descent; whilst, in a digester of thick copper, the different parts of the vessel, owing to the high conductivity of the metal, are maintained at so uniform a temperature as to prevent any such circulation of the liquid from taking place.

The body just described being regarded as a mere mixture of zincmethyl and ether, incapable of being separated on account of the close proximity of their boiling points, a more successful result was anticipated by mixing the iodide of methyl with methylic ether instead of vinic ether. As methylic ether boils at $-21°$ C., it was thought that no such difficulty of separation could arise; the bodies employed would then, in fact, be exactly homologous with those so successfully used in the preparation of pure zincethyl on the large scale. It was found, however, that although a large quantity of zincmethyl was produced, yet it was impossible to obtain it free from methylic ether. A large portion of the product boiled at 43°, a small residuum only distilling between this temperature and 48°; both portions yielded, on analysis, results approaching the formula

$$2\left(\begin{matrix}C_2H_3\\C_2H_3\end{matrix}\right\}Zn_2\Big)+\left.\begin{matrix}C_2H_3\\C_2H_3\end{matrix}\right\}O_2.$$

This result is, therefore, homologous with that obtained by the decomposition of iodide of methyl mixed with vinic ether.

In conclusion, the author states, that after an expenditure of many pounds of iodide of methyl, he has been unable to obtain even the smallest quantity of pure zincmethyl by the use of a copper digester, although a much larger product of the ethereal solution is obtained than in the corresponding preparation of zincethyl.

March 10, 1859.

Sir BENJAMIN C. BRODIE, Bart., President, in the Chair.

The following communications were read:—

I. Letter from JAMES P. MUIRHEAD, Esq., to Sir BENJAMIN C. BRODIE, Bart., Pres. R.S., dated March 8, 1859, relating to the Discovery of the Composition of Water. Communicated by Sir B. C. BRODIE.

I have now, with your permission, to request you to lay before the

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Royal Society the following brief remarks on the quotation from De Luc's "Idées sur la Météorologie," which has been referred to as fresh evidence in the controversy as to the discovery of the Composition of Water.

It is only at first sight, and when taken in an isolated form apart from the rest of De Luc's narrative, that the passage in question could bear the interpretation now sought to be put upon it; for Dr. Priestley's communication of Cavendish's experiment is said by De Luc to have been made "vers la fin de l'année 1782." But in the same section of the same volume he distinctly and positively says, that when in September [1783] he returned to Birmingham, "Nous ignorions, M. Watt et moi, que M. Cavendish eût eu des idées fort semblables aux siennes sur la Cause de ce Phénomène *."

Now, we may well ask, how could this possibly have been the case with De Luc in 1783, if Priestley's communication to him in 1782 had extended to the *conclusions*, as well as to the *experiments*, of Cavendish?

De Luc adds, on the next page of his work, that "Au mois de Juin" (an evident mistake for Janvier), "1784, M. Cavendish remit à la Société Royale un Mémoire, dans lequel il joignit, au récit de ses Expériences de 1781, sa théorie sur la formation de l'*Eau*†." Here, for the first time in De Luc's narrative (with the exception of an allusion to Blagden's statement at Paris in June 1783), occurs a clear and distinct notice of Cavendish's *theory* or *conclusions*, as distinguished from his *experiments*. What M. De Luc's opinion of the memoir was, in which those *conclusions* were announced, when he perused it in March 1784, and sent an analysis of it to Mr. Watt, is well known from his letters already published ‡.

We are thus enabled to set against the interpretation attempted to be put on the quotation from the "Météorologie," the most conclusive of all testimony; that, namely, of De Luc himself: for if he had intended to say that in the end of 1782 the *conclusions* of Cavendish had along with his *experiment* been communicated by Priestley, he could not possibly have gone on to say, as he has done a few pages later in the same volume, that in September 1783 he was ignorant of Cavendish having entertained any such ideas; nor

* "Idées sur la Météorologie," tome ii. p. 224.

† Ibid. p. 225.

‡ M. De Luc to Mr. Watt, 1st and 4th of March, 1784.

would he have felt the astonishment, and entertained the suspicions which he so strongly expresses, on his perusal of Cavendish's memoir in March 1784.

De Luc's account in the "Météorologie," it must also be observed, is not a contemporaneous one, published at the time of Priestley's communication in 1782, and before the conclusions of Watt were made known; but is given from memory, at an interval of several years, when such a mistake as that of June for January shows how little it can be relied on.

I am, &c.

JAS. P. MUIRHEAD.

II. "New Volatile Organic Acids, from the Berry of the Mountain Ash." By A. W. HOFMANN, LL.D., F.R.S. Received February 3, 1859.

Whoever has been engaged in the preparation of malic acid from the juice of the unripe berries of the Mountain Ash (*Sorbus Aucuparia*), cannot have failed to perceive the peculiar powerful odour evolved during the evaporation of the liquid partially saturated with lime. The body to which this odour belongs was hitherto unknown, and only lately, my friend and former pupil, Dr. George Merck of Darmstadt, when preparing malic acid on a large scale, conceived the happy idea of evaporating the liquid in a distilling apparatus. He thus obtained an acid distillate, from which he succeeded in separating an oily body possessed of acid properties. To the kindness of Dr. Merck I am indebted for an appreciable quantity of this remarkable body, which has enabled me to examine its properties and establish its composition.

The preparation of the oil from the aqueous acid obtained by distilling the mother liquor of the bimalate of calcium, presents no difficulty. The liquid is saturated with soda, evaporated and mixed with dilute sulphuric acid, when the oil rises as a brown layer to the surface of the liquid. It is separated by ether, and after the volatilization of the latter, submitted to distillation. The first portions of the distillate contain appreciable quantities of water; the thermometer, however, rapidly rises above 200° C. What now distils is a perfectly pure compound, which, on redistillation, exhibits a con-