MR. JOHN DANIEL has sent us an advance-proof of a paper on "Polarization, using a thin Metal Partition in a Voltameter." The investigation had its starting-point in an observation of Dr. L. Arons', who noticed that ordinary gold leaf, used as a partition in an H_2SO_4 voltameter, allowed a current of ·2 or ·3 ampere to pass without any visible development of gas upon the metal, which was pasted over a hole 1½ c.m. in diameter, bored in a glass plate. The glass plate slid in grooves in a wooden frame, which was placed in the middle of the glass-voltameter. When platinium-foil (0·1 mm. thick) was substituted for the gold-leaf, there was a profuse escape of gas from the metal partition. Mr. Daniel has made similar experiments with partitions of gold, silver, aluminium and platinum of various thicknesses, and with various electrolytes, and has obtained for the different substances, values of the "critical thickness" above which polarization at the partition takes place, as well as some other interesting facts as to "critical current density," &c. He finds, for instance, that the "critical thickness" in good-conducting solutions of H_2SO_4, $CuSO_4$ and NaCl, is greater than ·00009 mm., but less than ·0004 mm., in the case of gold; while ·00015 mm., and ·002 mm. are the corresponding figures for platinum, with a current density of not more than 0·1 ampere per square c.m. of the metallic partition. Between these "critical limits" the polarisation for a given current increases with the thickness. In $CuSO_4$, all the plates except those below the critical thickness were destroyed by oxidation, and a similar effect was noticed in NaCl, in which gold and silver below the critical thickness were quite unaffected, while above it they could not be used on account of the chemical action.

NOTES from the Marine Biological Station, Plymouth.—Last week's captures include the Ascidian *Ascidia mollis*. The tow-nets continue to yield the regular autumn forms, among which the Liphonophore *Muggiæa atlantica* and the larvæ of the Polychæta *Magelona* and *Terebella* have generally been plentiful. An interesting feature of recent tow-nettings has been the presence of numerous minute free-floating colonies of certain Didemnidæ. Young *Echini* and *Asterinæ* of this season's growth are now plentiful at a depth of five fathoms and in coralline tide-pools respectively. The following animals are breeding:—The Hydroid *Sertularella Gayi*, the Nemertine *Amphiporus dissimulans*, the Archiannelid *Histriobdella Homari*, and the parasitic Cirrhipede *Sacculina*.

THE additions to the Zoological Society's Gardens during the past week include a Leadbeater's Cockatoo (*Cacatua leadbeateri*) from Australia, presented by Miss Mercy Grogan; a Common Quail (*Coturnix communis*) British, presented by Mrs. Mazelin; two Black-pointed Teguexins (*Tupinambis nigropunctatus*) a Crowned Snake (*Scytale coronatum*), a Tree Boa (*Corallus hortulanus*), a —— Snake (*Leptognathus nebulatus*) from Trinidad, W.I., presented by Messrs. Mole and Urich; two Hamsters (*Cricetus frumentarius*, white var.) European, a Black-headed Caique (*Caica melanocephala*) from Demerara, a Corean Sea Eagle (*Haliætus branickii*) from Corea, a Black-pointed Teguexin (*Tupinambis nigro-punctatus*), a Tree Boa (*Corallus hortulanus*), a Boddært's Snake (*Coluber boddærti*) from Trinidad, W.I., deposited; a Golden Plover (*Charadrius pluvialis*) British, purchased.

OUR ASTRONOMICAL COLUMN.

NOVA (T) AURIGÆ SPECTRUM.—In the current number of the *Astronomischen Nachrichten* (No. 3189) Mr. W. W. Campbell communicates his observations of the spectrum of Nova Aurigæ since its reappearance in August. At this time the continuous spectrum was very faint, the spectrum consisted of isolated bright lines, and the three brightest lines had the intensities and positions of the characteristic nebular lines, the result being that the spectrum of this new star was announced to be that of a planetary nebula. That this view has not been universally adopted is shown by Vogel's paper on the same star, and he inclines to the opinion that the bright lines are chromospheric, and that the brightest line is not the nebula line. In the present paper Mr. Campbell has made more visual and long exposure photographic observations of nebular spectra, and finds no less than five other lines which are in the spectrum of the new star. The nebulæ he uses here for comparison are: Orion, G.C. 4390, N.G.C. 7027, G.C. 4954, G.C. 4373, and in the photographs of their spectrum he obtains 12, 12, 7, 10, and 5 lines respectively that appear to him to be new. The tabulated list of lines brings out very clearly, that with the exception of the line 451, the identity of which is uncertain in these nebulæ, the Nova lines are matched perfectly in one or more of them, allowing for the fact that they (the Nova lines) were shifted about five-tenth metres (in August and November, 1892) towards the violet. The Nova spectrum, as Mr. Campbell says, "certainly differs no more from the nebular spectra than the nebular spectra differ from each other." As for the lines, 4857, 4336, 4098, and 396 are the well-known hydrogen lines; 5002, 4953, the first and second nebular lines, while all the others correspond well with the nebular lines. The presence of these four hydrogen lines and the chromospheric line 4472, strengthens, as he says, his argument, and he concludes with the words that "if the spectrum is not conceded to be nebular, I must ask what else we should expect in that spectrum if it were nebular?"

THE FIREBALL OF JANUARY 13, 1893.—In the *American Journal of Science* (vol. xlvi. September, 1893), Prof. H. A. Newton contributes a discussion of all the observations that were made of the large fireball that was observed in America in January last. The great interest attached to this fall lay in the fact, as previously mentioned in this column, that Mr. Lewis, of Ansonia, Conn., happened to obtain a very good picture of the trail as it passed in the line of sight of his instrument while he was photographing the comet Holmes. Prof. Newton seems to have taken great pains to have the information as accurate as possible, and has even had some of the observers cross-examined, so to speak, on many particular points. The plate on which the photograph was taken is 4 by 5 inches, and the meteor went nearly centrally across it, the photographed portion being about 19° long. Several stars of the tenth magnitude in the middle, and some of about the eighth, near the margin of the plate, are shown on the negative, so that some fairly good measurements of the position of the track have been procured. The co-ordinates of seven points of the trail have thus been measured, and a very slight curvature of the path is indicated by the results but not clearly proven, the curvature being caused, as suggested by Prof. Newton, by "the atmosphere's resistance of the irregularly shaped body." An enlarged print of the photograph (about 26 inches long) accompanies the paper. The striking feature of it is the irregularities of light on the path, and also its increase in frequency as the end of the plate is reached. This is due, as supposed, to a rotation of the stony mass, "more rapid at the end than at the beginning, and that the unequal amounts of burned material were thrown off according as a well burned or a raw surface was for the instant in front."

NITRO-METALS, A NEW SERIES OF COMPOUNDS OF METALS WITH NITROGEN PEROXIDE.

A REMARKABLE new series of compounds, formed by the direct union of nitrogen peroxide with certain metals, and of a nature somewhat akin to that of the metallic carbonyls recently discovered and investigated by Mr. Mond and his co-workers, are described by MM. Sabatier and Senderens in the September number of the *Bulletin de la Société Chimique*. It was observed that when vapour of peroxide of nitrogen in a state of tolerable purity was allowed to stream at the ordinary temperature over metallic copper, cobalt, nickel, or iron, these metals being in the finely-divided and pure condition obtained by the recent reduction of their oxides by hydrogen, rapid absorption of the nitrogen peroxide occurred with the formation of definite compounds possessing properties of an