

LETTERS TO THE EDITOR

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Flow of Water.

BEING away from home at this place, I did not see a copy of NATURE of September 15 in time to reply in the next issue to the letter of Prof. Osborne Reynolds. That letter is to a great extent a discussion of a point of considerable interest, viz. the clear border visible in my experiments with air injected into flowing water.

The discussion is, however, preceded by a statement which, whether intentionally or not, seems to imply that not only had Prof. Reynolds previously with similar apparatus made most of the experiments I have published during the last year or two, but had communicated to me his methods and shown me this apparatus. Apparently, therefore, my humble part has been the production of a certain number of photographs of effects slightly modified from those dealt with by him.

Now, though questions of this sort are of little interest, I have no alternative but to reply to all this, because, unfortunately, the real facts of the case as to my indebtedness to Prof. Reynolds have left quite a contrary impression on my mind to that which might otherwise be supposed.

With brevity in view, I will merely refer your readers to an article in NATURE (May 12), which gives a brief outline of my research up to that date. In that article is mentioned and duly acknowledged the only point for which I am indebted to the writings of Prof. Reynolds, viz. the idea of the two manners of motion of water, so ably worked out by him in the *Philosophical Transactions* of the Royal Society.

Beyond this I cannot recall a single idea, communicated verbally or otherwise, which I owe to Prof. Reynolds, and I certainly have never seen or heard of any other appliances which bear the remotest resemblance to those I have designed and used.

If the foregoing simple statement of fact is not sufficient, I am quite prepared to enter into the subject more in detail, although I should regret to have to do so.

My reply to the other portion of the letter will be rendered much more clear by means of diagrams, and I will therefore defer my answer to it until I return to work at Liverpool.

H. S. HELE-SHAW.

South Beach Hotel, Troon, N.B., September 26.

The Movement of Encke's Comet.

IN Prof. Poincaré's paper on the "Stability of the Solar System," the statement is made that "astronomers have only been able to explain the movement of Encke's comet by supposing the existence of a resisting medium."

It may be of interest if I state that in a paper published in the *Astrophysical Journal* for January 1896, I have shown that the movement of Encke's comet may be explained by the application of well-known physical laws, which have been verified experimentally by a number of physicists, and that no suppositious resisting mediums are necessary. It is also of interest to note that the same phenomena which explain this change of rate also explain the other cometary phenomena, such as the formation of cometary tails, the curious bridge in Biela's comet, and enable us to predict that comets are unstable bodies and must all ultimately split up into swarms of meteorites, the fragments continuously separating from each other.

I might also call attention to the fact that since, according to this theory (which has so far accounted for all the facts known without assuming any premises except well-known properties of matter), a comet can be used as a gigantic absolute electrometer (its tail being the index) for measuring the electrostatic potential of the sun and planets, accurate observation of the curvature and spectra of comets' tails are much to be desired throughout their whole period of visibility.

REGINALD A. FESSENDEN.

Western University of Pennsylvania, September 3.

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A Request for Zoological Literature.

I WISH to ask my fellow zoologists, especially those on the continents of Europe and America, to be kind enough to send me, for our library here, separate copies of their papers and memoirs on zoological subjects. Here, in New Zealand, a naturalist is not only isolated, but has no efficient supply of current zoological literature; the nearest library containing modern periodicals being Sydney—a week's journey. The museum library in Dunedin, though well equipped in some respects (travels and older books), is extremely poorly provided with periodical literature. We take in the English journals and *Proceedings of Societies*, &c., but we do not purchase a single German periodical (with the exception of the Naples *Mittheilungen* and the *Jahresberichte*), and only one French journal, *Annales des Sciences naturelles*.

Hence, we are fearfully handicapped in our research work, and in our efforts to keep abreast of zoological advances. Out of sight, here, is to be out of mind to a great extent; and I would earnestly ask my colleagues in Europe and America, in their kindness, to help to remedy this disadvantage. Even if we wish to purchase a work in Europe, it takes at the very least three months before we can obtain any reply to our orders, and more usually four or five months intervene.

You dwellers in and near cities and large libraries cannot appreciate this great inconvenience.

W. BLAXLAND BENHAM.

Dunedin, New Zealand, August 14.

Stereochemistry and Vitalism.

WHEN listening to Prof. Japp's stimulating presidential address, I could not but wish that he had pursued his subject further and inquired into the antecedents of the life-made carbon compounds.

These are probably formed in the first place, not as compounds of only C, H, and O, but rather as constituents of a large molecule which has nitrogen as its centre. The growth of the C, H, and O groups depends on the lability of N compounds, i.e. their proneness to transfer matter and energy. If, then, the formation of the said carbon compounds is controlled by the nitrogen, whose atoms (with a valency alternating between 3 and 5) are asymmetrical or have a symmetry different from that of the carbon atoms, does this peculiarity of the nitrogen determine the asymmetry of the resulting carbon compounds?

F. J. ALLEN.

Mason University College, September 24.

A White, or Milky Sea.

I LEFT Bombay for England in January 1881, on board the P. and O. s.s. *Sumatra* (Captain Briscoe), and on February 1, the vessel being then in N. lat. 14° and E. long. 53° (not far from the position described by your correspondent) had an opportunity of witnessing the phenomenon known as the "Milky Sea," rarely seen except in these waters. The following extract from my book, "An Engineer's Holiday," describing and explaining the appearance, may interest Mr. Barrett:—

"The whole ocean, from the ship to the visible horizon, looked as if it were covered with snow, whose surface evidently shone by the reflected light of the sky, for Venus, being very bright, threw a distinguishable line of radiance across it, while the phosphorescent crests of waves were now and then seen breaking above the layer of shining matter which overlaid the water.

"A current, always encountered north of Socotra, set the ship, on the day in question, fourteen miles to the northward of her course. This stream was crowded with large medusæ, visible not only during the day, but also at night, when, being themselves non-luminous, they appeared as whirling black discs in the general phosphorescence of the ship's wake. The ship's officers fully believed that this current brings with it, besides jelly fish, enormous quantities of decayed and phosphorescent matter, to whose presence they attributed the appearance of the 'Milky Sea.'

"The fact, however, that the seeming snow reflects light, and is broken through by quite small waves, disposes of this explanation, and we soon convinced ourselves that the phenomenon is really due to a thin layer of mist lying on the water, exactly