articles by Dr. D. E. Brinton, entitled "The Pillars of Ben" and "The So-called 'Bow-Puller,'" besides brief notes on collections and publications.

THE following are among the papers and other publications which have come under our notice during the past few days:—"Life in Sewers," by Mr. H. A. Roechling, in the *Transactions* of the Leicester Literary and Philosophical Society (vol. iv. part iii., 1897). The paper is an instructive account of bacterial life found in the sewage itself and in sewer air, and the diseases produced by it.—A paper on the distribution and migration of Colorado birds, by Mr. W. W. Cooke, is published as *Bulletin* No. 37 of the State Agricultural College, Fort Collins, Colorado. The total number of species and varieties of birds which occur in Colorado is 360, of which 228 are known to breed. This is said to be a larger number of species than has been taken in any State east of the Mississippi, and is only exceeded by Nebraska with nearly four hundred species.—The tidal phenomena of the St. John River, New Brunswick, Canada, at low summer level, are described by Mr. A. Wilmer Duff in the *Bulletin* of the Natural History Society of New Brunswick (No. xv., 1897.) Dr. G. F. Matthew contributes to the same bulletin a long review of the scientific work of Dr. Abraham Gesner, the geologist.—The Pasteur Memorial Lecture delivered by Prof. Percy Frankland before the Chemical Society on March 25, and reported in NATURE at the time (vol. lv. p. 518), is printed in full in the July *Journal* of the Society, with an excellent portrait of Pasteur.

THE additions to the Zoological Society's Gardens during the past week include a Chacma Baboon (*Cynocephalus porcarius*) from South Africa, presented by Mr. W. H. Stather; a Brown Capuchin (*Cebus fatuellus*) from South America, presented by Mr. D. Mackintosh; a Harnessed Antelope (*Tragelaphus scriptus*, ♂) from West Africa, presented by Mr. R. B. Llewelyn, C.M.G.: a Vulpine Squirrel (*Sciurus vulpinus*) from North America, presented by Messrs. A. G. and R. Rawlins; a King Parrot (*Aprosmictus syanopygius*) from Australia, presented by Mrs. R. L. Turner; a Crowned Horned Lizard (*Phrynosoma coronatum*) from California, presented by Mr. C. H. Hastings; a Daudin's Tortoise (*Testudo daudini*) from the Aldabra Islands; a West African Python (*Python sebæ*) from West Africa, deposited; a King Vulture (*Gypagus papa*) from South America; a Bronze-winged Pigeon (*Phaps chalcoptera*) from Australia, purchased; a Peacock Pheasant (*Polyplectron chinquis*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

NEW OBSERVATIONS OF VENUS.—During the first three months of the present year, Dr. Eduardo Fontseré, of the Observatory of the Royal Academy of Sciences, Barcelona, made a series of observations of the planet Venus with a refractor of 11 cm. belonging to that observatory. An account of these observations is briefly described in the current number of the *Astronomischen Nachrichten* (No. 3430), and is accompanied by numerous figures illustrating the different surface markings that were recorded. The colour of the planet was noted as being of a yellowish green tinge, the most brilliant regions of the disc being less coloured than the others. The polar regions were not found to resemble those on Mars. Attention was paid especially to the dark and light spots on the disc, which were at times very conspicuous. We cannot here enumerate the various differences of shade observed, but we may mention the most brilliant noticed, namely, that situated near the south pole, and forming the letter X by the crossing of two arcs of circles. Dr. Fontseré classifies the bright regions into two divisions: those which are, to all intents and purposes, permanent, but of a variable nature, increasing and decreasing in relative brightness between certain limits; and those which appear like white trails always inclined towards the equator, but never parallel to it. As in the observations of Trouvelot, large deformations of the terminator were distinctly noticed, but are attributed for the most part to irradiation. The extremities of the horns were also found to be sometimes prolonged into the non-illuminated portion of the disc. The observations during these three months have indicated that, relatively to the sun, Venus has not undergone any rotation except as regards the small libration, which was exactly equal to that which corresponded to the change of geocentric latitude. The above-mentioned observations form a valuable contribution to our present knowledge concerning the telescopic appearance and time of rotation of this planet.

THE YERKES OBSERVATORY.—In the June number of the *Astrophysical Journal*, Prof. Hale brings to a conclusion his series of articles on the Yerkes Observatory and Telescope. The concluding article is elaborately illustrated, showing the telescope and dome in various stages of construction, the frontispiece illustrating the stage reached on May 11 last. We notice that the dedication of the observatory will take place on October 1 next, and it is hoped "that European men of science who propose to attend the Toronto meeting of the British Association in August, may think it desirable to take part in the formal inauguration of the Yerkes Observatory. . . . It is planned to hold a series of informal conferences on astronomical and astrophysical subjects. . . . A cordial invitation is hereby extended to all men of science who may be willing to honour the observatory by their presence on this occasion."

RESOLVING POWER OF SPECTROSCOPES.—In this column, on May 20 (p. 62), we referred briefly to Prof. Wadsworth's investigations on the question of the theoretical resolving power of optical instruments, in which he distinguished between four different cases. In this work he obtained formulæ which gave the three different resolving powers, namely, (1) p (theoretical) for a wide slit and monochromatic radiations; (2) R (limiting) for an infinitely narrow slit, but for lines of finite width $\Delta\lambda$; and (3) P (practical) for a wide slit and non-monochromatic radiations ranging for each line over a small value $\Delta\lambda$. In the current number of the *Astrophysical Journal* (vol. vi. No. 1), he now publishes tables which he has prepared, giving the values of p, R and P for values of r, which gives the value of the theoretical resolution of the instrument for an infinitely narrow slit and infinitely narrow spectral lines. In these tables r ranges from 25,000 to 1,000,000, $\Delta\lambda$ from 0·01 to 1·00 tenth metres, s (linear width of slit) from 0·005 mm. to 0·3 mm, and Ψ (angular magnitude of collimator as viewed from slit) from 1/40 to 1/10. All the values are computed for $\lambda = 5500$ tenth metres, this being the mean wave-length of the brightest part of the visible spectrum. Prof. Wadsworth adds also a complete explanation of the use of these tables, and numerous important remarks.

THE HORIZONTAL GYROSCOPE.—Attempts have several times been made to eliminate the use of the horizon when employing a sextant on board ships, by adopting mechanical or other means of determining the horizontal or vertical. Among these may be mentioned the pendulum in a collimator devised by Colonel Goulier, the mercury siphon of M. Renouf, and other ingenious devices suggested by Lejeune, Cardan, &c. None of these seems, however, to have come into practical use, and the mariner is still using the sextant in its ordinary form. Another rather novel mode of determining the horizontal is described by M. Gaspari in the *Journal de Physique* (vol. vi. p. 229). This idea was proposed by Rear-Admiral Fleuriais, and from all accounts seems to be of practical use. It consists in making a small addition to an ordinary sextant by mounting in front of the telescope and behind the small mirror a horizontal gyroscope which contains on its upper part two small plano-convex lenses, equal in all respects, placed a distance apart equal to their focal length. On the plane faces of these lenses are engraved two lines parallel to the equator of the gyroscope, and this plane contains their optical centres. The gyroscope is given a motion of rotation from 80 to 100 turns a second under some conditions. The horizontal is obtained by observing the position of the *locus* of these lines as the lenses revolve. To describe the method of working, and give an idea of the theory of the instrument, would occupy too much space in this column. We may mention, however, that the instrument has been used both on land and sea, and the officer who made the experiments "est arrivé à etablir que l'appareil est definitivement devenu pratique." With a telescope magnifiying from 3 to 4 diameters an approximation of 2′ was obtained under ordinary conditions of observation, but generally greater accuracy than this was secured.

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