, who, born in a civilised country, has enjoyed all the advantages of education.

ART. III.—*Account of Electro-Magnetic Experiments made by* MM. VAN BEEK, Professor VAN REES *of Liege, and* Professor MOLL *of Utrecht.* In a Letter to Dr BREWSTER.

MY DEAR SIR,

I HAD the honour of addressing to you the details of some Electro-magnetic experiments in a former letter, which I hope came duly to hand. I have since observed in the Annals of Philosophy for August 1821, a letter from Sir Humphry Davy to Dr Wollaston, in which experiments are related, which you will have found to be of the same kind as those which were communicated by me. As Sir Humphry states his experiments to have been made in October 1820, no doubt can arise respecting their ha-

Fig. 1.

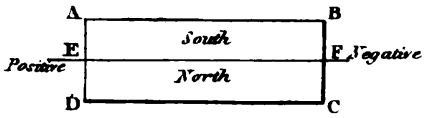


Fig. 2.

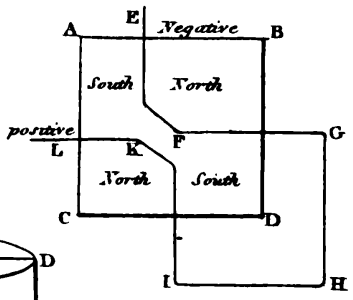


Fig. 5.

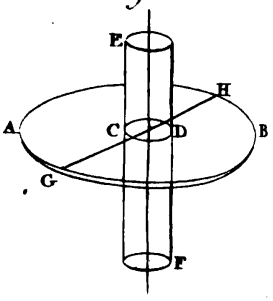


Fig. 3.

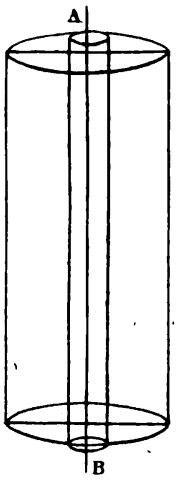


Fig. 4.

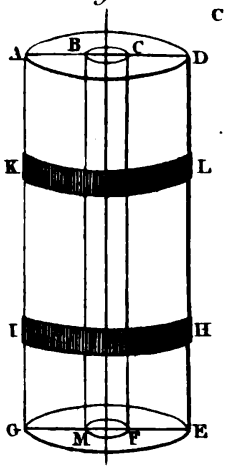


Fig. 6.

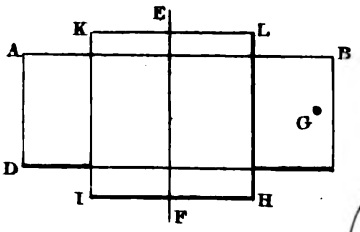
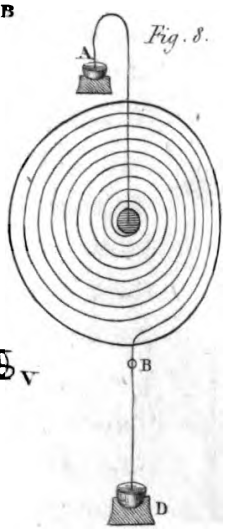


Fig. 8.



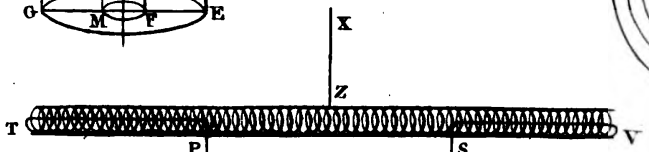


Fig. 11.

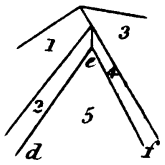
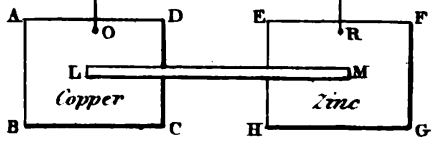


Fig. 7.



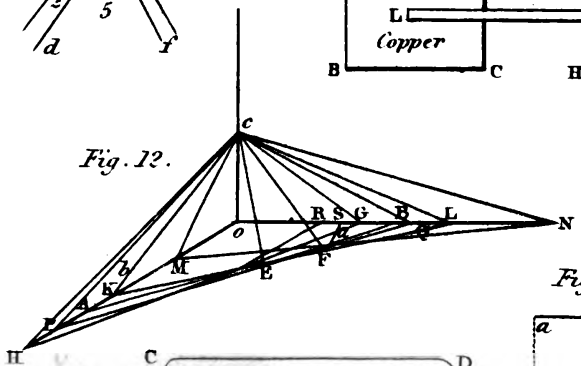


Fig. 12.

Fig. 10.

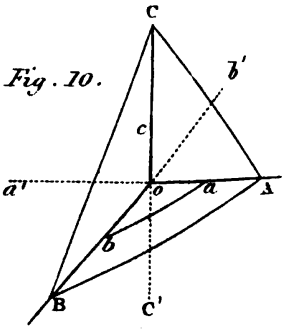


Fig. 13.

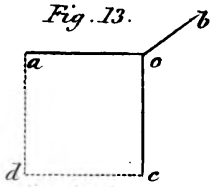


Fig. 9.

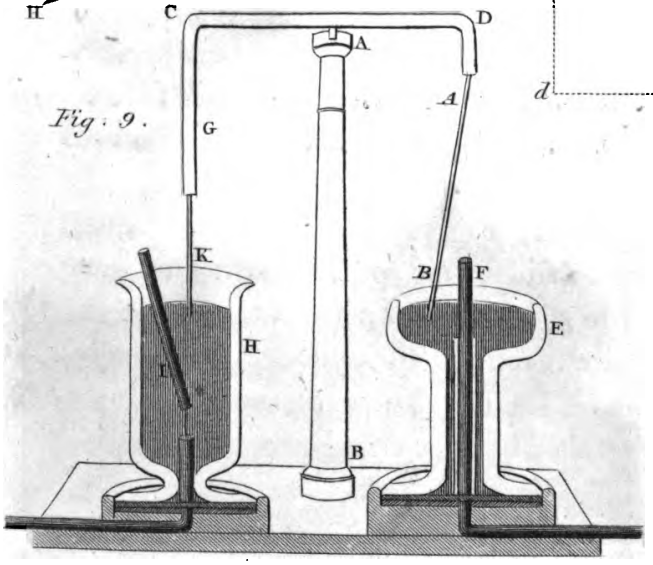
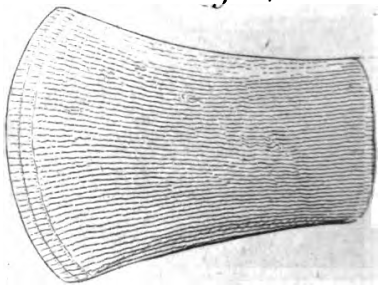


Fig. 14.



ving been previous to ours, though, I can assure you, that we received the number of the Journal in which they are communicated after my letter to you had been sent off. Be this as it may, we cannot help feeling pleased with having been employed in making experiments on a subject which attracted the notice of so illustrious a philosopher as Sir Humphry Davy.

I shall now proceed to relate some further experiments; but as I keep no minutes of my letters, it is not impossible that some of those which I am going to state are already contained in my former communication.

1. Having taken a steel-plate ABCD, Fig. 1. Plate II., we laid on it a glass-pane, and on the glass was placed a communicating brass-wire E; through this the Leyden battery was discharged; the end E of the wire communicating with the interior coating, the end F with the exterior coating of the battery. The steel-plate became magnetic by the discharges; the whole of the part ABFE having acquired a north, and the part FCDE a south pole.

2. We took a square plate of steel ABCD, Fig. 2.; on this, as usual, was laid a glass-plate, and on this a connecting brass-wire, bent as shewn at EFGHIKL. Through this wire the electric discharge of the battery was transmitted, and the steel-plate became magnetic, as shewn in the diagram. The end L of the wire communicating with the interior, the end F with the exterior coating of the battery, the parts BF and KC of the plate had north, the parts AF and FD had south, magnetic polarity.

3. We took a steel-cylinder, Fig. 3. of about an inch in diameter, and three inches long, perforated through its axis AB. Through this aperture was thrust a glass-tube, open at both ends, in which a brass communicating-wire was placed. Repeated powerful electric discharges gave no magnetism whatever to the cylinder.

4. We had a steel-cylinder, Fig. 4., made of two halves, kept together by two brass-rings, and perforated in the same manner as that described in the former experiment. When the brass-rings KL and IH are taken off, the cylinder separates into two halves ABMG and CDEF. Through the axis of the cylinder, whilst kept together by the rings, strong discharges were passed, and the cylinder, as in the former experiment, shew-

ed no magnetism; but when taken asunder, both halves were found magnetic, each having an opposite pole to the other. On joining them again, all magnetism disappeared, but on separating them, it shewed itself again.

5. We took a steel-disk, Fig. 5., of about one inch in diameter, perforated in its centre, in which was placed a glass-tube, containing the wire through which the electric-battery was repeatedly discharged. AB is the steel circular disk; and CD the hole in its centre, through which is stuck the glass-tube, EF. The strongest discharges could not make this disk show any magnetism; but when it was cut with a chisel in the direction of any of its diameters, for instance GH, both halves became magnetic, each having a pole opposite to the other. Thus, GAH was the north, and HBG the south pole. When again joined together, no polarity appeared.

6. As it might be suspected that the cutting of the disk with the chisel made it magnetic, another disk was cut through, without passing the electric discharge along its axis. It was not, however, found to be magnetic.

7. Over a slip of brass ABCD, Fig. 6., was laid a glass-plate KLHI. Over the glass, the communicating-wire EF of the electric-battery went across. In the brass was a small hole G; and in this a steel-needle, not magnetic, was stuck perpendicularly. After passing the discharge through EF, it became strongly magnetic.

8. I shall now proceed to describe two very convenient electro-magnetic apparatuses, made by my ingenious friend M. Van den Boss. They are intended to shew magnetism to be communicated to wires through which a galvanic current is circulating. ABCD, Fig. 7. is a copper, and EFGH a zinc, square plate, of about three centimeters side, kept from touching each other by the interposition of some small piece of wood LM. Both plates are attached and suspended to slender brass-wires, OP and RS. The wire OP enters at P, in the hollow space formed by a case of very thin quills inserted together, and two decimeters long. The end of the wire comes out of the quill at the end T, and returns, being wound as a spiral round it externally to the other end V, where it again enters the quill, and proceeds by a right line to S, where coming out, it descends, and is attached to the

other plate. The whole is suspended in equilibrium to some silken untwisted thread XZ. It may be observed, that the distance P S, ought not to be so large as drawn in the figure, and care should be taken to prevent the spiral twisted round the quill-tube from touching the wires P and S. The plates are now dipped in dilute acid, and the whole is suspended at X. Now, if a strong magnet is brought near T or X, it will show a strong polarity, by its attraction or repulsion. Thus, the apparatus, with no other galvanic-battery but the two small plates, shows the same phenomenon for which M. Ampere uses the instrument represented in Plate ii. Fig. 3. * of that gentleman's paper on electro-magnetism, and which requires a pretty strong galvanic force.

Another instrument delineated by M. Ampere, Fig. 2. Plate iii. † may be more easily constructed thus: A brass-wire AC, Fig. 8. rests at its bent end A in a cup containing some mercury, and is very moveable in azimuth round this point. The other end C, passes through the centre of a circular piece of thin pasteboard, and then forms spiral turnings round this circular piece. The wire is attached by linen or any thread to the disk, the diameter of which, in my instrument, is about eight decimeters, there being about fourteen windings of the spiral. To its end B is suspended another wire, whose end reaches again the surface of the mercury in the small cup D. The wires of the two poles of a galvanic-battery are in contact with the mercury in the cups A and D. It is required that the end of the wire A, on which the apparatus rests, should have a very free motion on a point placed in the middle. The plane of the disk will place itself in a situation perpendicular to the magnetic meridian, when the cups A and D communicate with the opposite poles of the battery.

I received, some days since, the apparatus lately contrived in England by Mr Faraday, of which I have not yet found a description in any of the Scientific Journals, but which I expect to find in your next number. This little apparatus works to admiration. No other shows so clearly the magnetism of the connecting wire. For if a strong magnet is brought near the

* See this *Journal*, Vol. IV., Plate VIII. Fig. 3.

† See this *Journal*, Vol. IV., Plate VIII. Fig. 7.

end of the pendulum-wire AB, Fig 9. it is strongly attracted *. Believe me, Dear Sir, very sincerely yours, G. Moll.

Utrecht, *8th December* 1821.

Art. IV.—*Barometrical Observations made at the Fall of the Staubbach, by* J. F. W. Herschel, Esq. F. R. S. L. & E., and Charles Babbage, Esq. F. R. S. L. & E. In a Letter from Mr Babbage to Dr Brewster.

My Dear Sir,

I promised a short time since to send you an account of some barometrical observations made by Mr Herschel and myself at the Fall of the Staubbach, during last summer. There are some circumstances attending the observations at the foot of the great fall, which seem worthy the investigation of other travellers who may visit the magnificent valley of Lauterbrunnen, and who may have more time than we had for the inquiry.

The finest view of this beautiful cataract, is that which presents itself to the traveller on descending the Wenger Alp, on his way from Grindelwald and Lauterbrunnen, as it is there only that the upper fall becomes visible.

I have assumed the ground-floor of the inn where we were accommodated, as the point to which all the measurements are referred. There are several reasons for this, amongst which may be mentioned, that I had previously determined very accurately its height above the stream which passes through the valley, and that the observations I made at the inn were not completed until the instrument had in both cases been exposed to the atmosphere a full hour.

We left the inn a few minutes after seven in the morning, and following a circuitous path, arrived in little more than an hour at a small wooden bridge, which traverses the torrent at some distance above the upper fall. It descends from this spot with great rapidity; and finding it inconvenient to follow its

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* As this ingenious apparatus was described in our last Number, viz. Vol. VI., p. 178., without a reference to a figure, it may be sufficient to state, that in Fig. 9. AB is the brass pillar; CD the copper-rod; E the shallow glass-cup with mercury; F the magnet; G the descending rod of metal; H the cylindrical cup; I the second bar-magnet; and K the thick wire descending from the rod above. See the *Quarterly Journal*, vol. XII. p. 283.