

or Amber as a Gem," has been published by Messrs. Sampson Low, Marston and Co., Ltd. The volume brings together many facts of interest concerning the origin and decorative uses of amber.

THE determination of the density of a gas has, till comparatively recently, been regarded as an operation of great difficulty, requiring elaborate apparatus and a large quantity of material. In the course of his researches on argon and helium, however, Prof. Ramsay has shown that it is possible by direct weighing to arrive at a reasonably accurate result upon as small a quantity as thirty cubic centimetres. In two recent numbers of the *Comptes rendus* are two contributions to this subject by M. Th. Schlœsing, jun., in which he gives a most ingenious method of measuring the density of a gas, based upon the balancing of two columns of the gases in a U-tube. Two vertical tubes about one metre in length communicate at their lower ends by a three-way tap; in one is placed an easily absorbable gas of known density, such as carbon dioxide, and in the other the gas under examination. On allowing the columns to communicate through the tap, a state of equilibrium between the gas, carbon dioxide, and air is set up after about four minutes, and the level of the invisible surfaces of separation then determined by absorbing the carbon dioxide with potash. In order to reduce the unavoidable diffusion of the gases, very narrow tubes were taken (1.6 mm. to 2.7 mm. in diameter), with the resulting advantage of reducing the quantity necessary for a determination. In the second paper data are given for nitrogen, oxygen, and methane, from which it would appear that an accuracy of 1/1000 is obtainable upon five to seven cubic centimetres of gas. With hydrogen only was there a failure, the mutual diffusion of the two gases being too rapid to allow of equilibrium being set up. There can be no doubt that the method will admit of many useful applications.

THE additions to the Zoological Society's Gardens during the past week include a Green Monkey (*Cercopithecus callitrichus*) from West Africa, presented by Mr. Robert O'Callaghan; a Horned Lizard (*Phrynosoma cornutum*) from California, presented by Mr. Charles Iseard; three Shaw's Gerbilles (*Gerbillus shawi*), born in the Gardens.

#### OUR ASTRONOMICAL COLUMN.

A PROBABLE NEW STAR.—In Circular No. 45 from the Wolsingham Observatory, dated February 14, the Rev. T. E. Espin states that an eighth-magnitude red star not in B.D. was found the previous night, its place being R.A. 7h. 12m. 16s., Decl. + 32° 19' (1855).

NEW PHOTOGRAPHS OF NEBULÆ.—With a reflector having the extraordinary ratio of 1 metre aperture to 3 metres focal length, M. A. Rabourdin has taken some remarkable photographs of several nebulae at the Meudon Observatory, and he gives a detailed account of them in *Comptes rendus* for January 31. On the ring nebula in Lyra he made three exposures—of twenty, thirty-five and fifty-five minutes. "These three plates," he remarks, "show that for this annular nebula the nebulosity of the interior increases with the time of exposure, whilst the total diameter increases very little. The final result is an elliptical nebula in place of the annular one taken with the short exposure. The photographs also show very plainly a star at the centre of the ring, which is, moreover, visible to the eye in the telescope; but neither the drawings of Herschel in 1833, Lord Rosse in 1844, nor that of Trouvelot in 1873, give any indication of it. Hence this would tend to show a comparatively recent change."

With an exposure of fifty minutes on the planetary nebula in Aquarius, a photograph was obtained showing two protuberances diametrically opposite, which would lead one to suppose that the central globe is surrounded by a diffuse belt analogous to Saturn's ring.

A photograph of the nebula in Andromeda, with only one

hour exposure, is said to exhibit as much detail as those previously obtained with four times the exposure; and the nebula is so extensive, that it was quite impossible to photograph the whole region on one single plate.

A photograph of the nebula in Triangula shows that it is a beautiful spiral one.

The region of the Pleiades was also photographed, giving one hour exposure, with Alcyone in the centre of the plate. Even with this comparatively short exposure, MM. Henry have discovered nebulae absolutely invisible in the telescope, enriching this region still more with two other new nebulae surrounding Atlas and Pleione. This photograph also shows more than the beautiful chart of the Pleiades taken by MM. Henry, and exhibits additional streams of nebulous matter which apparently bind together certain stars of this group.

CARBON IN THE CHROMOSPHERE.—That carbon existed in the solar spectrum itself was at one time a matter of doubt, but its existence was established long ago by the early researches of Sir Norman Lockyer. Now, with the aid of the 40-inch telescope of the Yerkes Observatory, Prof. Hale has observed the presence of carbon in the chromosphere, and his paper on this subject is to be found in the December number of the *Astrophysical Journal*. The observations were made last September, and the green fluting near *b* was distinctly seen as a bright reversal in the chromosphere. M. Deslandres, who was visiting the observatory at the time, had no difficulty in seeing the lines, and they have since been observed by Profs. Runge and Keeler.

These results are interesting, in the light of the fact that the photographs of the total eclipse of 1896 show a decided influence of the prominences on the corona, and the examination of the corona itself at the last eclipse, for the presence of carbon might possibly have led to fruitful results.

PARALLAX OF SIRIUS.—In the *Monthly Notices* for January, Dr. Gill discusses a series of observations for the parallax of Sirius, made by him in 1888-89 with the Cape heliometer. The comparison stars used were both of 8.7 magnitude; one, which he denotes by  $\gamma$ , being 4310" distant, and the other,  $\delta$ , 4536" away from Sirius, with respective position angles of 279° 17' and 101° 26'.

From these observations he deduces a value of  $0''.370 \pm 0''.0097$ , which is in remarkably close agreement with his well-known result of  $0''.370 \pm 0''.009$  from his 1881-83 observations.

Dr. Gill states that by this method of measurement it was possible to determine parallaxes so small as 1/50 of a second with some confidence—a degree of accuracy not previously attained in astronomical researches of any kind. He therefore thinks we may regard the parallax of Sirius as now satisfactorily determined, and that the corrections depending on a parallax of  $0''.37$  might with advantage be introduced in the apparent places of Sirius given in the national ephemerides.

WE note with pleasure that Mr. A. C. D. Crommelin, in the *Monthly Notices* for January, continues his paper which appeared in the December number, on the "Ephemeris for physical observations of Jupiter, 1898." We had been so long accustomed to seeing the late Dr. Marth's name attached to these and similar tables for the moon and other planets, that it was doubtful who would volunteer to fill his place; but we are glad to find that one so able as Mr. Crommelin has undertaken this task.

#### THE ATOMIC WEIGHTS OF NICKEL AND COBALT.

THE determination of the atomic weights of nickel and cobalt has attracted a considerable amount of attention during the last few years, the numbers obtained by different workers exhibiting relatively startling variations. Thus, including only the four most recent results, the values for cobalt vary between 58.78 (Hempel and Thiele, 1895) and 60.12 (Schützenberger, 1892). Similar variations observed for nickel by Krüss, led him to the conclusion that this metal contained a new element, to which he gave the name of "gnomium"; but recent work has not tended to confirm this view. In the *Proceedings* of the American Academy of Arts and Sciences for November and December last, are two important contributions to this subject, by Richards and Cushman and