

is well-defined, the body being flattened, whilst the posterior edges of the cephalothorax are prominent and somewhat hooked. The feet number five pairs, and are setose. No external ovisacs exist, and the antennæ are of simple conformation. Under the microscope the intestinal canal, filled with brownish matter, is seen to pulsate in rhythmical fashion. The abdomen is apparently composed of some four joints, and is terminated by two long caudal bristles. The eye is single, median, and red-coloured. In the absence of more definite characters, I should feel inclined to allocate the form near the genus *Alteutha*, of Baird, from the hooked character of the cephalo-thoracic edges. It differs from *Alteutha*, however, in the absence of the characteristic hooked edges of the fourth somite of the abdomen. The sudden appearance of myriads of these creatures in the tanks may probably be attributed to the recent favourable temperature; the eggs of the adults having lain dormant, as do the cyclops themselves, through the winter.

In the tanks are shown at present several large specimens of the lump-sucker (*Cyclopterus lumpus*). These fishes, as is well known, adhere by means of their sucker (formed by the modified ventral fins) to fixed objects. Watching a lump-sucker firmly attached to the glass of the tank, the idea occurred to me that the sucker may have been developed by natural selection, as a useful adjunct to the breathing-movements of the fish. When fixed, the fish appears to be perfectly at ease, and to breathe more fully and strongly than when swimming. The movements of the opercula, or gill-covers, when the fish was attached, were specially strong, as compared with their motion in the act of swimming. In a large-headed and heavy-bodied fish like *Cyclopterus*, any aid given to the respiratory movements would be a clear gain to the animal; and from a habit simply of resting on an object so as to afford leverage and play to the gills, the comparatively useless ventral fins may have become specially modified as a disc of attachment. The development of the sucking-disc and enlargement of the branchial cavity would thus proceed *pari passu*, and by natural selection the present exaggerated features of both organs would be attained. It would be interesting to know whether the history of cyclopterus development might or might not confirm these suggestions. The lump-suckers have spawned in our tanks, but unfortunately there has been no attempt on the part of the males to fertilise the ova.

Edinburgh, June 14

ANDREW WILSON

#### Snails v. Glow-worms

SOME years ago I brought three glow-worms from Wales to London, and at night I put them on the grass, when all showed their lights; but on looking for them a short time after, one had nearly disappeared, and on searching for it my hand came against something cold, and on taking it to the light I found it was a snail—one of those which just now are very common—about 1½ inches long by ¼ inch diameter, and of a sandy colour. The brute had swallowed the glow-worm, and I could see the light shining inside!

As there are no glow-worms in this part of the country, I wish some one who has the chance would try the experiment again, by placing a glow-worm and a snail near to each other, and report the result.

R. S. NEWALL

Ferndene, June 22

#### Oxygenated Rain

THIS morning I have read Mr. Solly's note on this subject. Yesterday, June 21, we had a thunderstorm, and while looking at the lightning I noticed that the rain falling on the window-glass had what I first thought were small particles of hail in the drops; but on magnifying it I found that the opacity was caused by a number of very small air-bubbles, which soon disappeared.

These drops fell during the shower, and only for an interval which I think did not exceed ten seconds, for I had only time to take the magnifier out of my pocket and observe a few drops, after which no more fell which contained air-bubbles.

One flash of lightning left a track which lasted about five seconds, and gradually faded. This was also observed by one of my family who was observing at a distance of 1,000 feet from where I was.

R. S. N.

#### Butterfly Swarms

THE swarms of butterflies alluded to in NATURE, vol. xx, p. 183, have been observed in various localities of Switzerland—

Lausanne, Morges, the foot of the Jura, &c. The passage lasted a long time, from one to four hours, on June 9; the species was *Vanessa cardui*. By comparing the hours and dates of the appearance in the various localities, I am convinced that it is simply due to the extraordinary local fecundity of this species, and not to a migration of butterflies from Africa or the shores of the Mediterranean, as various French and Swiss journals have supposed.

F. A. FOREL

Morges, Switzerland, June 23

#### Meteor

I SAW a bright meteor at Bath last night. It flashed into sight at a spot some 10° to the south of Arcturus at 10.38 P.M. The duration of its visibility was between two and three seconds, the direction of its path very nearly north-east to south-west, its brilliancy quite that of one of the so-called "fire-balls" in pyrotechnic displays. It travelled through about 25° of arc, leaving a very faint trail, which however disappeared almost immediately. What struck me as particularly remarkable about the meteor was the decided bluish-green colour of its light.

June 19

C. ARMBRUSTER

#### JOSEPH WILSON LOWRY, F.R.G.S.,

DEATH has just erased another well-known name from the roll of workers on the Geological Survey of Great Britain, that of J. W. Lowry, the eminent engraver whose maps, sections, and plates of fossils form so interesting a part of the records of this important branch of the scientific public service.

Joseph Wilson Lowry was the only son of Wilson Lowry, F.R.S., and Rebecca Lowry, well known as a mineralogist some seventy years ago; he was born October 7, 1803. His father was the leading architectural and mechanical engraver of his time, and he trained up his son to follow his own pursuits. From his early youth his father's house was the resort of men of high intellectual culture, and his mother's pursuits leading her also to associate with the scientific men of the day, what wonder that young Lowry early imbibed his parent's tastes and became an ardent lover of all natural history studies and pursuits, an accomplished draughtsman, and a well-informed scientific man.

His first practical effort was directed to the construction of a model in plaster of the Isle of Wight, geologically coloured, and divided transversely so as to give a section (also geologically coloured) through the centre of the island.

His pursuit of natural science led him early in life to become acquainted with John Phillips, at that time keeper of the Yorkshire Philosophical Society's Museum in York, and later on, when Assistant-General Secretary of the British Association for the Advancement of Science, or when associated with De la Beche on the Geological Survey, or when Professor of Geology in Oxford, until his death, Prof. Phillips remained the sincerely attached friend of J. W. Lowry.

Lowry's first important work as an engraver was the execution of the plates for the "Encyclopædia Metropolitana." He also executed for Sir John Rennie a series of plates of London Bridge. For many years Mr. Lowry prepared all the engravings for Scott Russell illustrative of wave-lines and the contours of ships. Mr. Lowry designed and executed numerous maps and charts for the Society for Promoting Christian Knowledge, the illustrations for Weale's Scientific Series, the atlas of maps published by the *Dispatch* newspaper, the first really cheap and good atlas ever produced.

The plates illustrating Phillips's "Geology of Yorkshire," and many other scientific works, were engraved by Mr. Lowry. We are also indebted to him for the excellent series of Natural History Charts of British Fossils, stratigraphically arranged, British Tertiary Fossils, Recent and Fossil Crustacea, by Dr. H. Woodward and J. W. Salter, &c. (Stanford's).

Hundreds of plates of fossils, exquisitely engraved, and maps and sections, too numerous to recount, published for the Geological Survey of Great Britain, amply testify to Mr. Lowry's rare ability as a scientific engraver. Even the familiar card-maps of each town visited year after year by the British Association were invented and produced by Mr. Lowry's skill and ingenuity.

But the days of engraving seem drawing to a close, at least so far as *printing* from engraved plates is concerned; but the beautiful plates prepared by Mr. Lowry cannot well be surpassed by modern lithography, save in cheapness.

Much as Mr. Lowry's work was valued by scientific men, his amiability of disposition and his modesty won for him even higher esteem among his friends. Many who knew him personally will recall his readiness on all occasions, even at great personal sacrifices, to help those who needed his assistance. His freshness of heart and kindness to young people were marked features in his character. He died on June 15.

H. W.

#### DAVID MOORE, PH.D.

THE death of the Director of the Royal Botanical Gardens at Glasnevin, near Dublin, on June 9 last, has caused a very wide-spread sorrow among the botanists and horticulturists of Europe. Although Dr. Moore had attained the age of seventy-two, yet his physical strength was but little abated, and his mental powers were as strong as they were mature. A peculiarly severe attack of acute cystitis of scarcely four days' duration deprived us of a truly excellent and amiable man.

A native of Dundee, his father, attracted by the fame of Dr. MacKay, the Director of the Botanical Gardens belonging to the University of Dublin, and well known as the author of the "*Flora Hibernica*," sent David Moore to Dublin to be MacKay's apprentice. The apprentice soon learnt all the master had to teach, and was not long in qualifying himself to form one of the government staff, to whom, under the superintendence of the late General Portlock, was intrusted the Ordnance Survey of Ireland. This was in 1834; the Survey began in the County of Londonderry. In 1837 the first volume of its *Memoirs* was published, to which Moore contributed an essay on the flora of the region surveyed. Shortly after this he was elected by the then Council of the Royal Dublin Society to the charge of their Botanical Gardens at Glasnevin. These gardens are situated within a couple of miles of Dublin, and present a pleasing alternation of flat and gently rising ground, which then slopes to the borders of the little trout stream called the Tolka. They are associated with the memories of Tickell and Swift, and one walk amid old yew trees is still pointed out as the one much frequented by the Dean when inclined to moody meditation. To enumerate the changes brought about in these Gardens during the forty years' work of Moore, would be to write his and their history. It might almost be said that he found them a mixture of pleasure-ground and herb-garden; he has left them with all their native loveliness shown off to its very best, and containing for their size one of the best stocked collections in Europe. As the stranger walked there he was told of the literary men who sought for rest and quietness amid their shade; to the list of these sacred memories will now be added the name of a scientific man, whose daily labour for just forty years has resulted in making them known throughout the world. Amidst the practical labours of Moore's life science was not forgotten. He ably assisted MacKay in compiling his list of Irish plants. But he also devoted a great deal of attention to compiling a history of the mosses, liverworts, and algæ of his adopted country, and as the result of his maturer labours in this direction, he published in 1872 an account of the mosses of Ireland, and four years later an account of the Irish Hepaticæ. He, conjointly with A. G. Moore, F.L.S., published an

account of the geographical distribution of plants in Ireland, under the title of "*Cybele Hibernica*." This is scarcely the place to record the numerous plants introduced by him to our gardens and stores, or to refer to the many interesting new hybrid forms brought into existence through his skill. For such scientific labours he was rewarded by being given the Ph.D. of Leipzig University, and with what we know he regarded as nearly as great an honour, in having the twenty-ninth volume of the third series of the *Kew Journal of Botany* dedicated to him by Sir Joseph Hooker, as "to one who, maintaining a very rich and beautiful botanic garden at a high standard of excellence, has advanced botanical science by many original observations and experiments."

Long will the memory of David Moore dwell in the minds of his many friends as that of one true and faithful, genial and generous.

#### THE RECENT ERUPTION OF ETNA

PROF. SILVESTRI has, with most commendable despatch, just issued his report to the Italian Government on the recent eruption of Etna. It takes the form of a quarto pamphlet of nineteen pages, entitled *Sulla doppia eruzione dell' Etna scoppiata il 26 Maggio, 1879*, and it is accompanied by a capital map, showing the exact extent and dimensions of the lava-streams. A reference to the map accompanying the previous article (p. 158) may help the reader to understand more clearly what follows.

At the end of our former article on the subject, we mentioned certain anomalies in the accounts of the eruption already transmitted by telegram from Rome, and at the same time asserted that we must wait for the Government Report before they could be explained. It is satisfactory to find that Prof. Silvestri has completely removed these anomalies, and has given a description of the eruption, which is so connected, reasonable, and precise, that it leaves nothing to be desired.

Silvestri considers that preparations for this eruption have been continued since 1874, and that this is the fulfilment of the abortive attempt which was then made. On August 29, 1874, a rift opened on the north-east side of the mountain, between the great crater and Mojo, and thirty-five small eruptive mouths were formed along its course, together with one larger crateriform monticule, which discharged lava. But after seven hours of activity, the dynamic forces suddenly decreased in intensity, and in two days' time nothing remained of the eruption save a few secondary manifestations. For a fortnight afterwards, however, earthquakes occurred on the north side of the mountain, and the great rift remained open. Silvestri predicted that when the next eruption came, this rift would prove the point of least resistance, and that the new lava would flow from it, or from craters raised along its course. This prediction has been completely verified.

The fissure of 1874 has extended itself—on the north-north-east towards Mojo, on the south-south-west towards Aderò. It is 10 kilometres (6·2 miles) in length, and passes through the great crater of Etna. On May 26, the south-western extremity discharged lava in the direction of Aderò while simultaneously the north-eastern extremity discharged lava in the direction of Mojo, thus presenting the curious anomaly of twin eruptions on opposite sides of the mountain. The craters on the south side of the mountain were situated near the base of Monte Frumento, 2,650 metres (8,743 feet) above the sea. There were eight eruptive mouths, from 4 to 15 metres in diameter; seven of these were open, while over the eighth was raised a monticule. The lava did not flow directly towards Aderò, 13 kilometres distant, but towards a series of monticules formed during a previous eruption, and known as *Monti Grotta degli Archi*. It accumulated against the