

It is proposed that a school of hygiene shall be established at the University of Michigan, and the State Legislature is about to be asked to authorise the necessary expenditure. The scheme was suggested by the State Board of Health. The school would include in its curriculum climatological studies, air analyses and ventilation.

LAST week there was a Convention of Photographers in the Hall of the Society of Arts, and the attendance was good and representative. The proceedings in the morning were opened by a few remarks from Capt. Abney, the President, who, in the afternoon, delivered a more elaborate address, projecting on a screen a succession of diagrams and pictures illustrative of his statements. At a dinner in the evening the toast of the Camera Club was proposed by Mr. V. Blanchard, who, in recalling the time when he made his first practical acquaintance with photography by watching a friend develop a paper negative, expressed the opinion that photographers might perhaps return to the use of paper negatives.

PROF. LIVERSIDGE, of the University of Sydney, who is about to return to England on leave of absence, has been requested by the Minister of Public Instruction of New South Wales to inquire into and report upon the mode of teaching natural science in the elementary schools of Great Britain and Ireland.

NEW SOUTH WALES will be represented at the Conference of Astronomers to be held in Paris in April next, by Mr. H. C. Russell, the Government Astronomer.

A VALUABLE "Report on the Medusæ collected by the U.S. Fish Commission Steamer *Albatross*, in the Region of the Gulf Stream in 1883-84," by Mr. J. Walter Fewkes, has lately been reprinted, at the Government Printing Office, Washington, from the Annual Report of the Commissioner of Fish and Fisheries for 1884. Mr. Fewkes is not sure that certain of the Medusæ recorded by the *Challenger* from great depths do not also live and flourish at or near the surface. There is need, he thinks, for greater accuracy in the determination of the exact depth from which a deep-sea Medusa is taken, and for an improvement of the apparatus used in this kind of collecting. In the case of fixed hydroids, or such Medusæ as *Cassiopia* and others, which live upon the bottom, the determination of the depth at which they live is an easy task. With such genera as *Atolla*, *Rhizophysa*, and others, this determination is more difficult. Mr. Fewkes points out that it is of great importance, from a morphological stand-point, that the question whether Medusæ are confined to certain depths, should be definitely answered. "I can at present," he says, "imagine no place on the globe where the uniformity of conditions under which Medusæ are placed can be the same as at great depths of the ocean. I do not mean necessarily on the floor of the ocean, since that may be raised or depressed, and the varieties of conditions which come from such motions may result, but in the depth of the sea, separated from the surface by a wall of water of great depth, and from the ocean-bed by a similar wall of equal amount. Here, if anywhere, may we look for the continuance of ancestral features unmodified by environment. On this account the determination of the bathymetrical limits of free Medusæ, no less than that of those animals which inhabit the bottom, is a most important thing, and from it should be eliminated all possibility of error."

DR. OTTO HERMES has just published the results of some interesting investigations concerning the phosphorescence of marine fish. He wished to ascertain whether the phosphorescence was caused by the same Bacillus which Dr. Fischer, an eminent authority on Bacteria, has discovered and brought from the West Indies. Marine fish are easily rendered phosphorescent after death by being moistened with a little sea-water. Dr.

Hermes took a fragment of a specimen of *Gadus callarias*, which had been made strongly phosphorescent in this manner, to the laboratory of Councillor Koch; and Dr. Frank, a pupil of the latter, was enabled to isolate it after a few days. This is undoubtedly a new species. Like Dr. Fischer's Bacillus, it can be transferred upon sterilised fish, and after forty-eight hours it emits an emerald-green light; the sea-water is also rendered phosphorescent. A point of difference is that the Bacillus of Dr. Fischer develops best in a high temperature (20°-22°), while that of Dr. Hermes develops better in a low one. Examined microscopically, the latter is much smaller than the former. Dr. Hermes has given it the name of *Bacterium phosphorescens*.

THE German Fishery Association lately asked the German Chamber of Commerce to put a premium on seals, it being maintained that these animals are most destructive to the fisheries. The petition was refused. The Association, in support of its views, stated that a full-grown seal requires 10 lbs. of fish a day for its food, making 3650 lbs. in a year. At the same rate, 1000 seals would consume the enormous quantity of 3,650,000 lbs. a year. As the seal is a faithful attendant upon herring-shoals, it causes enormous havoc among a species of fish which is one of the greatest sources of revenue to the fishermen on the North German coast. It is maintained that these depredations have greatly decreased the quantity of fish in recent years. Complaints of the serious destruction of fish by seals have also lately been made by Swedish fishermen in the Baltic.

THE additions to the Zoological Society's Gardens during the past week include a Green Monkey (*Cercopithecus callitrichus* ♂) from West Africa, presented by Mr. Charles W. Dempsey; a Bonnet Monkey (*Macacus sinicus* ♂) from India, presented by Mr. G. S. Copeland; a Common Otter (*Lutra vulgaris*), British, presented by Mr. John Hall; two Rufous Tinamous (*Rhynchotus rufescens*) from Brazil, presented by Mr. Francis Monckton; two White-throated Finches (*Spermophila albobularis* ♂ & ♀) from Brazil, deposited; a Collared Fruit Bat (*Cynonycteris collaris*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

A METHOD FOR THE DETERMINATION OF THE CONSTANT OF ABERRATION.—Referring to M. Lœwy's plan for the determination of the constant of aberration by measuring the relative positions of stars situated in distant parts of the sky at successive epochs by means of a double mirror placed in front of the object-glass of an equatorial (NATURE, vol. xxxv. p. 282), M. Houzeau points out (*Comptes rendus*, tome civ. No. 5) that the same idea occurred to him some years ago, and that the fundamental principle of the method, and an enumeration of the advantages attending its application, were published by him in 1871, in a paper entitled "Considérations sur l'Étude des petits Mouvements des Étoiles," which appeared in tome xxxviii. of the *Mémoires de l'Académie de Belgique*. It appears, therefore, that M. Lœwy's method cannot, strictly speaking, be considered a new one, though we believe it has never been put into actual practice—a work which we hope to see before long accomplished at the Paris Observatory.

THE APPLICATION OF PHOTOGRAPHY TO THE DETERMINATION OF STELLAR PARALLAX.—In the *Monthly Notices* for January 1887, Prof. Pritchard publishes the results of his measurements of the photographs of 61 Cygni and neighbouring stars, taken on fifty nights ending December 7, 1886, with a view to the determination of the parallax of this well-known star. Using measures of distance only, the relative parallaxes of each of the components, referred to each of four comparison-stars, are:—

Star	Parallax of 61 ^c Cygni	Probable error	Parallax of 61 ^c Cygni	Probable error
a ...	0'4412	...	0'0154	...
b ...	4529	...	4139	...
c ...	4433	...	4721	...
d ...	4158	...	4574	...

The means for the parallaxes thus obtained for the four independent sets of measures of 61¹ and 61² Cygni respectively are as follows:—

For 61¹ Cygni, 0".438; for 61² Cygni, 0".441.

Prof. Pritchard explains that this determination is to be regarded as provisional only, and that the work will be continued to the end of the annual cycle. The method certainly appears to be a most promising one, and the publication of the full details of the Oxford researches will be awaited with interest.

OBSERVATIONS OF VARIABLE STARS IN 1885.—No. 151 of Gould's *Astronomical Journal* contains Mr. Edward Sawyer's observations of variable stars made in 1885. The following epochs of maximum brightness were observed:—R Andromedæ, 1885 January 10; R Leonis, about 1884 December 24; R Leo. Min., 1885 June 26; R Boötis, 1885 May 16; R Ursæ Majoris, July 1; S Ursæ Majoris, May 7; U Herculis, July 8; ζ Herculis, June 4, August 2 (?), October 16; S Coronæ, May 11; χ Cygni, 1886, January 10; R Scuti, 1885 June 17, August 10 (?), and November 16; Mira Ceti, February 10; R Aquarii, January 4. β Pegasi and α Cassiopeiæ appeared constant, and ρ Persei nearly so, during the observations. R Coronæ was well observed, and showed numerous but slight fluctuations of light. An unusually bright phase, 6.2 m., occurred on August 15, followed by a rather faint minimum, 7.4 m., on October 13. T Monocerotis was well observed; last minimum, April 20, 15h. 26m. Camb. M.T.; last maximum, April 27, 15h. 55m. U Monocerotis was observed at minimum on April 1, and at maximum on April 14. W Cygni was observed at maximum on August 20 and December 16, giving a period of 118 \pm days, and at minimum on October 30.

THE ALLEGED ANCIENT RED COLOUR OF SIRIUS.—Mr. Lynn, in the current number of the *Observatory*, shows that the evidence for this star having formerly been of a red colour is much less strong than has frequently been supposed. Prof. Schjellerup had pointed out in his notes on his translation of Sûfi, that the designation $\delta\rho\kappa\alpha\iota\delta\eta\sigma$ applied to the star in our editions of Ptolemy was probably an error of transcription for $\sigma\epsilon\lambda\pi\iota\sigma$; whilst it had been suggested long ago that, for the word "rubr" which we find used in reference to it by Seneca, we should really read "fulgor." It certainly has always seemed improbable that a star of such vast dimensions as α Sirius must be should have so entirely changed its colour in less than 2000 years.

BRIGHT LINES IN STELLAR SPECTRA.—Mr. O. T. Sherman, in No. 149 of Gould's *Astronomical Journal*, brings together various observations of the bright lines which have been observed by Vogel or Copeland in the spectra of β Lyræ, γ Argûs, R Geminorum, and some smaller stars, and compares them with Hasæberg's observations of the low-temperature spectrum of hydrogen and the high-temperature spectrum of oxygen, and draws the inference that the stellar bright lines belong to these spectra. The inference seems scarcely warranted, however, for, on the one hand, the lines in the spectrum of hydrogen are so numerous that, wherever the star-lines lay, it would be easy to find lines near them, so that the accord would have to be very close for any such deduction to be safely based upon it; and, on the other, the observations of the lines in the stellar spectra are less accurate than Mr. Sherman seems to think. The slight differences in the recorded positions of the bright lines as given by different stars are probably indications simply of a roughness in the readings, and the lines are most likely the same in general in the different spectra. The following may be taken as rough mean positions for the bright lines in these interesting spectra: 600 mm., 581, 568, 540, 466, together with the F line of hydrogen, and, in some cases, D₃ and the third line of hydrogen at 434, assuming that the lines are the same in the various spectra of the type. The close correspondence of the bright lines in R Geminorum to those observed by Cornu in Nova Cygni, 1876, indicates that we probably have there the coronal line 1474 K, the principal chromospheric lines, and the typical nebular line at about 500.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1887 FEBRUARY 20-26

(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 February 20

Sun rises, 7h. 6m.; souths, 12h. 13m. 56.7s.; sets, 17h. 21m.; decl. on meridian, 10° 55' S.; Sidereal Time at Sunset, 3h. 22m.

Moon (New on February 22) rises, 5h. 52m.; souths, 10h. 25m.; sets, 15h. 2m.; decl. on meridian, 17° 6' S.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian
Mercury	7 33	12 58	18 23	7 34 S.
Venus	7 49	13 27	19 5	4 59 S.
Mars	7 38	13 9	18 40	6 23 S.
Jupiter	23 16*	4 17	9 18	12 11 S.
Saturn	12 59	21 8	5 17*	22 23 N.

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

Feb.	h.	Event
20	2	Jupiter stationary.
22	—	Annular eclipse of the Sun; visible only in parts of South America, Australia, and the South Pacific Ocean.
24	17	Venus in conjunction with and 1° 17' north of the Moon.

Variable Stars

Star	R.A. h. m.	Decl.	h. m.
U Cephei	0 52.3	81° 16' N.	Feb. 20, 20 38 m
Algol	3 0.8	40 31 N.	" 25, 20 17 m
W Virginis	13 20.2	2 48 S.	" 22, 23 0 M
δ Libræ	14 54.9	8 4 S.	" 24, 0 31 m
U Coronæ	15 13.6	32 4 N.	" 20, 23 19 m
S Libræ	15 14.9	19 59 S.	" 21, m
U Ophiuchi	17 10.8	1 20 N.	" 20, 3 27 m
and at intervals of 20 8			
β Lyræ	18 45.9	33 14 N.	Feb. 24, 4 0 m
W Cygni	21 31.8	44 52 N.	" 24, m
T Pegasi	22 3.4	11 59 N.	" 20, M
δ Cephei	22 25.0	57 50 N.	" 23, 21 0 m

M signifies maximum; m minimum.

Meteor-Showers

February 23-25, near β Trianguli, R.A. 30°, Decl. 35° N Also from Monoceros, R.A. 120°, Decl. 5° S.

GEOGRAPHICAL NOTES

It would seem that Dr. Oscar Lenz is only to leave Zanzibar this week. The *Times* Vienna Correspondent is mistaken in thinking that the Royal Geographical Society expects Dr. Lenz to come direct to London. He must, of course, first render his account to the Vienna Society, which sent him out; but after that, it is hoped, he will come to London and tell his story. It is possible that before leaving Zanzibar he may have an opportunity of giving Mr. Stanley the benefit of his experience. Mr. Joseph Thomson, in a letter to the *Times*, endeavours to show that Mr. Stanley is taking a too rosy view of the prospects of his expedition. Mr. Thomson naturally insists on the superiority of the Masai Land route over all others. Certainly Mr. Stanley exaggerated the difficulties of this route, and we are inclined to believe that, had it been selected, the expedition might have reached Emin Pasha sooner than by the Congo. It should be remembered that, even if all the vessels on the Middle and Upper Congo are available, they could not possibly convey a thousand people in one journey—a good authority assures us that there must be at least three journeys; so that, unless Mr. Stanley starts on his land journey with only one-third of his caravan, instead of 35 days after leaving Stanley Pool it will take 100 days to reach the mouth of the Aruwimi. At the same time we must believe that Mr. Stanley knows what he is about, and is not likely to lay himself open to the reproach of being so far out in his calculations.

In the official report, just issued, on the administration of Lower Burmah during 1885-86, and Upper Burmah during 1886, there are some interesting passages relating to the resources of the new British province. Agricultural products, such as rice, wheat, maize, and other cereals, are grown in large quantities. The country is believed to be rich in mineral resources, and the subject is at present under the examination of the Geological Survey. Meanwhile it is known that the country to the north-east of Mandalay is the richest, if not the only, ruby-