

measurement of the resistance of the human body, suggested that the latter instrument was too sensitive, and that from self-induction perfect silence could not be obtained. Both these remarks are true; but if time and the chairman had permitted, I should have said that absolute silence is rarely got, but that the minimum of sound is so easy, after a little practice, to estimate, that one-hundredth of a revolution on either side of it is instantly detected. The bridge wire takes ten turns on the barrel; consequently this amount is the thousandth part of a wire three metres long. Using a fixed resistance of 100 $\Omega$ , the possible error is quite unimportant, and even with 1000 $\Omega$  it is far within other instrumental accidents.

But as in the somewhat similar case of counting "beats" between tuning-forks, a sensitive and an educated ear is needed. At first starting I found that I made considerable mistakes, one of which is recorded in a paper contributed to NATURE some weeks back.

W. H. STONE

Wandsworth

### Simple Methods of Measuring the Transpiration of Plants

THE "potétomètre" described in NATURE, May 22, p. 79, appears to be an ingenious but a rather complicated instrument. Experience has, however, taught me that the extremest simplicity is most desirable. Mr. Ward hints at difficulties of manipulation which are quite conceivable. The plan I have adopted, and find to answer, as far as it goes, is to insert the cut end in a small test-tube and cover the surface of the water with a little oil. The whole can then be weighed to three places of decimals, and the absolute amount of loss in a given time is easily ascertainable.

But a serious objection must be made against all experiments with cut shoots and leaves, for they can only give, at best, unsatisfactory results. The amount of transpiration varies so much under the ever-changing conditions of light, heat, dryness, &c., that it is only by a long series of comparative experiments *with the same specimen* that the differences peculiar to each kind of plant can be ascertained; and no cut shoot can be employed for two or three days, much less for several days, as are necessary for obtaining satisfactory results; as the amount of loss steadily decreases till death ensues, although the shoot may be *apparently* quite healthy for a long time. I have been experimenting for several summers on the transpiration of plants under coloured lights, and at first used cut specimens, as so many experimenters have done, but I found they were most untrustworthy. I now grow the plants in miniature pots, which are covered up in gutta-percha sheeting. These can be weighed to two places of decimals. By this simple method all difficulties are entirely obviated.

GEORGE HENSLOW

Drayton House, Ealing

### Worm-eating Larva

THE following note, which I received from the Rev. Robt. Dunn of Cricklade, may be worth publishing in reference to Prof. McKenny Hughes's "Notes on Earthworms." Mr. Dunn says: "This afternoon (May 6) on a gravel path I saw a worm wriggling in an unusual way, and stooping down I saw that a big earthworm had a smaller worm hanging on at the belt or knob, or whatever you call it; so I got a bit of stick and pushed off the parasite and found it no worm, but I should say a sort of centipede, with a very red head, about one inch long. So I captured him and put him in methylated spirit, when he vomited what I presume was worm's blood." He further adds that what the beast vomited was a stream of crimson fluid; it separated at once into white flocculent matter with brick-red specks, but since it has all turned into a white sediment. Mr. Dunn sent me the animal, which proves to be the larva of a beetle, either one of the Staphylinidæ or Geodephaga.<sup>1</sup>

Southampton

W. E. DARWIN

### Cultivation of Salmon Rivers

I HOPE we may assume, from the paragraph which appears among the "Notes" in your issue of last Thursday (p. 129), that the Fishery Board for Scotland is about to take some active course towards the removal of obstructions to the ascent of

<sup>1</sup> Mr. W. F. Blandford has called my attention to an account of a similar encounter between a worm and a larva given in Dallas's "Elements of Entomology," p. 6.

salmon up Scottish rivers. When you say the Board "is specially desirous to introduce as soon as possible a fishway at the falls, and this, when done, would open up some 500 miles of excellent fishing and spawning ground," I hardly think you can be alluding to any one particular river. Am I correct in supposing you refer to the aggregate mileage of rivers in Scotland now closed by natural obstructions, *i.e.* waterfalls? The Report of the Special Commission to inquire into the condition of the salmon fisheries of Scotland, published in 1871, informed us that the River Tay alone had some 115 miles of river blocked against the salmon by the two natural obstructions of the Tummel Falls and the Falls of Garry on the two important Tay tributaries from which the respective waterfalls are named. If your "Note" meant to include the entire mileage of Scottish rivers seriously affected by artificial dams of a more or less obstructive character (and their name is legion in Scotland), as well as by the natural barriers that occur, I think 500 miles of obstructed fishing and spawning ground is far too low an estimate; it might in fact, I should say, be multiplied at the very least by three. Now that theoretical playthings are being laid aside, and in their place appears a prospect of a more sound, natural, and scientific basis being made the foundation of our future salmon cultivation, the absolute necessity of opening up the natural breeding-beds of the fish will, it is hoped, become patent to every one, and the dream of my old friend the late William J. Fennel, the father, so to speak, of our modern salmon fishery legislation and salmon river cultivation may at last be realised. "If I live," he said to me one day (I hardly care to remember how long ago it was, or how soon after he was taken from us), "I shall never rest until every weir and mill-dam in the three countries—England, Ireland, and Scotland—has a thoroughly good and permanent salmon ladder built upon it, or into it, or around it. We have shown we can restore the fisheries; we must now restore the rivers. That, sir, is the true position to take up, and that must be our next aim." Had Mr. Fennel lived, river restoration would probably have progressed more than it has during the last decade.

MARK HERON

June 9

[The falls referred to in our note on the Fishery Board for Scotland last week (p. 129) are the Falls of the Tummel.—Ed.]

### A RARE BRITISH HOLOTHURIAN

OF the six species of Holothurians with shield-shaped tentacles (the Aspidochirotae) that are known to occur on the shores of the North Atlantic Ocean, two—*H. obscura* and *H. agglutinata*—were so shortly described by Le Sueur as to be still strange to American naturalists; no definite statement as to the presence of a true, that is, aspidochirote, Holothurian in the British seas has ever made its way into any systematic revision or synopsis of the class.

Shortly, however, after the publication of Forbes' "British Starfishes," Mr. Peach of Gorran Haven, Cornwall, published in the *Annals and Magazine of Natural History* for 1845 (vol. xv. p. 171) a short article on the "Nigger" or "Cotton-Spinner" of the Cornish fishermen, in which he quite rightly remarks that no typical Holothurian with twenty tentacles had been observed by Forbes, and exhibits a just pleasure in being able to say that he had discovered one. Later, two Irish naturalists—Prof. Kinahan and Mr. Foot—separately noted the existence of what one called *Cucumaria niger* and the other *Holothuria niger*. With an exception to be mentioned immediately, no writer has for nearly forty years given the least indication of a knowledge of the existence of this "Cotton-Spinner," and it may therefore be supposed that it was always with interest that I examined any form that came from the British seas. A short time since, on opening a Holothurian that had been in the British Museum for nearly twenty years, I found that, instead of those tubules which, arising from the wall of the cloaca, were first seen by Cuvier, and called Cuvierian organs by Johannes Müller, being small and inconspicuous, or, as often happens, altogether absent, they formed rather a large, almost solid, compact mass of