

Protodrilus appears to inhabit only the European seas,¹ having been taken in the Black Sea, the Mediterranean, at Heligoland in the North Sea, and at Ambleteuse, on the French side of the Straits of Dover. Protodrilus was found on March 2 in a small bay just outside and to the east of Plymouth Sound. On March 11 the spot was again visited, and a large number of specimens, more than a hundred, gathered in about an hour. The animals were found almost at the high-water mark among stones and gravel at a point where a small stream of fresh water runs into the sea.

It is an interesting fact that the animals are immersed at one period in practically fresh water, and at another period in sea water; samples of the water in which the animals were living taken at low water during the neap and spring tides were found to have densities as indicated by a hydrometer of about 1.001 and 1.009 respectively; while the density of a sample of sea water taken just outside the breakwater at Plymouth, estimated by the same instrument, was found to be about 1.025.²

These specimens of Protodrilus are undoubtedly different from those previously taken at Ambleteuse and Heligoland, but they resemble in some characters both the Mediterranean forms, *Protodrilus flavocapitatus*, Uljanin, and *Protodrilus spongioides*, Pierantoni. The former of these species occurs in situations which are never covered by more than a few decimetres of water, while the latter is represented by only four specimens taken from fresh water. A fuller investigation of the English specimens is being undertaken in order to compare them in more detail with the known species of this genus.

The English Protodrilus were living in the situation described above along with *Gammarus marinus*, an Oligochæte and *Gunda (Procerodes) ulvae*; the latter of these species was first taken in this spot in great numbers two years ago, and does not appear to have been recorded previously on the English coast.

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On the Gain of Definition obtained by Moving a Telescope.

THE following is an account of a very singular fact which came recently under my notice, and for the explanation of which I am absolutely at a loss.

I am in the habit of rating my chronometer by means of the time-ball dropped at the Greenwich Royal Observatory, about $3\frac{1}{2}$ miles away, a signal which I observe in a small hand telescope.

On March 11, the weather being misty, I failed to pick the signal post, although I knew exactly where it was, and had placed the telescope exactly in the right direction. I moved the telescope a little, thinking I had displaced it in putting my eye to the eyepiece; and I immediately saw, very dimly, the dome of the observatory, and the signal, with the ball at half-mast, and noticed that *they were in the centre of the field all the time*. As soon as I steadied the telescope, however, they vanished completely. They reappeared as soon as I began to "sweep" for them, but remained discernible only while the motion lasted. I repeated the experiment several times; the signal

was really invisible while the telescope was fixed, but by imparting to it a slow oscillation right and left I kept the signal in view with sufficient distinctness to see the ball drop, although I was not certain it had really dropped until a second or so afterwards, owing to the great faintness of the image observed.

I recollected then that, often, in similar conditions of seeing, having picked the signal without any difficulty while "sweeping" for it. I had failed to see it afterwards, and gave up the attempt, thinking I had been mistaken, or that the mist had become thicker. I have therefore no doubt as to this most curious and inexplicable fact: an indistinct object is better seen in a slowly moving telescope than in the same telescope when kept steady. There must be a very interesting physiological property of the eye involved in producing this result, which is quite in opposition with what one would naturally expect. Perhaps some of your readers have noticed something similar, and could throw a little light on this mysterious phenomenon.

M. E. J. GHEURY.

Woolwich Polytechnic, March 15.

Four-horned Sheep.

MR. RITCHIE'S note on four-horned sheep in NATURE of March 6 is interesting, but I am inclined to doubt whether there ever was, in Scotland or any other country, a breed in which four horns are normal. No doubt it is possible to fix this character in the male sex by careful selection, as has been done by some breeders of the spotted or Barbary sheep (sometimes called Spanish, Syrian, or Zulu sheep); but even these have not succeeded in fixing the character in the female sex. I have evidence, in the shape of specimens or photographs, of the existence of four-horned sheep in North and South Africa, Mongolia, China, the Himalayas, Baluchistan, and Chile. The Iceland breed was supposed to be four-horned, and no doubt four-horned examples were often found amongst them, a specimen I have being precisely similar in type to an abnormally four-horned Shetland.

My own experience of four-horned rams is that in most cases the lower horns, and in some cases the upper also, require to be cut at some time in their life to prevent them from growing into the cheek, or below the jaw, so that the animal cannot graze; and this no doubt would have a tendency to eliminate the four-horned rams where not specially selected. No instance is on record, so far as I know, of any wild sheep having more than two horns, neither have I seen any skull of domestic sheep in which there were more than four horn-cores, though five-, six-, and even eight-horned sheep have been recorded.

H. J. ELWES.

Colesborne Park, near Cheltenham, March 14.

THE EXPERIMENTAL STUDY OF FLUID MOTION.¹

MANY attempts have been made to study the motion of fluids past an obstacle by experimental methods, and experiments made for this purpose may be divided roughly into two classes:

(a) Those in which the fluid is made to flow

¹ The figures which accompany this article are from the Technical Report of the Advisory Committee for Aeronautics for the year 1911-12, and are reproduced with the permission of the Controller of H.M. Stationery Office.

¹ U. Pierantoni, "Fauna und Flora des Golfes von Neapel." Vol. xxxi. Protodrilus, 1908.

² These values of density were made at temperatures between 15° and 17° C., and are to be regarded as approximations only to the absolute density: as the water in which the Protodrilus were living would be constantly changing, it was not considered worth while to analyse accurately two random samples.