OUR ASTRONOMICAL COLUMN

DR. JOHANN LAMONT.—The death of Dr. Lamont, so long connected with the Royal Observatory of Munich (Bogenhausen), was mentioned last week. He was of Scotch extraction, and was born at Braemar on December 13, 1805. He was at first assistant at Munich, under Soldner, and was appointed director of the observatory in 1835, and Professor of Astronomy in the University of Munich in 1852. His name has, perhaps, been chiefly associated with terrestrial magnetism, his first publication on this subject being the "Handbuch des Erdmagnetismus," which appeared in 1838. In 1851 he wrote on the ten-year period of magnetic declination, of the existence of which he was an independent discoverer, and the same year he published at Stuttgart his "Astronomie und Erdmagnetismus," and a long series of memoirs bearing upon magnetic science is due to him. He is also the inventor of a set of instruments for determining the magnetic elements very widely used by continental magneticians. As an astronomer we find him occupied with the observation of Halley's comet with the refractor of eleven inches aperture, erected in 1835, by means of which he was able to follow the comet until May 17, 1836, nearly a fortnight later than it was seen by Sir John Herschel, with his 20-feet reflector, at the Cape of Good Hope, the last glimpse of the comet being thus obtained by Lamont. It was then distant from the earth 2.69, and from the sun 1.86, so that the intensity of light was almost precisely the same as when the comet was first detected by Dumouchel at Rome, August 5, 1835. In 1836 he calculated elements of the Saturnian satellites *Enceladus* and *Tethys*, which had been observed at Munich, and also discussed Sir W. Herschel's observations of the latter. In the summer of this year he measured the diameter of Pallas, and formed charts of stars in the clusters in Scutum and Perseus. In the following year he made a series of measures of the two brighter satellites of Uranus, and deduced from them a value of the mass of the primary considerably less than that previously adopted from Bouvard's tables. The most extensive astronomical work executed at Munich under Lamont's direction is the observations of zones of stars from $+15^{\circ}$ to -30° published in successive volumes of the *Annalen der k. Sternwarte bei München*, and in the previous series; various catalogues founded thereon, and containing together upwards of 30,000 stars reduced to the year 1850, have been published in the supplementary volumes of the *Annals*. Mr. Hind found in Lamont's zones two observations of Neptune before its planetary character was recognised. The magnitudes of the telescopic stars in these zones will prove serviceable from time to time in the investigations of the periods of variable stars.

THE SATELLITES OF MARS.—Prof. Asaph Hall, after discussing the long series of observations of the newly-discovered satellites of Mars made with the Washington 26-inch refractor in 1877, expressed the opinion that at the approaching opposition of the planet these objects will be observable with that instrument from about October 10 to November 29. It may therefore appear almost hopeless to expect measures as early as September, yet probably efforts may be made in this direction and with the view to facilitate the identification of the outer satellite, *Deimos*, we subjoin positions calculated from Prof. Hall's elements for 13h. Greenwich mean time:—

	Pos.	Dist.		Pos.	Dist.
Sept. 11	235.5	48.5	Sept. 16	238.7	46.5
12	296.3	10.3	17	8.5	12.7
13	49.9	46.9	18	53.1	51.7
14	68.3	30.0	19	80.0	19.8
15	221.6	33.2	20	227.1	43.6

The greatest elongations of the satellites occur at angles

of about 53° and 233° , the greatest apparent distances at the next opposition being $67''$ for *Deimos* and $27''$ for *Phobos*, the former passing the extremity of the minor-axis of the ellipse about seven seconds distant from the limb of the planet.

GEOGRAPHICAL NOTES

HERR OTTO SCHÜTT, the well-known African traveller, has returned to Lisbon from his exploring expedition to Central Africa, undertaken by order of the German African Society, and has delivered an interesting lecture to the Lisbon Geographical Society. He brings home highly important and quite new data concerning the complicated hydrography of the Congo Basin. Between the Cuango and the Casai rivers, two known tributaries of the Congo, he has discovered four others, viz., the Quengo, Marata, Cinlu and Quanger rivers. Besides this he has determined the upper course of the Casai river from lat. 8° S. to about lat. 6° S. in a district totally unknown hitherto. From lat. 8° S. as far as lat. 4° S. the Casai takes the name of Zaire, which on older maps is often given to the Congo itself. The lake called Sankowa Lake by English explorers is situated in lat. 5° S., and is called Mucaruba by the natives. To the south of this lake a tribe of dwarfs are living. The tribes inhabiting the shores of the Quengo and the Casai rivers are cannibals. As the Muata Jamvo, who some three years ago stopped Pogge's further progress, did not permit Herr Schütt to cross the Lulua river, he had to return to Loanda on the west coast.

It is announced from Sierra Leone that Mr. H. M. Stanley arrived there on July 24, and left on August 1 for "Banana" (? Mboma), on the Congo.

INTELLIGENCE has been received at New York of the arrival of the Polar exploring vessel *Jeannette* at Onalaska, on the 2nd inst. She is to endeavour to meet with Nordenskjöld in Behring Strait. The United States Revenue vessel *Richard Rush* has passed through Behring Strait, within seventy-five miles of East Cape. Her captain reports that the sea northward of that point is clear of ice. Last winter had been unusually warm, and the ice broke up earlier than usual.

SEVERAL Russian expeditions are to be sent out during this autumn to Central Asia, and especially to the Darwaz. Capt. Hermann and the well-known young botanist, M. Smirnoff, will explore that quite unknown country, and M. Smirnoff will no doubt bring back a rich botanical collection.

A TELEGRAM has reached St. Petersburg through Pekin from Col. Prjwalsky, to the effect that at the date of his despatch his expedition had accomplished the third part of the route to the Himalaya, and that no great obstacles were expected to intervene between them and their desired goal—which may mean Lhasa.

LETTERS TO THE EDITOR

- [The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]
- [The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

How did Eozoon Originate, and is Graphite a Proof of Organic Beings in the Laurentian Period?

I READ with great interest the abstract of Dr. Moebius's investigations on Eozoon in *NATURE*, vol. xx. pp. 272, 297, and no more doubt of its inorganic origin. But how was Eozoon formed? We find such single or ramified foraminifera-like or algae-like fibres or stems (Figs. 5, 9, 10, 18, 19), which show,

by their irregularity, that all organic origin is excluded, sometimes in ice; they originate in the hardening together of crystals, under pressure, and are only the imprisoned, often stem-like and branched hollows of air. Like Eozoon they become afterwards filled with foreign matter, with serpentine and chrysotile, resulting out of the watery decomposition of olivine.

To show how analogous circumstances are also applicable to the origin of Eozoon, I shall first refute the two erroneous arguments often adduced for the organic existence in the Laurentian period: the presence of graphite and the stratification of the oldest rocks.

Graphite, as Dr. Moebius supposes, cannot be a sign of primitive organic life. (1) In the oldest period there certainly lived only the most primitive lower beings, which without exception decay rapidly, and are therefore not able to furnish coal. (2) Graphite is sometimes a substitute of mica in the Gneiss; if it be phytogen, the synchronous quartz and feldspar, &c., must also be declared so; but that is absurd. (3) We always get amorphous coal out of organic beings, and by chemical process in the cold way, and on the contrary crystallised coal, i.e. graphite, is only to be produced by heat, and in several ways, even out of gases. We must regard graphite as one of the arguments, proving the incandescent origin of the oldest rocks. Out of each kind of coal, also of graphite, bitumen can originate, so that bitumen is not always a sure proof of organic beings. (4) There exist many other facts proving the incandescent origin of Laurentian minerals; I will add, as I believe, a new one. This origin excludes at the same time any living beings. Not one original mineral of the Laurentian minerals contains water, only mica contains a very small proportion, but this chemically combined, for it cannot be expelled at red-heat. If these minerals had not had their origin in heat, they would sometimes contain water.

The other fallacious proof for the neptunic origin of Laurentian rocks is their occasional stratification, and this origin would include the possibility of organic beings. No geogenetic hypotheses have been able to combine the facts of heat origin and stratification! But if we change the generally adopted opinion of Kant and Laplace, that the gases of the atmokosmos formed our globe by being condensed first into incandescent liquids, and finally into crystals, we may combine all the facts.

It is often found that we get out of hot gases mostly crystals, which partly by chemical reaction, become at first incandescent, and even quartz, feldspar, granite, and some iron minerals that we find in the granite, are known to be produced crystallised out of gases. Other facts prove that these Laurentian minerals must have originated between white and red heat.

In the origin of glaciers we have an analogy for the agglomeration of the incandescent crystals into the first earth-crust without melting, only by baking together, as being somewhat plastic, the crystals of snow harden together into ice, driving out the air between the crystals and losing their crystallised surface, assuming also sometimes Eozoon-like forms. Glaciers not seldom show stratifications, especially in the upper part formed by temporary snow-falls. As on the top of the glacier the snow-crystals lie yet ununited, so the minerals of the Laurentian period were certainly lying ununited upon the surface, and became afterwards hydrated together, when the earth-crust was cool enough, so that we find them in the post-Laurentian period much more mixed and with products of neptunic erosion.

OTTO KUNTZE

Leipzig-Eutritzsch, August 2

Unobserved Impressions

A NOTE to Mr. Mivart's address in the Biological Section of the British Association contains the following:—

"Having gazed vacantly through a window we revert to the pages of a manuscript we may be writing and see there the spectra of the window bars we had before unconsciously seen. Here the effect on the organism must have been similar to what it would have been had we attended to it—i.e., it was unfelt sensation" (NATURE, vol. xx. p. 399).

The last words induce me to mention what I believe I have often observed but have hitherto presumed to be well known in psychophysics, because though they are not inconsistent with it they seem to show that it had escaped the speaker; namely, that an unobserved impression produces a much stronger effect on the organism immediately impressed than an observed impression. Of course the observation cannot be experimentally prepared; but if any one who experiences a case like that

described by Mr. Mivart will allow the image to fade and then try to form another of the kind, he will be struck I believe by the inferiority of the voluntary one.

The phrase "unfelt sensation" suggests questions I wish to keep clear of; but the phenomenon appears to me interesting, because it plainly shows that work which would be done on the retina, or on something, by an unobserved impression, is done elsewhere by an observed one.

C. J. MONRO

Chesterfield, August 24

Insect-Swarms

A WONDERFUL flight of insects has passed over here to-day, consisting of the butterfly *V. cardui* and the moth *P. gamma*. They all came from the sea from the north-west and passed over the land to the south-east. I first noticed the flight at 7.30 A.M. The morning was bright and sunny with a light wind a little south of east. Great numbers of *V. cardui* were soaring at all heights, up to at least 150 feet, above and between the poplars which surround the house in which I am staying; all were going leisurely to the south-east; lower down *P. gamma* more erratic in its flight, was going in numbers in the same direction. I went down on to the grassy slope above the shore cliff. The blackberry blossoms were covered with *V. cardui* and *P. gamma*, three or four on a flower, the fussy moths much disturbing the more sedate butterflies, but each bent on holding its own. With scarcely an exception they took flight in a south-east direction when disturbed or when satisfied with their often, I fear, vain search for food. I stepped fifty paces from a clump of dark firs at right angles to their line of flight and counted the butterflies which passed for two intervals of two minutes; the numbers were 95 and 108, but I probably missed some of the higher ones. On the shore at 10 o'clock I counted 73 in one minute pass a space 50 paces in width; at 11.45 in one minute 50 passed the same space. The numbers of *P. gamma* were more difficult to ascertain owing to their smaller size and more erratic flight, but as they all flew very low on the shore, not more than a foot or two at most above the water or sand, I stepped 20 paces and tried to count the moths passing within those limits with the result—one minute 32 moths, two consecutive minutes 18 moths, again two minutes 120 at least. In the second interval a strong gust of wind checked the flight altogether, and in the third interval the moths came so fast that I missed many I feel sure. The *P. gamma* were evidently much exhausted; while bathing I saw several floating on the surface of the water, which took flight when touched or crawled on to a finger presented to them; some settled on me and on others while we were bathing. At 12 o'clock I passed uninterruptedly through the flight while walking from Trouville Harbour for a distance of two kilometres northwards along the shore. There was then an occasional white butterfly (*Pieris*) in the flight, and I also noticed two dragon-flies coming from the sea and following the same direction as the other insects; I noticed other dragon-flies with the flight inland, but they abound here. Had those coming from the sea accompanied the flight throughout as hawks are said to follow the flights of birds on which they prey? From the shore I climbed up the cliff, the grassy slopes above it were swarming with *P. gamma* and *V. cardui*, nearly every flower having one visitor at least. At 1.15 P.M. *P. gamma* passed over in undiminished numbers, but *V. cardui* was not so abundant. At 5.30 I rode parallel with the coast line along the Honfleur road to a point rather more than 10 kilometres from Trouville, passing through an uninterrupted flight of *P. gamma* all the way, but no *V. cardui*, though the butterfly still abounded on the blackberry and other blossoms by the roadside. Throughout the last two kilometres the moths were much fewer in number, but had not quite disappeared when I turned back. *P. gamma* generally flew lower than *V. cardui*, but the force which impelled them in one direction, as if their bodies were magnetised and their north pole was in the south-east, was so strong that when they met an obstruction to the course of their flight they went often over it not round it. While riding I noticed that they rose up and flew over isolated buildings, and I was curious to see whether they would do the same with a church tower. As I passed through Villerville, three came over the top of the church tower, and again at Criquebeuf, three fluttered up the wall, and flew over the church tower as I passed it. At 8 P.M. I went up on to the roof of the house; the moths were then flying up the front of the house and over the roof in great numbers. The flight of *P. gamma* continued to pass the