

A HEALTH EXHIBITION will be opened in Warsaw on May 15 next.

AN International Agricultural Exhibition of Tools and Implements will be held at Parma in September next.

THE Royal Bavarian Academy of Sciences is collecting the numerous treatises of Joseph Fraunhofer, hitherto dispersed in numberless serials, and is about to publish them in one volume.

PROF. VERNEUIL AND L. H. PETIT have issued the first number of a periodical publication called "Études expérimentales et cliniques sur la Tuberculose." It is published by means of a fund especially raised for the promotion of the study of tuberculosis.

M. H. GADEAU DE KERVILLE has just published a work on evolution. It is entitled "Causeries sur le Transformisme," and contains an exposition of the facts and theories upon which the doctrine of evolution is based.

A BOOK on therapeutics, by M. G. Hayem, Professor in the Paris Medical School, has just been published.

THE February number of the Italian Geographical Bulletin contains a detailed account, by Dr. G. A. Colini, of the rich ethnological collection recently presented to the Prehistoric and Ethnographic Museum of Rome by General Genè, Commander of the Italian possessions on the East Coast of Africa. The collection includes a great variety of objects, such as arms, costumes, implements, ornaments, utensils from Abyssinia, Somali Land, and the Afar (Danakil) country. Amongst them are baking-ovens, braziers, incense-burners, cooking-utensils, pestles for grinding coffee, pepper, durra, &c.; baskets, matting, veils, robes, loin-cloths, wooden sandals, lamps, swords, match-lock guns, knives, hairpins, &c., illustrating the arts and industries of the East African peoples.

WE have received the four latest Bulletins of the U.S. Geological Survey (Nos. 30-33). No. 30 contains Mr. C. D. Walcott's second contribution to "Studies on the Cambrian Faunas of North America." A systematic review of our present knowledge of fossil insects, including myriapods and arachnids, by Mr. S. H. Scudder, is presented in No. 31; and an elaborate account of mineral springs of the United States, by Dr. A. C. Peale, in No. 32. No. 33 is made up of notes, by Mr. J. S. Diller, on the geology of Northern California.

MR. EDWARD COOKWORTHY ROBINS, whose collected papers on technical education and applied science, buildings and fittings, &c., were reviewed in NATURE some time ago, is now engaged on a general work of reference on the same subject. It will appear shortly under the title of "Technical School and College Buildings," in a quarto volume of about 250 pages, with upwards of 100 full-page illustrations, plates, and maps.

IN the Proceedings of the American Antiquarian Society (vol. iv. p. 62) Mr. Frederick W. Putnam gives an account of twelve jade objects found in Nicaragua and Costa Rica, ten of which were ornaments made by cutting celts into halves, quarters, or thirds, a portion of the cutting edge of the celt remaining on each piece. Mr. O. W. Huntington, who was asked to report upon the nature and source of the material of these ornaments, is of opinion that the specimens "are unquestionably Chinese jade." They have, he says, "all the characters of that mineral, although the largest specimen from Costa Rica is rather unusual in its colour, and would not be taken for jadeite at sight." The *American Naturalist*, which calls attention to these facts, thinks "it will now be in order to collate during the next ten years the evidence for and against contact between the Orient and the western shores of America."

SOME interesting notes from Venezuela have lately been contributed by Dr. Ernst, of Caracas, to the Proceedings of the Berlin Anthropological Society. The writer brings together much valuable information as to the manners and customs of the aboriginal population, and about their food, ornaments, implements, weapons, and canoes.

THE additions to the Zoological Society's Gardens during the past week include a Mauge's Dasyure (*Dasyurus maugei* ♀) from Australia, presented by Mr. W. Miller; two White-crowned Pigeons (*Columba leucocephala*) from the West Indies, presented by Lieut.-Colonel Dawkins; two Long-tailed Grass Finches (*Poephila acuticauda*) from Australia, presented by Mr. Walter Burton; an Algerian Tortoise (*Testudo mauritanica*) from North Africa, presented by Mr. J. M. Green; a European Pond Tortoise (*Emys europæa*), South European, presented by Mr. Henry Garle; five European Tree Frogs (*Hyla arborea*), European, presented by Mr. F. W. Green; an Axis Deer (*Cervus axis* ♀), a Collared Fruit Bat (*Cynonycteris collaris*), sixteen Puff Adders (*Vipera arietans*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

RESEARCHES ON THE DIAMETER OF THE SUN.—Herr Auwers has published in the *Sitzungsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin*, 1886, No. 1., the first part of an elaborate investigation of the value of the sun's diameter as found from meridian observations, and of the apparent variations thereof. The discussion now published refers to variations in the mean annual values only of the diameter. The series of observations discussed are the meridian observations of the sun made at Greenwich, 1851-83; at Washington, 1866-82; at Oxford (Radcliffe Observatory), 1862-83; and at Neuchâtel (transit observations only), 1862-83. The "personal equations" of the various observers are first determined on the supposition that there may be periodic annual variations, both in the horizontal and vertical diameters of the sun, such for instance as have been supposed by Secchi and others to exist, with a period corresponding to the sunspot cycle. The first determination of "personal equation" is therefore made by comparing observations taken in each year with others taken in the same year only. The resulting diameters are, however, such as to convince Herr Auwers that, although inequalities exist in each of the series of observations discussed, their comparison with each other and with the sunspot curve is sufficient to show that they have no connexion either with the latter or with a progressive change, but are most probably due to uncorrected "personal equations." A second determination of these on the assumption that, for some observers at least, they are liable to change, but that the sun's diameter is not subject to annual variation, leads to much more satisfactory results, and is regarded by Herr Auwers as the correct solution of the problem. The effect of personality on the deduced solar diameter, which on the average, for an individual observer, amounts to about 1" (sometimes 3", 4", and even 10"), may be inferred from the fact that the values of the horizontal and vertical diameters of the sun, deduced from thirty-three years' observation with the Greenwich transit-circle, and referred to the mean of Dunkin, Ellis, Criswick, and J. Carpenter, as standard, are respectively 32' 2".48 and 32' 2".00; whilst, referred to the mean of fifty-four observers, the same observations give, for the horizontal and vertical diameters respectively, the values 32' 1".99 and 32' 2".73.

COMET 1887 *b* (BROOKS, JANUARY 22).—The following ephemeris for Berlin midnight, is by Dr. R. Spitaler (*Astr. Nach.* No. 2776).

1887	R. A.			Decl.	Brightness
	h.	m.	s.		
March 24	...	4 18	8	...	35 46.5 N. ... 0.72
26	...	4 21	20	...	34 26.1 ...
28	...	4 24	26	...	33 8.9 ... 0.66
30	...	4 27	26	...	31 54.9 ...
April 1	...	4 30	21	...	30 43.9 ... 0.61
3	...	4 33	11	...	29 35.7 N. ...

The brightness on January 24 is taken as unity.

MINOR PLANET No. 262.—This object has received the name of Valda.

HARVARD COLLEGE OBSERVATORY.—The late Uriah A. Boyden having left property to the value of 230,000 dollars in trust for the purpose of astronomical research, the Trustees of the fund have transferred the property to the President and Fellows of Harvard College, in order that the researches proposed by Mr. Boyden may be directed at the Harvard College Observatory. These researches will be supported by a portion of the means of the Observatory, in addition to the trust fund itself. By the terms of the will the money is to be devoted to observations "at such an elevation as to be free, so far as practicable, from the impediments to accurate observations which occur in the observatories now existing, owing to atmospheric influences."

ASTRONOMICAL PHENOMENA FOR THE WEEK 1887 MARCH 27—APRIL 2

(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 27

Sun rises, 5h. 49m.; souths, 12h. 5m. 30".s.; sets, 18h. 22m.; decl. on meridian, 2° 35' N.; Sidereal Time at Sunset, 6h. 41m.
Moon (at First Quarter on April 1) rises, 7h. 19m.; souths, 14h. 12m.; sets, 21h. 16m.; decl. on meridian, 9° 44' N.

Planet	Rises	Souths	Sets	Decl. on meridian
	h. m.	h. m.	h. m.	h. m.
Mercury	5 19	11 26	17 33	0 40 N.
Venus	6 38	13 47	20 56	12 41 N.
Mars	6 3	12 30	18 57	4 37 N.
Jupiter	20 47*	1 52	6 57	11 28 S.
Saturn	10 39	18 48	2 57*	22 30 N.

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

Occultations of Stars by the Moon (visible at Greenwich)

March	Star	Mag.	Disap.	Reap.	Corresponding angles from vertex to right for inverted image
			h. m.	h. m.	
27	μ Ceti	...	18 42	19 35	108 359
29	γ ¹ Tauri	...	6	20 38	near approach 47 —
29	θ ¹ Tauri	...	4½	21 17	22 13 ... 117 335
29	θ ² Tauri	...	4½	21 26	22 8 ... 91 0
29	γ ⁵ Tauri	...	6	21 46	near approach 226 —
29	B.A.C. 1391	...	5	22 16	23 7 ... 159 288
29	δ ⁵ Tauri	...	6	23 12	near approach 42 —
31	ι ¹⁵ Tauri	...	6	0 9	0 45 ... 173 258

April
2 ... B.A.C. 2731 ... 6½ ... 21 20 ... 22 30 ... 111 288

March
27 ... 0 ... Venus in conjunction with and 4° 50' north of the Moon.

April
1 ... 22 ... Saturn in conjunction with and 3° 23' north of the Moon.

Variable Stars

Star	R.A.	Decl.	h. m.
	h. m.	h. m.	h. m.
Algol	3 0'8	40 31 N.	Mar. 28, 19 3 m
ζ Geminorum	6 57'4	20 44 N.	..., 30, 22 0 m
δ Libræ	14 54'9	8 4 S.	..., 30, 22 21 m
U Coronæ	15 13'6	32 4 N.	..., 30, 22 43 m
U Herculis	16 20'8	19 9 N.	Apr. 1, m
U Ophiuchi	17 10'8	1 20 N.	Mar. 28, 4 58 m
			and at intervals of 20 8
W Sagittarii	17 57'8	29 35 S.	Mar. 29, 3 0 M
R Lyræ	18 51'9	43 48 N.	..., 31, m
η Aquilæ	19 46'7	0 43 N.	Apr. 2, 2 0 M
S Sagittæ	19 50'9	16 20 N.	..., 2, 4 0 M
T Aquarii	20 44'0	5 34 S.	Mar. 28, m
T Cephei	21 8'1	68 2 N.	..., 31, M
δ Cephei	22 25'0	57 50 N.	..., 28, 2 0 m

M signifies maximum; m minimum.

GEOGRAPHICAL NOTES

IN a recently-issued Colonial Office Report on the Gambia will be found some useful data on the climate of that colony which completely upset the results of previous observations and greatly reduce the temperatures hitherto accepted. The mean temperature, according to these latest observations, varies from 68°·5 in January to 80° in July at 7 a.m., and from 73°·7 in January to 82°·5 in July at noon. The same Report contains some interesting statements relating to the ethnology of the colony.

THE principal paper in the just-issued Bulletin (only No. 4 of 1885) of the American Geographical Society is on the historical and geographical features of the Rocky Mountain Railways, by Mr. James Douglass. There is also a translation of Baron Nordenskjöld's reply to criticisms on the "Voyage of the Vega." The criticisms relate to points of minor importance.

THE new number of the "Antananarivo Annual and Madagascar Magazine" (Christmas, 1886), consists, besides a reprint of Mr. A. R. Wallace's chapter on the fauna of Madagascar, mainly of papers on linguistic topics and on Malagasy folk-lore. M. Grandidier's paper on the channels and lagoons of the east coast of the island is translated with some interesting remarks by Mr. Sibree appended. Mr. Sibree points out that it would only require about thirty miles of canals to connect all these lagoons and so create a safe and extensive internal waterway of the greatest commercial value. The Rev. W. Montgomery contributes a paper on the Malagasy game of "Fanerana," in many respects resembling chess.

IN the new number (Heft i. Band 10.) of the *Deutsche Geographische Blätter*, we find a useful and careful, if rather too favourable, study of the trade-routes of Mexico, old and new, and their commercial importance, by Herr A. Scobel. From a scientific point of view the most valuable paper is that of Dr. Otto Finsch on his visit three years ago to the atoll of Diego Garcia in the Chagos Archipelago, about half-way between the Seychelles and Ceylon. Dr. Finsch was only a few hours on the islands, but his notes on the people (mostly of the Negro type from the Mauritius) and the richness of the bird life are interesting. An open space in the little east island was covered with "millions" of birds, whose combined cry was deafening. Eggs, also in "millions," lay about everywhere, unprotected by any nest. The commonest among these birds was the sooty tern (*Sterna fuliginosa*). Next to the Laccadives, the Chagos Islands seem to be the favourite breeding-place of this bird in the Indian Ocean. The variety in the colouring of the eggs was unprecedented in Dr. Finsch's experience, especially considering the fact that they all belonged to birds of the one species named above. The only other species noticed in the island by Dr. Finsch was the noddy (*Anous stolidus*). The birds arrive in the islands in the month of June, and stay till the young are fledged; by November they have all taken their departure. As on most coral islands, the animal world generally is very poor.

THE same number contains an account of Fontana's exploration of Eastern Patagonia in 1835, and also a short biography of Emin Pasha. From the latter we learn that Edward Schnitzer was born at Oppeln, in Silesia, in 1840; received his early education at Neisse, in Upper Silesia, and studied medicine at Breslau, Berlin, and Königsberg. From his earliest years he had a special taste for natural history, and especially ornithology, and in the latter department he has all along been a diligent collector. In 1864 we find Schnitzer at Antivari, in Albania, as a surgeon in the Turkish service. In 1870 he accompanied Ismail Pasha to Syria and Arabia, and afterwards to Trebizond, Erzerum, and Epirus. At Ismail's death in 1874, Schnitzer came to Constantinople, and in 1875 made a short visit to his German home. Entering the Egyptian service, he, in 1876, followed Gordon Pasha from Cairo into the Soudan, where, under the title of Emin Effendi, he was appointed chief surgeon, and in 1878 Governor-General of the Equatorial Province, with the title of Bey. His work as administrator, scientific explorer, and collector, since then is well known. To Bremen and Vienna he has sent some 2000 bird-skins, carefully labelled with all necessary information, and including some twenty-five new species.

SINCE the time of Herodotus travellers in Africa have brought home reports of pygmy tribes scattered about in various regions of Africa. Readers of Schweinfurth will remember the Akkas