seated subterranean action, because the rocks at New Brighton, and Hilbre Island, and Hilbre Point—the latter close to the submarine forest—would have manifested some sympathy with the area under the depressing influence, whereas their elevation had been unchanged for centuries. The author had caused two borings to be made: the first gave, sand 2 feet; peat, with trunks of trees, 4 feet; red clay, 16 feet; quicksand, penetrated to the depth of 4 feet only. The second boring was commenced outside the embankment, 8 feet below the level of the marsh; and gave red clay, 10 feet; brown clay with sand-beds 2 or 3 inches thick, and 5 or 7 feet apart, penetrated to the depth of 38 feet. The author supposed that the abrading action of the tides on the edges of these strata would prepare a ready means of escape for the water and sand underneath the clay, during the refluxes of the tide; and that the hydrostatic pressure of water at a higher level in the permeable strata, would force the sand from underneath the clay beds, and cause the shore to subside. The clay and peat would resist the action of the water longer, and descend conformably with the undermining of the lower strata until submerged even beneath the level of low water. In Bidston Marsh, which formed a continuation of the flat shore at Leasowe, there were also the remains of an ancient forest imbedded in peat; but in the south-east corner of the marsh trees still flourished at a level only 18 inches above that of the extinct forest.—Prof. Harkness stated, that the moss at Formby was interstratified with silt, showing that the sea had sometimes gained access, and at others been shut out; the bitumen of Ormskirk really came from these peat-bogs at Formby.—Sir C. Lyell remarked, that the action of water on clays was much more rapid than on root-beds.

'On the Silurian Anthracite of Cavan,' by Dr. Whitty.—The author described this deposit as a bed of soft anthracite or culm, about 4 feet thick, occurring in dark grey clay-slate, dipping 80° south-east, with an average strike of 37° west of north. The slaty rock alternated with beds of shale and conglomerate, much altered by metamorphic action. The bed of anthracite varied its direction, but seldom more than a few degrees; it appeared to have suffered much by compression and dislocation, diminishing in a short space to a few inches of thickness, or giving off spurs into the slate rock; portions of the slate were also included in the culm. Its composition was carbon, 77·64; water, 4·35; ash, 18·1. For burning it required mixture with wood or turf. It might be worked like the Cornish mines, being nearly vertical, and the water brought out by an adit, without pumping. The value of culm in Cavan was 8 to 10 shillings per ton; of coal, 24 shillings per ton; the culm would be of value for lime-burning.—Dr. Griffiths stated, that he had not met with anthracite elsewhere in the grauwacke of Ireland; if this bed could be traced at the surface for a long distance, it might be worked like a mineral vein.—Prof. Harkness said, that the attempt to work Silurian anthracites in Scotland had been unsuccessful.

Mr. A. Bryson exhibited specimens from the slates of Peebles-shire, having many convoluted markings, which he supposed to be worm tracks, filled up by matter deposited in them slightly different from the surrounding matrix.—Prof. Harkness stated, that they belonged to the genus Crossopodia (M'Coy).

WEDNESDAY.

'On Crustacean Impressions from the Trias of Dumfries-shire,' by Prof. Harkness.—It was well known that footprints of reptiles were abundant in the New Red Sandstone of Dumfries. Those now exhibited were compared to leech-bites in form, and were believed to be left by crustaceans. They came from an upper bed of sandstone, quarried at Corse Hill, north of Annan. The layers were sometimes ripple-marked and channeled as if by rills of fresh water trickling over a shore.

Mr. J. Price invited attention to the geology of a little district, of carboniferous limestone, at Llysfaen and Penmaen Rhos, near Abergele. The drift here assumed four distinct appearances: 1st, flattish boulders of micaceous sandstone, with Terebratulæ, were strewn over the surface of the elevated sheep pastures; 2nd, the slopes towards the sea were thickly covered with drift, composed of native limestone in a semi-bouldered state, often scored with parallel lines, the fragments being sometimes eighteen inches across; 3rd, drift of very smooth pebbles of limestone, in a matrix of highly comminuted lime gravel; 4th, a gravel pit at Tyn-y-coed contained pure sea-sand and gravel of small pebbles like the present beach: one of the pebbles had been perforated by the Cliona. There were also lumps of clay stuck over with pebbles. This spot was now three-quarters of a mile inland, and three or four hundred feet above the sea level.

Mr. S. Knipe exhibited several sections in the neighbourhood of Liverpool.

Mr. Charlesworth exhibited and described several new vertebrate fossils:—1. Vertebræ, supposed to be cetacean, from upper greensand of Cambridge, in the cabinets of the Rev. T. Image and Mr. Reed, of York. Their structure was extremely dense, and the ends marked with radiating grooves as in Mammalian Vertebræ, which have lost their epiphyses. The bodies of these Vertebræ were depressed, giving an elliptical section, and on the dorsal surface was a ridge instead of the usual spinal canal. The vascular foramina were large.—2. Part of the lower jaw of a new mammal (*Stereognathus ooliticus*, Ch.) from the Stonesfield slate, in the cabinet of the Rev. J. Dennis, of Bury. This was the fifth quadruped of the Stonesfield slate, and must have been twice the size of any of the others. The specimen was part of the centre of one division of the lower jaw; its curvature was very slight, and the concavity below. The section, where it was broken across, was rectangular, and as wide as deep. The surface presented no trace of sutures or vascular lines. Three teeth remained, occupying half the length of the fragment, and one of these had six similar cusps arranged in two rows.—3. The skull of a new mammal, named *Platycharops Richardsonii* (Ch.), from the London clay of Herne Bay; about the size of the Hyracotherium, but quite distinct, having very prominent zygomatic processes, and the crowns of the molar teeth being furnished with one large tubercle occupying two-thirds of the surface, and several small complicated tubercles inside.—4. *Teleosaurus ischnodon*, (Ch.), a new species, in the Museum of the Yorkshire Philosophical Society, with teeth very closely crowded, leaving only a slender bony partition between the sockets.

Sir R. I. Murchison exhibited a slab of Old Red Sandstone, sent by the Rev. T. T. Lewis,—one of the greatest contributors to the elucidation of Siluria, who had lately discovered rippled surfaces and trails of animals in the Old Red Sandstone of Puddlestone, near Leominster. The tracks were of two kinds, one set perhaps produced by a mollusc, the other by a crustacean.

Prof. Buckman communicated a notice of two elephants' tusks found in the Stroud Valley, Gloucester. The largest was slightly curved, 10 feet long, 3 feet in circumference, and 1 foot 6 inches in its greatest diameter; the other tusk was curved, forming three-fourths of a circle. Remains of rhinoceros and hippopotamus were found in the same gravel.

Prof. Buckman also sent an account of coal deposits in West Virginia. They occurred on the banks of a tributary of the Ohio, 300 miles from Pittsburg, and 150 from Cincinnati, and were covered by New Red Sandstone. There were five seams of coal, with a total thickness of 20 feet; one bed of splint coal was 10 feet thick. They contained Calamites, Stigmariæ, and true coal-measure ferns. The grits below were like those of the Welch coal-field, and nearly horizontal. At the top there was a little band of limestone, with Cyprides, like the Ardwick limestone of the Lancashire coal-field.

MONDAY.

SECTION D.—ZOOLOGY AND BOTANY, INCLUDING PHYSIOLOGY.

The Rev. J. Yates exhibited the Staminiferous flower-stalk of the *Dion edule*,—a species of plant belonging to the natural order Cycadaceæ.

Prof. E. Forbes read a paper 'On some Points connected with the Natural History of the Azores.'—After giving an account of his views on the geological relation of the Azores to the continent of Europe, the author proceeded to make some remarks on a collection of Mollusca made by his friend Mr. M'Andrew. Amongst them were forty-four species of Gasteropoda, seven species of Lamellibranchiate Mollusca, and one species of Cephalopoda. Of these, the whole were referable to the Lusitanian Fauna, and only one species was found in America, and this was found also in the Canary Islands. There was a list also of eighteen species of land Mollusca; one or two of these were peculiar, but the rest belonged to the West Atlantic or Lusitanian Fauna.

'On the Application of Cyanide of Potassium to killing Insects for the Cabinet,' by Mr. G. B. Buckton.—The author observed that little or no information was to be obtained from writers on Entomology with reference to killing insects intended for future examination. After noticing the remarkable manner in which some of the Orthoptera and Neuroptera are capable of resisting the action of sulphurous acid, and consequent unfitness of the substance for such a purpose, it was stated that the desired object may be conveniently effected in many cases, by subjecting the living insect to a moist atmosphere at a high temperature. A suitable apparatus was described, and likened to a diving-bell of thin and well annealed glass, having an inner lining towards the top, of cork, upon which the specimen to be operated upon may be fixed by a pin. Suffocation quickly ensues on plunging the bell-mouth downwards into a basin of water at or near its boiling point. After noticing the certain and rapid manner in which the vapour of hydrocyanic acid acts on insect life, and objecting to its common use from its well-known poisonous and volatile properties, it was further stated that cyanide of potassium possesses the useful properties of the acid for such a purpose, without most of the disadvantages. Chemists have been long aware of the peculiar change of this substance, by moisture, into hydrocyanic acid, ammonia and other products, and as the air always contains aqueous vapour, the salt slowly undergoes the same decomposition on exposure at ordinary temperatures. The requisite apparatus is very simple, and consists of a wide-mouthed jar of glass, fitted with a brass cap having an aperture capable of being closed pretty accurately with a slide. The cyanide of potassium, in coarse lumps, is placed under a false bottom of blotting-paper, which serves the double purpose of absorbing the moisture arising from the deliquescent nature of the salt, and is also permeable to the air. A small glass bell, for transferring an insect from the net to the aperture of the instrument, completes the apparatus, which may be carried into the fields. An insect usually dies in a space of time varying from forty seconds to two minutes; but in the larger Coleoptera and Lepidoptera a longer treatment is desirable, to provide against the possibility of future resuscitation. The author considered that the cyanide possessed many advantages over crushed laurel leaves, which cannot always be obtained. The salt, now so extensively used in the arts, is cheap and may be kept for any length of time in stoppered bottles, and is thus available abroad. The instrument, also, is always ready, for a charge of thirty or forty grains will keep up a poisonous atmosphere for a month or longer without renewal. A singular instance of resistance to the action of the cyanide was then exemplified. An impregnated female of the Burnet sphinx (*Anthrocera Filipendula*) was placed in the instrument in company with the spectre moth (*Mormo Maura*). The large insect was dead in less than two minutes, but the Burnet was comparatively lively after the expiration of fourteen hours. It is worthy of note, that oviposition did not commence until liberation of the insect from confinement, possibly showing a knowledge on the part of the insect that such an atmosphere was fatal to the larvæ when excluded from the egg or injurious to the vitality of the egg itself. As both the larva and imago of *Tinea pellionella* was experimentally proved to be incapable of resisting the action of the vapour from the cyanide, a suggestion was made, that furs and