

the transmitted intensity depends almost entirely on the ratio of the densities. If we take the case of a partition of wood having a density half that of water, calculation then shows that at normal incidence about 4 per cent. of the sound is transmitted if the thickness be 1 cm. Reducing the thickness to 2 mm., the intensity of the transmitted sound increases to 50 per cent., and rises to 80 per cent. if the thickness is only 1 mm.

What I desired to emphasise in my previous letter is that the diminution in the sound transmitted with increasing thickness is not necessarily due to any absorption, but is explained by the effect of the reflection at the second surface which, when the thickness is small compared with the wave-length, neutralises the reflection at the first surface. This does not appear to be sufficiently appreciated, and some of the conclusions drawn in Prof. Watson's paper require correction accordingly. The effect of the second surface is also of importance when total reflection ought to take place according to the usual formulæ at the first surface. With a thickness less than a wave-length, part of the sound is transmitted. This case has been treated by Lord Rayleigh ("Collected Works," vol. vi. p. 71).

ARTHUR SCHUSTER.

The Annelids of Iceland and the Faroes.

THIS is a subject about which very little has hitherto been known. In discussing the part which white ants play in the economy of nature Prof. Henry Drummond compared them with earthworms. He referred to Darwin, and said that in "Vegetable Mould" a reference was made to the existence of earthworms in Iceland. I cannot find any such allusion. It is true that a few worms have been recorded for Iceland and one for the Faroes. I am fortunately in the position to add somewhat to our knowledge. My son, Dr. J. Newton Friend, having recently returned from an expedition in those islands, I have had the privilege of examining his collection of annelids. The following are the results:

The common earthworm (*Lumbricus terrestris*, L.) flourishes in Iceland. I examined twenty-three specimens, twenty of which were perfectly adult. Not one of them differed in any particular from the type as found in England. I hoped to find spermatophores, but in this matter disappointment was experienced. The specimens were collected near Reykjavik at the beginning of August, and were just in the right condition for laying their cocoons.

The red earthworm (*L. rubellus*, Hoffm.) was also found. Though adult it was smaller than our English specimens usually are, and the dorsal surface was of a darker brown colour. I have often found similar specimens, however, in the British Isles, so that they are in no sense to be looked upon as a variety.

The purple worm (*L. purpureus*, Eisen=*L. castaneus*, Sav.) has already been recorded, alike for Iceland and the Faroes. Thus each of the three common species of European Lumbrici is now known to be a denizen of Iceland. To these may be added two species of the genus *Dendrobaena*. One of these (*D. rubida*, Sav.) is best known by the variety usually named the gilt-tail, a denizen of ripe manure and decaying leaves. The other (*D. octoedra*, Sav.), although widely distributed geographically, is not a common species in Great Britain. Up till the present, then, five species only of the Lumbricidae have been recorded.

The shores of Iceland, if they could be worked as Claparede worked the Hebrides, would doubtless yield a variety of forms, especially the red-blooded pot-worms or pachydrilids. None of these, so far

as I am aware, has been up till the present placed on record, but *Clitellio arenarius*, O. F. M., well known on our English coasts, is reported for the coasts of Iceland.

I can find no records for the Faroes except the purple worm already noted. It is, therefore, with peculiar pleasure that I am able to add two new members to the list. These are both enchytraeids, and were collected in peaty earth near a stream some two miles inland from Thorshaven. One of these was a pachydrilid (*Lumbricillus lineatus*, O. F. M.). I have written fully on the synonymy in the *Irish Naturalist*, and my conclusions are supported by the more recent investigations of the American helminthologist, Welch.

The other enchytraeid is of the white-blooded kind (*Mesenchytraeus oligosetosus*, Friend). It was found some time ago among gleanings made in Jersey, and described by me in the *Zoologist*. I have more recently found a striking variety of this worm, or an allied species, near Birmingham. The Faroes material agreed with the Jersey. The worm is about a third of an inch in length, and belongs to the group which has enlarged setae on the segments which contain the spermathecae. It may also be noted that I found one of the commoner opaline parasitic in the Faroese enchytraeids. Our list therefore stands thus: *Mesenchytraeus oligosetosus*, Faroe Is.; *Lumbricillus lineatus*, Faroes; *Clitellio arenarius*, Iceland; *Dendrobaena rubida*, Iceland; *Dendrobaena octoedra*, Iceland; *Lumbricus purpureus*, Faroes and Iceland; *Lumbricus rubellus*, Iceland; *Lumbricus terrestris*, Iceland.

Addendum (Aug. 16).—A further investigation with pocket lens has resulted in some interesting additions to the foregoing list:

Achaeta minima Southern, only 1 mm. in length, but agreeing exactly in all particulars with the material from Ireland. The intestine contained peaty soil with a number of diatoms.

Marionina (*Chamaedrillus*) *sphagnetorum* (Vejd.).—Very slender, but true to type. White (colourless) blood. I stated my reasons in these columns some time ago for transferring this species to the genus *Chamaedrillus*.

Dorylaimus obtusicaudatus Bastian. A fine female nematode, about 2½ mm. long. All from the Faroes.

HILDERIC FRIEND.

Cathay, Solihull.

On the Reality of Nerve-Energy.

THE expression "nerve-energy" is widely used both by non-technical writers and by medical and physiological authors as well.

What the former mean by it is of no particular moment; but in medical and physiological literature it should connote something quite definite, if indeed the existence of nerve-energy is admitted at all. There seems a doubt whether its existence is to be admitted in a formal sense, for although certain physiologists use the expression nerve-energy as a convenient term, the thing itself is not discussed in their text-books, nor does it find a place in the indexes.

If nerve-energy has no place in the scheme of things vital as conceived by modern physiologists, then the term ought not to be used by them just because it is occasionally a very useful one. When they do use it, it means no more than "innervation."

The subject is full of difficulties, one of which is our having to reckon with the use of the still vaguer