The Secretary read a paper from Mr. ROBERTSON 'On the Boring Operations of *Pholas dactylus*,' in which the author clearly traced a portion of the effect produced by the animal on the rock in which it lived to a rotatory action of the shell. This movement never moved the animal more than half round in its hole, and sometimes not so much as this.

Prof. E. FORBES stated that there were three ways of explaining the effect or boring by Mollusca:—1st. by the valves; 2nd, by the secretions; 3rd, by siliceous particles studding the tissues. Dr. Williams's theory adopted the two former modes of operation,—with which he was disposed to agree; but Mr. A. Hancock still maintained that the latter was the mode in which the boring was effected.

'On the Mechanical Operations of the Boring and Tubicolous Annelides,' by Dr. T. WILLIAMS.

'On Some Indications of the Molluscous Fauna of the Azores and St. Helena,' by Prof. E. FORBES,—Great interest attaches to the malacology of the islands of the Atlantic on account of its bearing on inquiries into the ancient conformation of land in that region and the causes of the distribution of organized beings. We have so few data respecting the invertebrates of the Azores and St. Helena, that every fragment of fresh information becomes of consequence. The author has lately had opportunities of examining a small collection of land shells gathered in the Azores by Mr. Macgillivray, the indefatigable naturalist who accompanied the surveying voyage of H.M.S. Rattlesnake, and also a small parcel of the littoral and sublittoral molluscs collected at St. Michael's and sent to Mr. M'Andrew. From St. Helena he has recently received a quantity of the shells cast on the shore, and a few recent and subfossil land shells, collected by Mr. Alexander, a student of King's College. Out of eight species of land shells from Fayal, in the Azores, one is a new form of Bulimus, allied to a Maderian species,—two are *Helix paupercula* and *Pupa anconostroma*, both Maderian,—one is the *Helix barbula* of Charpentier, an Asturian and Gallician species,—two, *Helix pisana* and *Bulimus ventricosus*, are widely distributed South and West European forms,—two, *Helix aspersa* and *H. cellaria*, are cosmopolites, diffused probably owing to transportation by men. Of the marine shells from St. Michael's, *Purpura Læmastoma, Haliotis tuberculus, Metra fulva, Nochus langreri*, and Triton (*variegatum*), are characteristic Lusitanian species, ranging also through the Mediterranean. A Littorina is not European; it is the *Littorina striata* of Capt. King, a species remarkable for being common to the Azores, Madeira, the Cape de Verds, and the Guinea Coast. A starfish sent with the shells is the common *Urasta spinosa* of Europe. The shells brought by Mr. Alexander from St. Helena are equally interesting. To the six land shells already known he adds three, a Succinnea, a Bulimus, and a Helix; the last representing, but very distinct from, the *Helix Guerincaria* of Madeira. Our knowledge of the marine shells of Madeira has hitherto been entirely due to Mr. Cuming; who, during a brief visit to that island, dredged for a long time in forty fathoms water on a soft muddy bottom. The shells he obtained (and of which he has most liberally communicated his lists) belonged to the genera Cardium, Cytherea, Metra, Clavatula, Pleurotoma, Nassa, Scalarda, Eutoma, Pyramidella, Trochus, Delphinula, Turritella, Natica, Bulla, and Hyalinda. The species proved, so far as they have been examined, to be, as they seemed to be to Mr. Cuming at the time he captured them, all peculiar. To these genera Mr. Alexander adds specimens of *Lucina Donax* (?) Hipponyx (?) Acmæa, Siphonaria, Fissurella, Gena, Marginella, Cyprœa, Conis, Cassis, Columbella, Cerathum, Forsarus, and Rissoa. In the British Museum there is an unnamed Littorina from St. Helena closely representing, but distinct from, the *Littorina striata* above alluded to. Several of the above-named shells are too young for determination, others are decidedly new. The known species not peculiar are, *Cassis testiculus, Cyprœa lurida, spurica*, and *moneta, Conus Guineacus*, Var. *krotta, Marginella millarea*, and *Natica caurena*. The Forsarus is not the Senegal shell, but the *F. Cumingii*. Several of the above are common to the West Indies and Mediterranean.—The author infers from these facts that the coast-line of the ancient land of which the Atlantic islands north of the line are fragments had a bend indicated by the distribution of the *Littorina striata*; and that the ancient connexion of the Azores with the Lusitanian land on the one hand and Maderian on the other, as previously maintained by him, is supported strongly by these additional data. On the other hand, the facts concerning St. Helena indicate, as the indigenous vegetation of that island had previously done, that it had been insulated from a very ancient period and had never been connected with the continent. At the same time, the marine molluscs would seem to point to the submergence of a tract of land, probably linking Africa with South America, before the elevation of St. Helena. Along the sea-coast of such a tract of land the creatures common to the West Indian and Senegal seas might have been diffused.

Prof. PHILLIPS admitted the justice of Prof. Forbes's conclusions, though some of them were opposed to received geological opinions. It must be admitted that if the same forms of plants and animals appeared on opposite coasts, it was fair to infer that those coasts were at one time united. If from such facts we might infer that there was once a connexion between the Highlands of Scotland and the mountains of Scandinavia, between the centre of England and Germany, between Ireland and Spain,—so we might infer from the same facts a connexion between England and America. When we found the same animals in rocks over a wide district—as, for instance, in the Silurians of England, Asia and America,—we concluded there had been a connexion between these seas, which had produced these rocks. Why should not the same argument hold good with regard to the distribution of animals and plants of the present day? Although the area appeared large for which this distribution was demanded, the areas of the distribution of certain forms of animals—as of fishes—was larger at the present day than any demanded for the distribution of the older strata of the earth.—Prof. E. FORBES stated that there were no areas of distribution larger in the older rocks than they were at the present day, and illustrated this statement by reference to the distribution of *Saricava rugosa* and other animals.—Mr. C. J. F. BUNBURY said that the indigenous Flora of St. Helena was very peculiar, and not like any other:—so, also, were the Mollusca. The Flora of the Azores resembled that of the south of Europe, and not that of America. There was undoubtedly at one time a connexion between Africa and South America; but proofs of this connexion must not be looked for in the present Flora and Fauna,—as probably that connexion was dissolved before the present era.

'Observations on the Geographical Distribution of the Land Mollusca,' by Mr. L. REEVE.—This paper consisted of a few additional observations of the geographical distribution over the globe of a tribe of snails, recently published by Mr. Reeve in the 'Annals and Magazine of Natural History.' It was doubted at the time whether a system of typical arrangement could be formed upon the consideration of a single genus,—whether an examination of all the forms and species was not essential. It being a work of considerable labour to collect the data for this inquiry, the author submitted a preliminary outline of his views from a consideration of the Bulimi only. He was now working upon the genus Helix, and found the results to be perfectly similar. The inquiry was founded on a consideration of the shell—not on account of the difficulty of procuring observations on the animal, but because it offered a readier and more varied set of characters. The animal differs immaterially in form and generic character in any of the genera of land mollusca, but the shell varies according to the physical conditions by which it is surrounded. These groups of forms appear to be so many expressions of the calcifying organ of one and the same mollusc, depending on the laws and circumstances of organic distribution. On comparing his map of the distribution of land mollusca with that of the marine mollusca by Prof. E. Forbes, Mr. Reeve pointed out some points of resemblance where the areas of sea distributions of types corresponded with those on the adjacent land.

Prof. E. FORBES thought that we should not arrive at accurate views of the distribution of the land mollusca until their structure and relations were more perfectly understood. He regarded Bulimus as only a group of the great genus Helix. In order to arrive at correct conclusions on this point, the structure of the teeth of the Mollusca must be studied.

'On a new Testacean discovered during the Voyage of H.M.S. Rattlesnake,' by Prof. E. FORBES.—Among the collections made by Mr. Macgillivray is a new genus of Gasteropodous molluscs, floaters in the manner of Santheria, but having close affinities of shell, unival and operculum, with Jeffreysia. It appears to throw new light on the nature of Macluria, and the so-called Palæozoic Littorinæ. Prof. Forbes proposes to name this curious shell *Macgillivraya*.

'Account of Researches upon the Structure of the Acalephæ,' by Mr. T. H. HUXLEY.—The object of the present communication is to give some account of a portion of the investigations made by the author during the circumnavigatory voyage of H.M.S. Rattlesnake, under the command of the late Capt. Owen Stanley. The author describes the structure of the Physophoridæ and Diphydæ, illustrating the peculiarities of their organization by drawings of several of the species. The Diphydæ are shown to be chains of polypes, provided with peculiar natatorial organs,—the Physophoridæ to be similar chains, sometimes provided with similar natatorial organs, but always possessing a peculiar "float," formed by a dilatation of the polype-stem, containing a vesicle of air. The zoological relations of these two families are next inquired into. An attempt is made to show that, together with the Beroidæ, Medusidæ, Hydroiæ and Authozoic Polypes, they form a well defined class of the animal kingdom,—for which the author proposes the name of the *Nematophora*, from the very general diffusion of the peculiar "thread-cell" throughout the class. The Nematophora being once separated, the author endeavours to show that the rest of the Radiata are on the one side related to the Mollusca, on another to the Annulosa, and on the third to the lowest plants—so that the class Radiata, as such, must be broken up.

Prof. E. FORBES said that Mr. Huxley's researches had thrown great light on the structure and affinities of the group of Radiate animals. He was not prepared to adopt all Mr. Huxley's views,—but they were entitled, he felt assured, to the most mature consideration of naturalists.

The Secretary read a paper from Messrs. ALDER and HANCOCK, giving an account of two new Nudibranchiate Mollusca. One was a new species of the old genus Eolis,—and the other a new genus altogether. The anatomy of the latter was given by Mr. A. Hancock. The paper was illustrated by drawings of the forms and anatomy of the creatures described.

SECTION E.—GEOGRAPHY AND ETHNOLOGY.

[We should have stated in our last report that on Thursday this Section was visited by His Royal Highness Prince Albert.]

'On Ethnographical Classification, considered with peculiar reference to the two unsolved Problems in Indo-Germanic Philology,' by the Rev. J. W. DONALDSON.—The two unsolved problems in Indo-Germanic philology are,—first, the amount and nature of the affinity which connects the Indo-Germanic and Semitic branches of the human family,—secondly, the origin and interpretation of the ancient Etruscan language. These two questions depend on a satisfactory definition of the Asiatic starting-point and European limits of the Sclavonian emigration; and in order to arrive at this definition it is necessary to review the general principles of classification. The comparative anatomy, &c. of the different races of men is not at all calculated to explain the facts of our science or to assist us in classifying the different families. With this view, it is obvious that there can be but four elements in the inquiry: first, philology,—secondly, old ethnical and local names,—thirdly, history and tradition,—fourthly, physical or descriptive geography. Taking all these sources of information, we find that the Sclavonians may be traced back to the most westerly position in Iran,—*i. e.* to a close contact with the Semitic or Syro-Arabian race; and the ethnographical or *primâ facie* conclusions are fully confirmed by linguistic and palæographic arguments. Some particularly interesting inferences may be drawn from the degree in which the Medo-Sclavonian and Semitic tribes respectively have adopted or introduced alphabetic writing. In the other, or European, extremity, we find that the