

THE Geological Survey of Egypt has just issued the third part of its catalogue of invertebrate fossils in the Cairo Museum, by M. R. Fourtau. It comprises the Cretaceous bivalved shells, and is illustrated by seven beautiful plates. As in the previous parts, M. Fourtau uses specific names in a rather wide sense, being convinced that by this means it is easier to appreciate the relationships of a fauna than by multiplying names to denote minute differences. He is also inclined to use familiar and generally adopted names, instead of adhering strictly to the law of priority. His final table, illustrating the geological and geographical distribution of the fossils, includes 170 forms, of which not more than forty-two are peculiar to the Egyptian deposits. Four fresh-water shells are, curiously, found among them. The variable shells of the oysters are especially interesting, and good drawings of these occupy most of the plates. There are parallel variations in the different species depending on the several identical conditions under which they lived. Both the Survey and the author are to be congratulated on the mass of new facts they have brought together, and on the admirable manner in which these are published.

VOL. XXXIII. of the *Compte rendu* of the Société de Physique et d'Histoire Naturelle of Geneva contains a paper by Dr. A. Schidlof on a source of error which may be present in the determination of the electronic charge by Millikan's method. When fine drops of mercury are produced by blowing a gas through the liquid, they are found immediately after production to have a density identical with that of the liquid, but after a time their apparent density decreases considerably owing to the formation of a layer of oxide or of condensed gas on the surface. Dr. Schidlof points out that the same change may occur in the oil drops used by Millikan, and considers that the numbers given by Millikan show a progressive diminution of the electronic charge as the experiments continue, which could be explained by the formation on the oil drops of mean radius $5 \cdot 10^{-4}$ cm. of a layer of thickness 10^{-6} cm., of density 0.3. He considers that the true value of the electronic charge lies between 4.775×10^{-10} —the value given by Millikan—and 4.8×10^{-10} .

THE Manchester Steam Users' Association has just published its chief engineer's memorandum for 1916-17. Among other subjects discussed by Mr. C. E. Stromeyer is the action of caustic liquors on steel plates. Some rings were cut out of a solid plate, and were bored with a tapering hole; others had a tapering outside, and were forced into the first set of rings so that the external rings were under tension and the internal rings under compression. After treatment in a caustic-soda evaporator, the rings were cut up into small segments, and of each ring one short piece was bent inwards and the other outwards. The results were very consistent. All those which were in a compressed condition when exposed to the caustic bent double without the least sign of cracking; those under tension, when exposed to the caustic, cracked in innumerable places when bent. These cracks appeared both on the outer surface, which was in direct contact with the caustic, and on the inner surface, which was not in contact with the caustic, but was pressing hard against the compressed inner ring. Evidently, therefore, the influence of the caustic had penetrated through $\frac{1}{2}$ in. of metal. Mr. Stromeyer suggests that the action of caustic soda may have been the cause of the cracking of boiler plates in certain instances, and has also several suggestive remarks regarding the design of autoclaves used for the production of certain coal-tar dyes by treatment with strong caustic solutions. A number of autoclaves have been made from drawings found in Continental text-books, and these designs are nearly all faulty.

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OUR ASTRONOMICAL COLUMN.

THE APPROACHING SHOWER OF JANUARY METEORS (QUADRANTIDS). This shower will probably reappear on the nights following January 2 and 3. The best time to observe it will probably be on the early evening of January 3. Mr. T. W. Backhouse, of Sunderland, who has devoted much attention to this meteoric system during a long period of years, concludes that the maximum will occur on the morning of January 3. At that time, however, the gibbous moon will be shining and high in the sky. On the evening of the date mentioned our satellite will not rise until between 10 and 11 p.m., and in the dark sky between about 5.30 and 7 p.m. meteors should be abundant. The radiant point at $232^{\circ} + 52^{\circ}$ (8° S. of ι Draconis) will be due north at about 8.40 p.m., at an altitude of only 14° seen from the latitude of Greenwich.

The Quadrantid shower is sometimes very rich, though its principal activity is of very brief duration, and it is seldom well observed owing to the generally clouded English skies at this particular period of the year.

OBSERVATIONS OF β LYRÆ.—A valuable series of observations of the well-known variable star, β Lyræ, has been made at Catania by A. Bemporad (*Mem. Soc. Spett. Ital.*, September-October, 1917). The principal mean results of the observations during 1911-12 are as follows:—

	Mag.	Julian day	Interval in days
First principal minimum ...	4.39	2419, 227.51	$\leftarrow 3.065$
First maximum ...	3.54	230.575	$\leftarrow 3.075$
Second minimum ...	3.87	233.65	$\leftarrow 3.700$
Second maximum ...	3.54	237.35	$\leftarrow 3.080$
Second principal minimum...	4.39	240.43	

The total range of variation was thus 0.85 mag., and there were indications that the second maximum was brighter than the first by about 0.02 mag. While the light-curve about the principal minimum was practically symmetrical, the descent to the secondary minimum was more rapid than the rise to the succeeding maximum.

RADIAL VELOCITIES OF STAR CLUSTERS.—At the Albany meeting of the American Astronomical Society Dr. Slipher announced some important results which he has obtained relating to the radial velocities of star clusters (*Journ. R.A.S., Canada*, vol. xi., p. 335). The instrumental equipment was that previously employed by him, with marked success, for spiral nebulae. Ten clusters have been observed, and the velocities range from -410 to $+225$ km. per sec. The mean velocity, taken without regard to sign, is 150 km. per sec. As in the case of spiral nebulae, the high velocities observed suggest the possibility that the clusters are distinct from our own sidereal universe.

PARALLAX OF THE RING NEBULA IN LYRA.—An attempt to determine the parallax of the central star of the Lyra nebula has been made by Mr. A. van Maanen, with the aid of photographs taken with the 60-in. reflector at Mt. Wilson (*Popular Astronomy*, vol. xxv., p. 630). Nine comparison stars were utilised, and the resulting relative parallax is given as $+0.002'' \pm 0.005''$. The absolute parallax would be $0.004''$, and as there is practically no doubt as to the association of the star and nebula, this indicates enormous dimensions for the nebula itself, namely, 330 and 250 times the diameter of the orbit of Neptune for the major and minor axes. Taking 14.1 as the visual magnitude of the central star, the above parallax leads to the low value of $+7.1$ for the absolute magnitude.