THE last issue (Heft 37) of the German Asiatic Society of Japan contains a lengthy paper, with numerous tables of analyses, on the food of the Japanese, the authors being Dr. Kellner and M. Mori. They refer at the outset to the extraordinary differences of opinion amongst various writers as to the exact nature of the staple diet of the Japanese people. One writer says it is almost wholly boiled rice flavoured with small quantities of fish or pickled vegetables; another says that, as far as means allow, it is a mixed, and not a purely vegetable diet, and therefore physiologically ample; a third that it is almost wholly vegetarian; a fourth, that as much animal food is consumed in Japan as in Germany, Austria, France, and the Danubian Principalities; and so on. All the writers here quoted are modern men of science who have resided in Japan, and have therefore had ample opportunities for forming an accurate opinion. As to beef, however (there is no mutton in Japan), there can be no question that its consumption is very small. In 1882 only 36,288 beasts were slaughtered, or about 1 kilogramme of meat per head of the population, and it must be borne in mind that a large consumption takes place at the open ports amongst Europeans, and in the proximity of vessels. The conclusions to which the present writers—one of them, it will be noticed, being a native investigator—come is that the food of the Japanese people varies so considerably that, from a physiological point of view, no single proposition can be laid down respecting it. There are two main groups to be distinguished: in one, the people from poverty are compelled to be vegetarians, and use a diet which leaves much to be desired in its effect in strengthening the body; those in the second group are able to obtain animal food from the sea with some ease, and therefore use a mixed diet, which in kind and quantity appears ample. Between these two extremes we find all kinds of diet. The authors have not only made analyses of the various food-stuffs of Japan, but have investigated in various public institutions, from prisons to schools for army officers, the effect of various classes of food on the labour and weight of different persons.

ON February 10, at 12.40 a.m., a brilliant meteor was seen at Venersborg, in Sweden. It went in a direction from south to north, and was surrounded by an intense blue light. It was seen to fall to the earth some considerable distance off, but no sound could be heard.

DR. ROBERT FRIES, a Swedish botanist, has completed a memoir on the fungus-flora of the south-west coast of Sweden on which he has been engaged for a number of years. It embraces 865 varieties.

PROF. SVEN LOVÉN, the "Nestor of Swedish science," recently completed his seventy-ninth year, when he received numerous congratulations from friends at home and abroad. He is at present engaged in publishing a catalogue by Linnæus of the Lovisa Ulrika Museum in Sweden, which will be accompanied by numerous illustrations and explanatory notes from a modern scientific point of view by Prof. Lovén.

THE report of the Norwegian Association for the Preservation of Archæological Remains for last year shows that thirty-one barrows were opened in 1887 by the Association at Tvetene, in the parish of Brunlanæs, all of which were found to date from the early Iron Age. Some 146 objects of various kinds were found. These objects were added to the Museum of the Christiania University.

THE well-known Norwegian naturalists, M. Michelet and Dr. Bahrt, have introduced a Bill into the Storthing, prohibiting the killing of any birds (except birds of prey, ravens, rooks, and magpies) in the whole of Norway during the period April 1 to August 15, also the taking of eggs or young birds. The chief object of this Bill is to put a stop to the present wanton destruction of birds by foreign "sportsmen."

MR. F. S. WELLS, of Southgate, has sent us four photographs of the lunar eclipse of January 21 last. Considering the small size of the photographs, they are very interesting, and Mr. Wells tells us that they were taken without costly apparatus. In the original negatives the images were merely seven-sixteenths of an inch. Mr. Wells enlarged them five diameters.

MR. R. COPELAND writes to us:—"I have just learnt from Leipzig that Prof. Krehl is the University Librarian at that place, and not Virchl as printed in Dr. Muir's letter on p. 246, and repeated by me on p. 344 of NATURE." Mr. Copeland also mentions that the "Demonstratio eliminationis Cramerianæ" was duly entered under De Prasse by Mr. R. Tucker, Hon. Sec. Mathematical Society, when drawing up the catalogue of the "Mathematical and Scientific Library of the late Charles Babbage" in 1872. This library forms the nucleus of Lord Crawford's collection of scientific books.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus* ♀) from India, presented by Captain R. F. Hibbert; a Common Raccoon (*Procyon lotor*) from North America, presented by Mr. C. J. Urquhart; a —— Civet (*Viverricula* ——) from China, presented by Mr. Percy Montgomery; two Laughing Kingfishers (*Dacelo gigantea*) from Australia, presented by Mrs. Mars Buckley; twelve Black-headed Gulls (*Larus ridibundus*), a Common Gull (*Larus canus*), British, presented by Mr. J. G. Barker; five Prince of Wales's Pheasants (*Phasianus principalis* ♂ ♂ ♀ ♀ ♀) from Afghan Turkistan, presented by Major Peacock, R.E.; a Cape Eagle-Owl (*Bubo capensis*), five Angulated Tortoises (*Chersina angulata*), three Areolated Tortoises (*Homopus areolatus*), a Natal Sternothere (*Sternothærus castaneus*), a Smooth Snake (*Homolosoma lutrix*), an Infernal Snake (*Boodon infernalis*), a Rufescent Snake (*Leptodira rufescens*), a Spotted Slowworn (*Acontias meleagris*), five Round-throated Frogs (*Rana fuscigula*), a Narrow-headed Toad (*Bufo angusticeps*) from South Africa, presented by the Rev. G. H. R. Fisk, C.M.Z.S.; a Natal Sternothere (*Sternothærus castaneus*) from South Africa, presented by Colonel J. H. Bowker, F.Z.S.; two Cirl Buntings (*Emberiza cirlus*), British, purchased; a Hog Deer (*Cervus porcinus*), an Eland (*Oreas canna*), a Yellow-footed Rock Kangaroo (*Petrogale xanthopus*) born in the Gardens.

## OUR ASTRONOMICAL COLUMN.

TEMPEL'S COMET, 1867 II.—M. Raoul Gautier has published in the Memoirs of the Société de Physique et d'Histoire Naturelle de Genève, vol. xxix. No. 12, a discussion of the orbit of the comet discovered by Herr W. Tempel, at Marseilles, on April 3, 1867, with especial reference to its appearances in 1873 and 1879. There are several points of especial interest about this comet: not only was it an addition to the number of known comets of short period, but it possesses the peculiarity of an elliptic orbit of but slight inclination, and of less eccentricity than that of any other member of the same class. Its spectrum, too, would seem to be unusual, for the imperfect view of it obtained by Dr. Huggins, May 4 and 8, 1867, led him to conclude that the bright bands, which it gave together with a continuous spectrum, were not those of carbon. Its orbit, and especially its period, is also subject to great perturbations from the action of Jupiter, and its perihelion distance was considerably increased between 1873 and 1867 without its aphelion distance being much altered. It had also been identified by M. Winnecke with the comet observed by Goldschmidt at Paris, May 16, 1855, in a search for De Vico's comet, but von Asten's inquiries have shown that the identification was an erroneous one.

M. Gautier—though the perturbations due to Jupiter during the period 1873–79, with which he was principally engaged, have been but small, the two bodies being always distant from each other—has calculated the perturbations after the method of variation of the elements, since this method was most suitable for the periods 1867–73 and 1879–85, and he wished to connect his calculation with those for the two other periods, which it is his intention to compute, and which he hopes to carry forward so as to furnish positions for the comet for its next return in 1892.

The following are the final results obtained by M. Gautier for the two appearances :—

| | Second appearance, 1873. Mean equinox 1873·0. | | Third appearance, 1879. Mean equinox 1879·0. | | Mean errors common to both systems. |
|---|---|---|---|---|---|
| $M_0$ | 1873 April 15·0 = −4° 5′ 24″·177 | | M 1879 April 24·0 = −2° 10′ 2″·454 | ± | 29″·35 |
| $\mu$ = | 592″·9765465 | = | 593″·1200165 | ± | 0·000140 |
| $\phi$ = | 27° 33′ 22″·79 | = | 27° 33′ 6″·69 | ± | 5·24 |
| | ° ′ ″ | | ° ′ ″ | | ′ ″ |
| $\pi'$ = | 240 2 52·71 | = | 240 15 31·77 | ± | 1 31·75 |
| ☊′ = | 21 29 0·30 | = | 21 29 34·33 | ± | 6·14 |
| $\iota'$ = | 27 0 58·62 | = | 27 0 39·50 | ± | 2·00 |
| $\pi$ = | 238 2 52·98 | = | 238 15 30·65 | ± | 1 31·75 |
| ☊ = | 78 43 48·42 | = | 78 45 55·66 | ± | 13·18 |
| $\iota$ = | 9 45 58·59 | = | 9 46 2 64 | ± | 2·61 |
| T = | 1873 May 9·83096 | = | 1879 May 7·15493 | ± | 0d·0495 |
| log $a$ = | 0·5179794 | = | 0·5179093 | | |
| log $q$ = | 0·2482605 | = | 0·2482463 | | |
| $e$ = | 0·4626205 | = | 0·4625512 | | |

The time of perihelion passage is given in Berlin mean time.

The comet was not seen in 1885, and there seems distinct evidence, from the greater difficulty of observation in 1873 and more especially in 1879, that it has diminished in brightness at each succeeding return.

COMET 1888 *a* (SAWERTHAL).—The following elements have been computed for this comet by Mr. W. H. Finlay, Royal Observatory, Cape of Good Hope :—

T = 1888 March 17·18 G.M.T.

$$\left.\begin{aligned} \pi - ☊ &= 4° 29' \\ ☊ &= 244\ 6 \\ \iota &= 43\ 57 \end{aligned}\right\} \text{Mean equinox 1888·0.}$$

$\log q = 9·8354$

Error of middle observation—

$\Delta\lambda \cos\beta = -5''$ ... $\Delta\beta = -2''$.

$$x = [9·8927]\, r \sin(330° 30' + v)$$
$$y = [0·0000]\, r \sin(240\ 7 + v)$$
$$z = [9·7954]\, r \sin(329\ 30 + v).$$

The following ephemeris for Greenwich midnight has been computed by Dr. L. Becker, the perihelion passage having been increased by one day, as suggested by Prof. Krueger :

| 1888. | R.A. h. m. | Decl. ° ′ | Log $r$. | Log $\Delta$. | Brightness. |
|---|---|---|---|---|---|
| March 5 | 20 33·9 | 33 9 S. | 9·865 | 9·956 | 1·5 |
| 13 | 21 3·4 | 20 29 S. | 9·840 | 9·975 | 1·6 |
| 21 | 21 30·8 | 8 31 S. | 9·838 | 0·008 | 1·4 |
| 29 | 21 57·5 | 1 58 N. | 9·859 | 0·047 | 1·0 |
| April 6 | 22 23·5 | 10 43 N. | 9·898 | 0·088 | 0·7 |

The brightness on February 18 has been taken as unity.

THE TOTAL ECLIPSE OF THE MOON, JANUARY 28.—The following list has been received from the Pulkowa Observatory of the number of occultations observed at those observatories from which reports had been received up to February 17, in addition to those given in NATURE for February 2 (p. 333) :

| | | | |
|---|---|---|---|
| Pulkowa | 50 | Padua | 4 |
| Tashkent | 21 | San Fernando | 10 |
| Turin | 32 | Strasburg | 10 |
| Belgrade | 3 | Bordeaux | 21 |
| Bothkamp | 30 | Kiel | 36 |
| Geneva | 23 | Collegio Romano | 5 |
| Neuchâtel | 6 | Wilhelmshaven | 2 |
| Kis Kartal | 2 | Marseilles | 39 |
| Paris | 12 | Liverpool | 11 |
| St. Petersburg | 2 | Bilk | 8 |

At Helsingfors and Algiers they had also been successful.

The weather was cloudy at the following stations : Besançon, Breslau, Charkow, Dorpat, Dresden, Gotha, Gottingen, Hamburg, Jena, Kalocsa, Kasan, Kremzmunster, Leipzig, Munich, Nikolajen, Pola, Prague, Riga, and Upsala. Seventy-five observatories had not reported at the above-mentioned date.

VARIATIONS OF LUNAR HEAT DURING THE ECLIPSE OF THE MOON.—Dr. Boedicker succeeded in making a series of interesting experiments under favourable circumstances of the variations in the amount of heat radiated to us from the moon during the progress of the total eclipse of January 28. The observations were made with a Thompson's galvanometer used in connection with Lord Rosse's 3-foot reflector at Parsonstown, and commenced at 7h. 19m., or 1h. 10m. before the first contact with the earth's penumbra, and continued until 15h. 45m., or 1h. 34m. after the last contact. 638 readings were made in all. The principal deductions drawn from the observations were :—

(1) The heat radiated by the moon commenced to decrease long before the first contact with the penumbra.

(2) Twenty-two minutes before the commencement of totality the heat was reduced to less than 5 per cent. of that which it had been twenty minutes before the first contact with the penumbra.

(3) In spite of this rapid cooling at the approach of totality, the heat after the last contact with the penumbra did not remount immediately to the point where it had been before the first contact.

## *ASTRONOMICAL PHENOMENA FOR THE WEEK* 1888 *MARCH* 11–17.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

*At Greenwich on March* 11

Sun rises, 6h. 24m. ; souths, 12h. 10m. 1·3s. ; sets, 17h. 57m. : right asc. on meridian, 23h. 28·4m. ; decl. 3° 25′ S. Sidereal Time at Sunset, 5h. 16m.

Moon (New on March 12, 16h.) rises, 6h. 16m. ; souths, 11h. 23m. ; sets, 16h. 39m. : right asc. on meridian, 22h. 41·3m. ; decl. 10° 59′ S.

| Planet. | Rises. h. m. | Souths. h. m. | Sets. h. m. | Right asc. on meridian. h. m. | Declination on meridian. ° ′ |
|---|---|---|---|---|---|
| Mercury | 5 43 | 11 13 | 16 43 | 22 30·9 | 6 42 S. |
| Venus | 5 29 | 10 12 | 14 55 | 21 30·1 | 15 24 S. |
| Mars | 21 20* | 2 38 | 7 56 | 13 55·2 | 8 56 S. |
| Jupiter | 0 48 | 5 1 | 9 14 | 16 17·9 | 20 24 S. |
| Saturn | 12 51 | 20 49 | 4 47* | 8 8·9 | 20 44 N. |
| Uranus | 20 10* | 1 44 | 7 18 | 13 0·9 | 5 45 S. |
| Neptune | 8 44 | 16 24 | 0 4* | 3 42·9 | 18 1 N. |

* Indicates that the rising is that of the preceding evening and the setting that of the following morning.

| March. | h. | |
|---|---|---|
| 11 | 6 | Mercury in conjunction with and 5° 8′ north of the Moon. |
| 16 | 4 | Mercury stationary. |

*Variable Stars.*

| Star. | R.A. h. m. | Decl. ° ′ | | h. m. | |
|---|---|---|---|---|---|
| R Ceti | 2 20·3 | 0 41 S. | Mar. 13, | | *M* |
| λ Tauri | 3 54·5 | 12 10 N. | ,, 14, | 22 5 | *m* |
| ζ Geminorum | 6 57·5 | 20 44 N. | ,, 15, | 2 0 | *M* |
| R Canis Majoris | 7 14·5 | 16 12 S. | ,, 11, | 0 41 | *m* |
| | | | ,, 17, | 20 17 | *m* |
| U Monocerotis | 7 25·5 | 9 33 S. | ,, 16, | | *M* |
| δ Libræ | 14 55·0 | 8 4 S. | ,, 14, | 0 40 | *m* |
| U Coronæ | 15 13·6 | 32 3 N. | ,, 17, | 1 50 | *m* |
| S Libræ | 15 15·0 | 19 59 S. | ,, 13, | | *M* |
| R Herculis | 16 1·2 | 18 40 N. | ,, 14, | | *M* |
| R Ursæ Minoris | 16 31·5 | 72 30 N. | ,, 12, | | *M* |
| U Ophiuchi | 17 10·9 | 1 20 N. | ,, 16, | 3 0 | *m* |
| X Sagittarii | 17 40·5 | 27 47 S. | ,, 11, | 3 0 | *M* |
| U Sagittarii | 18 25·3 | 19 12 S. | ,, 14, | 3 0 | *m* |
| | | | ,, 17, | 2 0 | *M* |
| β Lyræ | 18 46·0 | 33 14 N. | ,, 11, | 4 0 | $m_2$ |
| R Sagittæ | 20 9·0 | 16 23 N. | ,, 14, | | *m* |
| T Vulpeculæ | 20 46·7 | 27 50 N. | ,, 13, | 2 0 | *M* |
| | | | ,, 14, | 4 0 | *m* |
| δ Cephei | 22 25·0 | 57 51 N. | ,, 17, | 22 0 | *M* |

*M* signifies maximum ; *m* minimum ; $m_2$ secondary minimum.

*Meteor-Showers.*

| | R.A. | Decl. | |
|---|---|---|---|
| Near Capella | 50° | 48° N. | March 4–12. |
| ,, ξ Virginis | 175 | 10 N. | Bright ; slow. |
| ,, κ Cephei | 300 | 80 N. | Bright ; slow. |