LETTERS TO THE EDITOR.

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The Inheritance of Acquired Characters.

IT may be of interest to your readers to know that two guinea-pigs were born at Oxford a day or two before the death of Dr. Romanes, both of which exhibited a well-marked droop of the left upper eyelid. These guinea-pigs were the offspring of a male and a female guinea-pig, in both of which I had produced for Dr. Romanes, some months earlier, a droop of the left upper eyelid by division of the left cervical sympathetic nerve.

This result is a corroboration of one series of Brown-Séquard's experiments on the inheritance of acquired characteristics. A very large series of such experiments are of course needed to eliminate all sources of error, but this I unfortunately cannot carry out at present, owing to the need of a special farm in the country for the proper care and breeding of the animals. LEONARD HILL.

Physiological Laboratory, University College, London, October 18.

"Rhynchodemus Terrestris" in Ireland.

IT is now nearly twenty-five years ago since Sir John Lubbock discovered this Land-planarian for the first time in England. Although it is very doubtful whether the two other species, viz. *Geodesmus bilineatus* and *Bipalium kurense*, can be looked upon as truly indigenous in Europe, it is not so with *Rhynchodemus terrestris*.

Since Müller's original discovery of this worm in 1774 in Denmark, it has been taken in the Balearic Isles, near Lille, and on the Mediterranean coast in France, and near Würzburg in Germany. Finally, Sir John Lubbock speaks of it as having been found in Shropshire and Kent in England. More recently Mr. Harmer discovered it near Cambridge, and I have now to add a new locality, having received some specimens from Blackrock, near Dublin. R. T. SCHARFF.

October 22.

Dr. Watson's Proof of Boltzmann's Theorem on Permanence of Distributions.

IN working over Dr. Watson's proof of Boltzmann's H-theorem (Watson, "Kinetic Theory of Gases," second edition, p. 43), it appeared that, probably through a slip, the reasoning given depends on an assumption palpably absurd, *i.e.* that the function whose vanishing defines the beginning or end of an encounter between a molecule belonging to a set with m degrees of freedom and one belonging to another set with n degrees of freedom *is a function of the coordinates of the last molecule only*, the one belonging to the n set. For while he takes the number of molecules of the n set whose momenta and coordinates lie between

$$p_1 \text{ and } p_1 + dp_1 \ldots q_n \text{ and } q_n + dq_n$$

as

$$f(p_1 \ldots q_n)\, dp_1 \ldots dq_n,$$

he also takes $q_n = 0$ as the condition of encounters between those molecules and others from a set whose coordinates are

$$P_1 \ldots Q_m.$$

I do not know Boltzmann's proof, but while I suppose it is all right, I find it very hard to understand how any proof can exist. *A priori* the only physical property assumed in Watson's proof is that

$$dp_1 \ldots dq_n = dp_1' \ldots dq_n',$$

together with the fact that the number of molecules about a configuration $p_1 \ldots q_n$ is

$$f(p_1 \ldots q_n)\, dp_1 \ldots dq_n;$$

and therefore it would, if true, apply to a system obtained by reversing the velocities when the permanent configuration had been very nearly reached. Such a system would retrace its path and go further and further from the permanent configuration.

Hence it would appear as if the whole conception of Dr. Watson's proof was founded on a mistaken idea of what can be proved, and that all that any proof could show is that, taking all the values of $\frac{dH}{dt}$ got from taking all the configurations which approach towards a permanent configuration of the molecules, *and* the configurations which recede from the permanent configuration (obtained by reversing velocities), and then striking some kind of average among them, the average $\frac{dH}{dt}$ would be negative.

Will some one say exactly what the H-theorem proves?

EDWD. P. CULVERWELL.

Trinity College, Dublin, October 12.

The Meteor-Streak of August 26, 1894.

SINCE the publication of my paper in NATURE of September 27, in which I discussed observations of the fireball of August 26 and its drifting-streak, I have received many additional descriptions which show that some of the earlier reports were not very accurate. The results I derived for the direction and rate of motion of the streak have therefore to be considerably amended to agree with the new materials.

From all the data I find that the height of the streak was fifty-four miles above a point seven miles north-east of Denbigh. From thence it travelled horizontally to south-east, passing successively over Ruabon, Denbighshire, and Wem and Wellington, Shropshire, finally becoming extinct six miles west of Wolverhampton, at just about the same height as at first. It traversed sixty-one miles in thirty minutes, which is equivalent to 176 feet per second.

This deduction differs from the previous one, which assumed the meteoric or cosmic cloud to have been rapidly ascending in the atmosphere during the time it remained visible. Mr. Wood, of Birmingham, obtained a similar result from the earlier observations. I feel certain, however, that no such upward movement of the cloud really occurred, but that it maintained, throughout its rapid drift to the south-east, a nearly uniform elevation of about fifty-four miles above the earth's surface.

Bristol, October 14. W. F. DENNING.

Flight of Oceanic Birds.

JUDGING from Mr. Kingsmill's photograph, it would appear that the bird is just in the position of the half-stroke of the wings when making a fresh start or a sudden spurt. While these birds generally sail about, yet at times they do flap their wings. The movement of the wings in all these oceanic birds is very deliberate. I might here be allowed to point out the interest attaching to such photographs as these; and as many have hand-cameras now, snap-shots of animal life at sea, or of any natural phenomena, would be valuable and interesting additions to our knowledge of sea life. D. WILSON BARKER.

Greenhithe, October 13.

A LONG-PERIOD METEOROGRAPH.

IN order to obtain a record of the principal meteorological variations at the summit of Mont Blanc, M. Jules Richard, of the well-known firm of scientific instrument makers, has constructed for Dr. Janssen a meteorograph which will run through the winter and spring without being re-wound.

The instrument (Fig. 1) is set in action by a weight of about ninety kilograms, which falls from five to six metres in eight months. This weight moves a pendulum, which regulates the movement of the various parts of the apparatus. It was essential that the motion of the pendulum should not be greatly affected by considerable variations of temperature. A modified form of Denison's escapement was therefore adopted by M. Richard (Fig. 1, A.). An advantage of this escapement is that it only requires a very minute quantity of oil. Denison was unable to detect any variation in the uniform motion of the pendulum when the oil had frozen to the consistency of tallow.

All the movements of the meteorograph are given to the respective instruments through a horizontal shafts