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"Nec araneorum sane textus ideo melior quia ex se fila gignunt, nec noster
vilior quia ex alienis libamus ut apes." *Jusr. Lips. Monit. Polit. lib. 1. cap. 1.*

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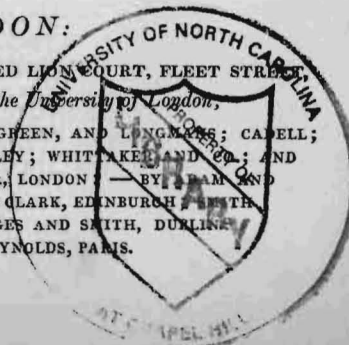
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carbonic acid or in one of any other gas which does not chemically act either upon hydrogen or oxygen.

6. A platina wire (in its natural state) assumes in every respect the condition and voltaic bearings of a positively polarized wire by being plunged only for a few seconds into an atmosphere of hydrogen.

7. Gold and silver are not sensibly affected under the same circumstances.

8. A platina wire does not acquire any degree of electromotive power by being put into oxygen gas: the metal remains in its natural state. Neither is any degree of such power acquired by gold or silver under the same circumstances.

9. Platina, gold, and silver, by being placed only for a few seconds in an atmosphere of chlorine, assume the voltaic state of a negatively polarized wire.

10. Water slightly acidulated with sulphuric acid and holding some hydrogen dissolved, bears to acidulated water containing no hydrogen the same voltaic relation that zinc does to copper; provided, however, both fluids be separated from each other by a membrane, and connected with the galvanometer by means of platina wires. If for the latter purpose (that is to say, for connecting the fluids with the galvanometer) gold or silver wires are made use of, the said fluids do not excite the least current.

11. Two fluids, one being acidulated water containing some oxygen dissolved, the other being likewise acidulated water containing no oxygen, appear to be in a voltaic point of view perfectly indifferent to each other, whether they are connected with the galvanometer by platina, silver, or gold wires.

12. Water slightly acidulated with sulphuric acid and holding some chlorine dissolved, bears to acidulated water not containing any chlorine the same voltaic relation that copper bears to zinc. In other terms, the former fluid acts under certain circumstances the electromotive part of the peroxides of silver, lead, &c.

13. The aqueous solution of hydrogen mentioned in § 10, loses its property to excite a current by being mixed with a certain quantity of an aqueous solution of chlorine; and, *vice versâ*, the latter fluid loses its electromotive power mentioned in the § 12 by being mixed with a sufficient quantity of hydrogen dissolved in water.

14. Muriatic acid positively polarized loses its peculiar voltaic condition by being mixed with some chlorine, and the same acid being negatively polarized loses its polarity by being treated with some hydrogen. From the facts stated, and

others which are mentioned in the memoir above alluded to, a great number of rather important inferences might be drawn; but having for the present no leisure time to do so, I am obliged to confine myself to stating those which follow:

a. The secondary currents produced both by polar wires, electrolytic fluids, and secondary piles, are due to chemical action, i. e. (in the cases mentioned) to the union of oxygen with hydrogen, or to that of chlorine with hydrogen; and not, as M. Peltier seems to think, to the mere act of the solution in water of the gases mentioned.

b. The chemical combination of oxygen and hydrogen in acidulated (or common) water is brought about by the presence of platina in the same manner as that metal determines the chemical union of gaseous oxygen and hydrogen.

c. The current produced by a platina wire being surrounded by a film of chlorine, or by water holding chlorine in solution, is not dependent on the action of the latter body upon platina, but on the action of chlorine upon the hydrogen of water.

d. Electrolytic bodies do not suffer even the weakest current to pass through them without undergoing decomposition. (This inference is drawn from the fact ascertained by me some time ago, that platina wires acting as electrodes in muriatic acid are polarized by a current so weak as not to be able to electrolyze even iodide of potassium).

e. The most delicate test to ascertain that electrolyzation has taken place, is the polarized state of the electrodes.

I cannot close my letter, Gentlemen, without taking the liberty to point out to you the beautiful, and, as it seems to me, most conclusive evidence in favour of the correctness of the chemical theory of galvanism, now so much contested, which is afforded by the fact stated in § 10. If the mere contact of the two different fluids mentioned there were the real cause of the current obtained, it is obvious that the same current ought to be produced whether the fluid be connected with the galvanometer by means of gold, or if they be connected with the instrument by that of platina wires; but the result being determined by the nature of the connecting wires, and platina being known to favour the union of hydrogen and oxygen, whilst gold and silver do not possess in any sensible degree that property, we are entitled to assert that the current in question is caused by the combination of hydrogen with (the) oxygen (contained dissolved in water) and not by contact.

I am, Gentlemen, yours, &c.

Bâle, Dec. 1838.

C. F. SCHÖNBEIN.