

blackberries, 44 of currants and gooseberries, 63 of cherries, 191 of peaches, 72 of plums, 37 of pears, 101 of apples, besides quinces, apricots, nectarines, mulberries, and others, were separately grown. Cultural notes were periodically written, whilst quality, vigour, and productiveness were numerically estimated according to a fixed scale. In every case, the weight of an average specimen of the fruit is tabulated, the information thus conveyed being regarded as preferable to a record of the size, and at the same time more easily and accurately acquired. The difficulties of nomenclature and synonymy are somewhat lessened by a strict following of the rules of pomology, as formulated by the American Pomological Society and the National Division of Pomology, and every effort is made to avoid ambiguity. Notes on insects and other pests—such, for example, as the currant eelworm, *Nematus ventricosus*—are added wherever necessary, and the useful effects of sulphate of copper sprayed as an insecticide are referred to. The *Bulletin* should be of great practical value to the cultivators of Michigan, a State the climate of which especially fits it for profitable fruit-growing.

MR. DAVID FLANERY, of Memphis, Tenn., U.S.A., writes that on January 14 last, "while looking for certain stars in the east at 5'45 a.m., suddenly a great light shone behind and to the left of me, and after studying a moment to determine whether it was a flash from the trolley, or some other common occurrence, I turned around to the west, and looking up beheld a body of grey nebulous matter, such apparently as the Milky Way is made up of, slowly disappearing from view. It lasted a full minute, and without moving in any direction faded away. I heard no noise as of an explosion, but the light and the apparent smoke which had the form J plainly indicated that an immense meteor had fallen or had been consumed. The locality of the phenomenon was on the borders of the Great Bear, Ursa Major, and the Little Lion, Leo Minor, and around the two bright stars Lambda and Mu, which mark the hind feet of the Bear."

THE phenomenal Eichener Lake in the Grand Duchy of Baden, which has the peculiarity of appearing and disappearing at uncertain periods, has recently again made its appearance after a lapse of time.

IT will be fifty years next October since the first application of ether in surgical operations took place; and in honour of this scientific jubilee, Prof. C. Binz, of Bonn, has recently published in Richard Fleischer's *Deutsche Revue* a valuable historical sketch of the successive stages through which that beneficial discovery has gone in various countries.

MESSRS. WILLIAM WESLEY AND SON have just issued a valuable catalogue (No. 125) of works on zoology. Scientific men and institutions on the look-out for standard zoological books and papers will find the catalogue well worth consultation.

THE Report of the Berlin branch of the German Meteorological Society for the current year contains, as usual, an interesting investigation into the climate of that city, by Prof. G. Hellmann, the Vice-President. The subject this year is the publication and discussion of the daily mean temperatures, and extreme values for the last forty-eight years.

THE additions to the Zoological Society's Gardens during the past week include an Egyptian Jerboa (*Dipus aegyptius*) from Algeria, presented by Mr. F. J. Pringner; a Polecat (*Mustela putorius*) from Worcestershire, presented by Mr. F. D. Lea Smith; an Alexandra Parrakeet (*Polytelis alexandrae*) from Australia, presented by Mr. W. Pritchard Morgan, M.P.; a Natal Python (*Python sebae*, var. *natalensis*), five Hoary Snakes (*Coronella cana*), a Rhomb-marked Snake (*Psammothylax*

rhombeatus), a Cape Bucephalus (*Bucephalus capensis*), five Puff Adders (*Vipera arietans*) from South Africa, presented by Mr. J. E. Matcham; a Brown Mouse Lemur (*Chirogaleus miltii*) from Madagascar, three Red Kangaroos (*Macropus rufus*, ♂ ♂ ♀), four Black Wallaroos (*Macropus robustus*, 4 ♂), an Alexandra Parrakeet (*Polytelis alexandrae*) from Australia, a Hamadryad (*Ophiophagus elaps*) from India, deposited; two Common Sheldrakes (*Tadorna vulpanser*), European, purchased.

ERRATUM.—In Prof. J. J. Thomson's article on Röntgen rays, p. 582, col. 2, line 5, for 4×10^{-8} centimetres, read 4×10^{-6} centimetres.

OUR ASTRONOMICAL COLUMN.

THE SPECTRUM OF MIRA.—During the recent maximum of Mira Ceti, Prof. Wilsing was fortunate enough to obtain eleven photographs of the spectrum (*Sitz. Akad. Wiss.*, Berlin, March 26, 1896). The photographs are evidently very similar to those obtained by Prof. Pickering some years ago, hydrogen being represented by broad bright lines. The absence of the hydrogen line H_{ϵ} , which falls very near a broad line of calcium, is again very striking, and the simplest explanation of this fact is to suppose that the hydrogen light at that wave-length is absorbed by calcium vapour. This necessitates the supposition that there is a cooler layer of calcium outside the incandescent hydrogen, but the high atomic weight of calcium cautions us to regard this hypothesis as merely provisional. There is no certain evidence at present as to whether the hydrogen lines appear in the spectrum except about the time of maximum, and the Potsdam instruments are not of sufficient aperture to permit such an investigation to be made.

It is stated that there are no bright lines other than those of hydrogen, although there are parts of the spectrum (especially about wave-lengths 3894, 3906, and 4350) which give the impression of bright lines. The latter appearances are regarded simply as regions in which the continuous spectrum is thrown into relief by the absence of dark lines; similar effects, but not so marked, are said to be seen in the solar spectrum.

With the exception of the bright lines of hydrogen, the spectrum of Mira shows a nearly perfect agreement with that of the sun in the region more refrangible than H_{γ} , while on the less refrangible side of this line the spectrum is characterised by dark flutings fading towards the red.

There is probably a slight displacement of the bright lines towards the less refrangible sides of their true positions, but the photographs are on too small a scale to permit any exact determination of the velocity in the line of sight. There is no suggestion of a doubling of the hydrogen lines such as is seen in the case of β Lyrae, but the occurrence of a strong dark line alongside H_{ζ} reminds one of the appearance of this line in β Lyrae.

The paper concludes with a table of wave-lengths, extending from λ 3772 to λ 4755.

COMET SWIFT, 1896.—The comet observed by Swift on April 13 is a new one, and from its position on April 16, 19, and 20, Dr. R. Schorr has derived the following elements and ephemeris for Berlin midnight:—

$$\begin{aligned} T &= 1896 \text{ April } 17.51 \text{ Berlin mean time.} \\ \omega &= 1^{\circ} 12' \\ \Omega &= 177^{\circ} 55' \\ i &= 55^{\circ} 15' \end{aligned} \left. \vphantom{\begin{aligned} T \\ \omega \\ \Omega \\ i \end{aligned}} \right\} 1896.0$$

$$\log q = 9.7515$$

	R.A.		Decl.	Bright- ness.
	h.	m.		
April 30 ...	3	1.8	+51 55	0.72
May 2 ...	2	51.3	+55 22	0.63

The unit of brightness is that on April 16. The comet will be very near to γ Persei on May 2.

This comet is now well placed for observation, and being circumpolar can be seen practically all night. Observations made at South Kensington by Mr. Shackleton, on the 28th inst., show that it is so bright that it can be seen with an opera-glass. The comet has a well-marked nucleus and a slight tail. Spectrum observations and measures made with a small 3-prism spectroscope, collimator 6-inch, showed three bright bands, but practically no continuous spectrum. Comparison was made with a spirit flame, and the carbon bands were seen to be identical with the bright bands of the comet, the one at λ 516 being especially bright.