

basis of all classifications. Many attempts of improving it have from time to time been made, but the problem of obtaining a more perfect nomenclature still remains, to a great extent, unsolved. When such an accomplished bibliographer as Dr. Hellmann undertakes the reproduction of a work, we may be sure that he will tell us all that can be known about it, and few persons can read his introductory remarks without learning something. Comparatively few copies appear to have been reprinted from the *Philosophical Magazine*, and Dr. Hellmann points out that the first part of the text was set up afresh, as some of the lines do not exactly agree; also, that some small omissions were made in the separate copies of 1803 which have been added to this new edition. In 1832 a second edition was issued without plates; but in 1849 L. Howard appears to have drawn a new set of cloud pictures, and these, although not considered to be equal to the first, were included in the third edition, published in 1865. Many other details of great interest are given by Dr. Hellmann, to which we cannot now refer. We may mention that the plates only are actual *facsimiles*, while the type of the text is as nearly as possible like that of the original work.

THE additions to the Zoological Society's Gardens during the past week include a Slow Loris (*Nycticebus tardigradus*) from Malacca, presented by Captain Spalding; two Sooty Mangabays (*Cercocebus fuliginosus*, ♀ ♀), an African Civet Cat (*Viverra civetta*), two Royal Pythons (*Python regius*) from West Africa, presented by the Rev. Canon J. Taylor Smith; two Crested Porcupines (*Hystrix cristata*) from South Africa, presented by Mr. Adrian Vander Byl; a Water Vole (*Arvicola amphibius*) British, presented by Colonel L'Estrange; a Buzzard (*Buteo vulgaris*) British, presented by Colonel C. B. Rashleigh; a Raven (*Corvus corax*) British, presented by Miss P. L. Graham; two Pin-tailed Sand Grouse (*Pterocles alchata*, ♂ ♀) South European, a Black Gallinule (*Limnocorax niger*) from East Africa, two — Moorhens (*Gallinula* sp. inc.) from Madagascar, presented by Mr. H. H. Sharland; four Swainson's Francolins (*Francolinus swainsoni*), a Delalande's Lizard (*Nucras delalandii*), a Rough-keeled Snake (*Dasyplettis scabra*) from South Africa, presented by Mr. J. E. Matcham; a Chimpanzee (*Anthropopithecus troglodytes*, ♂) from West Africa, a Lioness (*Felis leo*) from India, deposited; a Chimpanzee (*Anthropopithecus troglodytes*, ♀) from West Africa, a White-backed Trumpeter (*Psophia leucoptera*), a Short-tailed Parrot (*Pachynus brachyurus*) from the Upper Amazons, a Blackish Sternotherer (*Sternotherus subniger*) from Madagascar, purchased; two Barbary Wild Sheep (*Ovis tragelaphus*, ♀ ♀) born in the Gardens.

OUR ASTRONOMICAL COLUMN.

FOUR NEW VARIABLE STARS.—Prof. E. C. Pickering announces (*Astr. Nach.* 3225) that four new variable stars have been discovered by Mrs. Fleming from the presence of bright hydrogen lines in photographs of their spectra taken in connection with the Henry Draper Memorial. The first of these is a star in the constellation Sculptor, having the co-ordinates R.A. oh. 10^m. 4m. Decl. - 32° 36'. The range of variability of this star is from magnitude 6.5 or 6.6 to 10.0, and the period 366 days. The second star is Arg-Oeltz 16121, in Scorpius, its exact position being R.A. 16h. 50^m. 3m. Decl. - 30° 26'. The range of variability is from 7.3 to 11.6 magnitude, and the period is 278 days. The star B.D. + 1° 3417, in the constellation Ophiuchus (R.A. 17h. 14^m. 5m. Decl. + 1° 37') is the third of the variables discovered, the range in this case being from magnitude 8.5 to 12.5, and the period 348.4 days. The fourth star is B.D. + 4° 4250, in the constellation Aquila (R.A. 19h. 46^m. 5m. Decl. + 4° 13'). Its period is about a year, and at the last maximum on August 12, 1893, its photographic magnitude was 9.5. At a minimum it becomes fainter than the twelfth magnitude.

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SPEED OF PERCEPTION OF STARS.—When working at the Etna Observatory during a high wind, Prof. Riccò noticed how the pole star and its companion appeared to change their mutual distance at every vibration of the telescope. The phenomenon was not observed on the following night, which was calm, but could be reproduced by shaking the telescope. The pole star appeared in every case to move more rapidly than its companion. This observation has been communicated to the *Società degli Spettroscopisti Italiani*, and connected with Prof. Schaeberle's investigation of the difference of personal equation between bright and faint stars observed in transit. Schaeberle estimated the apparent retardation of faint stars at 0.02 sec. per magnitude. Prof. Riccò proposes to redetermine this by measurements of stellar distances by the micrometer as compared with the transit instrument. That the colour may have a determining influence is shown by the fact that when a spectrum is displaced rapidly at right angles to its length, the more refrangible portions appear to lag behind.

ELEMENTS AND EPHEMERIS OF GALE'S COMET (δ 1894).—The following elements and ephemeris are given in a supplement to *Astronomische Nachrichten*, No. 3225:—

T = 1894 April 13.75 G. M. T.

$$\left. \begin{aligned} \omega &= 324.19 \\ \Omega &= 206.15 \\ i &= 87.15 \\ q &= 0.9849 \end{aligned} \right\} \text{Mean Eq. 1894.0.}$$

Ephemeris for Greenwich Midnight.

1894.	R.A.	P.D.
April 26	101.38	124.23
30	115.22	109.31

The comet is increasing in brightness, and on April 30 it will be 6.05 times brighter than at the time of discovery.

A MISTAKEN COMETARY DISCOVERY.—From a note by Prof. Krueger in *Astronomische Nachrichten*, No. 3224, it appears that the object seen by Mr. Holmes on April 9, and afterwards announced as a new comet, is really the nebula No. 6503 in the New General Catalogue.

THE INSTITUTION OF MECHANICAL ENGINEERS.

THE meeting of the Institution of Mechanical Engineers was held last week in the theatre of the Institution of Civil Engineers, on Thursday and Friday evenings, April 19 and 20. The chair was taken by the President, Prof. Alexander B. W. Kennedy, F.R.S. Two papers were read at the meeting: the first, "On the Grafton High Speed Engine," by Mr. E. W. Anderson; and the second, "On Fluid Pressure Reversing Gear," by Mr. David Joy. The President's address was, however, the chief feature of the meeting, and to this we shall mainly confine our report, more especially as it would be difficult to give an adequate description of the mechanical devices upon which the two papers were founded without somewhat elaborate illustrations.

After the usual formal proceedings, Prof. Kennedy read his address. It had been expected that in consequence of the leading part the President has recently taken in the development of electrical engineering that the address would deal largely with that subject, and in this respect the result proved to be in accordance with general expectation. The address pointed out that practical electrical problems divided themselves into three main sections, in which electrical energy is used, respectively: firstly, for lighting; secondly, for power; and thirdly, for physico-chemical processes. The third section, which relates to the deposition of metals, the reduction of chemical compounds, &c., was one in which the President had not had experience, but he had no doubt that there was a great future before it. In this section he also included the application of electricity to heating, and said it was to be hoped that there being so many competent workers engaged in the study of this subject, success would soon attend their efforts. The commercial problem of producing the heat sufficiently cheaply to allow of its general use was yet to be overcome. Remembering, however, that something like 95 per cent. of all the energy that goes to incandescent lamps appears only as heat and not as light, there would seem to be an ample opening here for another "thermal storage"