OUR ASTRONOMICAL COLUMN.

A NEW COMET.—A Copenhagen telegram announced an observation of Encke's comet by Dr. Max Wolf on September 14. At 13h. 51·3m., Königstuhl Mean Time, the position of the comet was R.A. 6° 24′, declination +13° 16′. The *Morning Post* of September 26 states that an observation made on September 21 proves the object to be a new comet, and not Encke's comet, as first supposed.

AN EMPIRICAL LAW OF PLANETARY DISTANCES.—An interesting empirical law connecting the distances of the planets from the sun is discussed by G. Armellini in the *Observatory* for September. The law is expressed by the simple formula $x_n = 1{\cdot}53^n$, where 1·53 represents the distance of Mars from the sun, and n takes the values −2, −1, 0, 1 . . . for the planets Mercury, Venus, Earth, Mars . . . The numerical values given by the formula are compared with the true values, and with those given by Bode's law, in the appended table:—

	Formula	True distances	Bode
Mercury	$1{\cdot}53^{-2} = 0{\cdot}427$	0·387	0·4
Venus	$1{\cdot}53^{-1} = 0{\cdot}654$	0·723	0·7
Earth	$1{\cdot}53^{0} = 1{\cdot}00$	1·00	1·0
Mars	$1{\cdot}53^{1} = 1{\cdot}53$	1·52	1·6
Asteroids	$1{\cdot}53^{2} = 2{\cdot}34$ / $1{\cdot}53^{3} = 3{\cdot}58$		2·8
Jupiter	$1{\cdot}53^{4} = 5{\cdot}48$	5·20	5·2
Saturn	$1{\cdot}53^{5} = 8{\cdot}38$	9·54	10·0
(Vacant place).			
Uranus	$1{\cdot}53^{7} = 19{\cdot}46$	19·2	19·6
Neptune	$1{\cdot}53^{8} = 29{\cdot}76$	30·1	38·8

It will be seen that the formula has a marked advantage over Bode's law in the representation of Neptune. Moreover, since the two distances given for the asteroids are comprised within the limits of the asteroidal zone, there is only one vacant place, whereas Bode's law, if written in the form $x_n = 0{\cdot}4 + (0{\cdot}3 \times 2^n)$, presumes the existence of an infinite number of small planets between Mercury and Venus. It is considered possible that the vacant place between Saturn and Uranus may be occupied by small planets which have not been detected on account of their great distances.

ECLIPSING VARIABLES.—Photographic light-curves of the eclipsing variables, TT Lyræ and Y Camelopardalis, obtained at Harvard, have been utilised in a discussion of the orbits of these stars by Martha B. Shapley (*Astrophysical Journal*, vol. xlvi., p. 56). The periods derived from the new observations are respectively 5·243708 days and 3·305568 days. In the case of TT Lyræ the observations give positive evidence of a shallow secondary minimum and of a variation of light due to the ellipsoidal form of the components. There is also an unusually large "reflection" effect, which is attributed to inter-radiation, and on this interpretation the hemisphere of the faint star which faces the bright component is eleven times as bright as the other. Since only a small part of the light of the bright star remains visible at principal minimum (the variation being 2½ magnitudes), a large proportion of the total loss of light at that time is due merely to rotation of the unequally illuminated faint companion. Y Camelopardalis has also a large range of variation, losing 78 per cent. of its light at principal eclipse. The two systems are closely similar in many respects, and are estimated to be more than 3000 light-years distant from the earth.

Similar observations and determinations of orbital elements have been made at the Laws Observatory in the case of the eclipsing variables Z Vulpeculæ, TV Cassiopeiæ, and *u* Herculis (Laws Observatory Bulletin, 26, 27, 28). The elements of the eclipsing systems TV, TW, TX Cassiopeiæ, and T Leonis Minoris have been investigated by R. J. McDiarmid (Dissertation, Princeton University). The brightness of TX Cassiopeiæ is estimated to be 1400 times that of the sun.

THE EGYPTIAN OIL FIELD.[1]

THE Egyptian oilfield occurs along the western coast of the southern end of the Gulf of Suez, and, being beside a great ocean highway, is in a most convenient position for an oilfield, and where mining operations should throw light on some interesting geological problems. Dr. Hume writes on this field with high authority and intimate knowledge; his information and conclusions are, however, often indefinite, and his report has that air of detachment from practical applications which has been responsible for much of the distrust of geology felt among mining engineers. The author is no doubt wise to avoid unnecessary trespass on the field of the engineer, and his report is on the region and not on the oilfield alone. It would, however, have been even more useful if it had included statistics of the oil yields and information as to the quality of the oil, and if the author had not declined to express any opinion on the future of the field.

His geology is also cautious. He states that the oil is mostly derived from a cavernous dolomitic limestone, which he regards, however, as merely a reservoir. He attributes the source of the oil to deeper beds of Globigerina marl. This suggestion may be due to the influence of Prof. Mrazec, who accompanied Dr. Hume on a visit to the field, has contributed the cross sections to the report, and is probably responsible for the suggested comparisons with the Rumanian oilfields. The Egyptian oilfield appears to have much more in common with that of Persia than with that of Rumania. In the fields beside both the Gulfs of Persia and Suez the chief oil horizon is a thick series of gypsum beds which Dr. Hume regards, doubtless correctly, as lagoon deposits; they overlie a Mid-Miocene (Helvetian) coral limestone, and lie below a limestone containing a fossil oyster, *Alectryonia virleti*, which is characteristic of the Upper Miocene (Tortonian). Dr. Hume refers this bed to an indefinite "Mio-Pliocene" horizon, which he places above the Lower Pliocene. The remarkable resemblance in the general succession of the Egyptian and Persian oilfields favours the correlation of the virleti beds with the Upper Miocene, and the origin of the oil from the gypsiferous deposits.

The Egyptian oilfield structurally consists of a band of sedimentary rocks which has sunk between the granitic masses of Sinai and south-eastern Egypt. It thus resembles the Alsatian oilfield which has been lowered between the Archean masses of the Vosges and the Black Forest. By this movement the beds have naturally been folded and faulted. But it is not clear from Dr. Hume's account whether, in the Egyptian field, the folding was the primary movement, or, as in the Alsatian field, was secondary to the faulting. He attaches most stress to folding, but he includes therein movements that would generally be regarded as faulting; for the upraising of a mass of old granite into overlying sediments, which are thereby disturbed and brecciated along the contact, he includes as folding.

The report is well illustrated by numerous photographs and an excellent map by Dr. Ball, and though the text leaves us wishing that the author out of the fullness of his knowledge had given more information on some branches of the subject, we are grateful for a valuable addition to both Egyptian and economic geology.

J. W. G.

[1] Ministry of Finance, Egypt. Report on the Oilfields Region of Egypt. By W. F. Hume, Director of the Geological Survey of Egypt. Pp. viii+103+23 plates. (Cairo: Government Press, 1916.)