

contact processes, so far as the production of acids which are not very concentrated is concerned. For the manufacture of the strongest acids, however, numbers are given which indicate that the contact process is considerably superior to the older process from the commercial point of view. The other articles on the subject deal with more recent alterations which have been made in the lead chamber process, the theory and practice of sulphuric acid manufacture and the treatment of platinum residues.

THE additions to the Zoological Society's Gardens during the past week include a Side-striped Jackal (*Canis lateralis*), a Young Leopard (*Felis pardus*), a Spotted Hyæna (*Hyaena crocuta*), a Harnessed Antelope (*Tragelaphus scriptus*), a Nagor Antelope (*Cervicapra redunca*), a Marabou Stork (*Leptoptilus crumeniferus*), a White-necked Crow (*Corvus scapularis*), a Spur-winged Goose (*Plectropterus gambensis*), two Red-backed Pelicans (*Pelecanus rufescens*) from Gambia, West Africa, presented by Captain Sir George C. Denton, K.C.M.G.; a Striped Hyæna (*Hyaena striata*) from Gambia, West Africa, presented by Captain MacCarthy Morrogh; a Black-eared Marmoset (*Hapale penicillata*) from South-east Brazil, presented by Mrs. Armynt Thornton; a Yellow-fronted Amazon (*Chrysotis ochrocephala*) from Guiana, presented by Miss Ellen Cull; a Red-winged Parrakeet (*Ptilis erythropterus*) from Australia, presented by Miss E. P. France; a Pale-headed Parrakeet (*Platyercus pallidiceps*) from Australia, presented by Mr. Thomas Morson; a West African Python (*Python sebae*) from West Africa, presented by the Rev. H. Ross Phillips; two European Tree Frogs (*Hyla arborea*), European, presented by Mrs. Sidney Wolton; a Thar (*Hemitragus jemlaica*), a Yak (*Poephagus grunniens*) born in the Gardens.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN AUGUST:—

- August 1. 15h. 25m. to 19h. 8m. Transit of Jupiter's Sat. III.
- 4. 11h. 34m. to 16h. 29m. Transit of Jupiter's Sat. IV.
- 5. 5h. Jupiter in opposition to the sun.
- 8. 12h. 38m. Minimum of Algol (β Persei).
- 10. 8h. 29m. to 9h. 32m. Moon occults δ Libræ (mag. 5.3).
- 10. 8h. 41m. to 9h. 35m. Moon occults α Libræ (mag. 3.0).
- 11. 9h. 27m. Minimum of Algol (β Persei).
- 11-12. Maximum of the Perseid meteoric shower.
- 15. Venus. Illuminated portion of disc = 0.886. Mars = 0.965.
- 18. 17h. 1m. to 17h. 22m. Moon occults ϵ^1 Capricorni (mag. 5.2).
- 28. Saturn. Outer minor axis of outer ring = 16".48.
- 30. 4h. 37m. to 8h. 20m. Transit of Jupiter's Sat. III.
- 31. 11h. 10m. Minimum of Algol (β Persei).

A NEW ALGOL VARIABLE.—Prof. Pickering announces the discovery of a new Algol variable (+43° 41'01") by Mrs. Fleming, at the Harvard College Observatory.

Two plates, taken with the 8-inch Draper telescope on March 7, 1900, and April 3, 1902, respectively, were being examined in order to discover, if possible, a trace of the image of Comet 1902 *a* on the latter plate. This search was unsuccessful in its immediate object, but Mrs. Fleming noticed that the image of a faint star, the position of which for 1900 was R.A. = 21h. 55.2m., Dec. = +43° 52', showed a variation in magnitude during the interval between the taking of these two plates, and on examining more plates it was found that generally the light was bright and constant, thus showing the star to be of the Algol type.

The period is about 31.4 days, and the star retains its maximum brightness (photographic magnitude = 8.9) for twenty-eight days and then decreases to minimum by the following steps:—9.0 m. at 1.05 d. before minimum, 9.5 at 0.94 d., 10.0 at 0.84 d., 10.5 at 0.71 d., 11.0 at 0.58 d., and 11.5 at 0.43 d.

The light then remains constant at 11.6 m. for more than half a day. The times of increase are apparently the same as those of decrease, but this is not conclusively indicated. (*Astrophysical Journal*, No. 5, vol. xv.)

SPECTROSCOPY OF THE SOLAR ECLIPSE OF MAY 18, 1901.—In No. 5, vol. xv. of the *Astrophysical Journal*, Mr. W. J. Humphreys gives an account of the United States Naval Observatory Eclipse Expedition to Sumatra last year, and a reduction of the spectrograms obtained.

Excellent photographs of the corona were obtained, the cœlostast used having a mirror at either end of its heavy polar axis, one supplying the light to the coronagraph, the other to the spectroscope.

The concave grating used was of 30 feet focal length and had a diffracting surface 8 inches long and 5 inches wide; the whole of this area was not used, however. To obtain good uniform focus heavy celluloid films were used, and these were 2½ inches wide and 36 inches long.

Six films were exposed, and the reductions of the spectra are set out in tabular form, 330 lines between λ 3118 and λ 5204 having been measured. Neglecting those due to hydrogen and helium, the lines are chiefly those belonging to the Mendeléeff series which terminates with the Fe, Ni, and Co groups.

Incidentally observing the shadow bands, Mr. Humphreys found that they were stationary at first, but another observer noted that afterwards they widened out and then attained an increasing velocity.

Mr. Humphreys concludes his report with some useful suggestions which might be profitably considered by future eclipse observers.

REPORT OF THE CAPE OBSERVATORY FOR 1901.—Sir David Gill, in this report, announces the completion and official inauguration of the 24-inch "Victoria" telescope presented to the observatory by Dr. Frank McClean.

The transit circle has been completed and effectively mounted, the house being of a semi-cylindrical form, of which the two halves may be drawn aside at right angles to the axis when observations are to be taken. Owing to the loose nature of the upper rocks, the standard azimuth marks have had to be placed on the surface of the solid rock at the bottom of shafts some 30 feet deep, from which the marks are reflected to the instrument. The heliometer has been cleaned and repaired, and observations of the oppositions of Mars, Jupiter and Saturn have been made. Some thirty observations of the distances and position angles of Jupiter's satellites have also been completed.

The equatorials have been used for observing the phenomena attending ninety-seven separate occultations, to observe Giacobini's comet and the great comet of 1901, and to seek, without success however, for Encke's comet. Thirteen previously unrecorded double stars have been detected by Mr. Innes, the most interesting of them being τ_2 Lupi, h_2 4625 (chief star) and C.G.A. 2861. The 7-inch equatorial has been used for the revision of the C.P.D., and incidentally the unsuspected variability of the following stars has been detected:—C.P.D. - 51° 2275, anonymous, Cor. D.M. - 22° 14789, the ranges of variability being from 8.6 m., 9.8 m. and 9.4 m. to invisibility respectively. The character of the second star is not completely known yet, but it is suggested that it may be a Nova, R.A. = 11h. 14m. 14s., Dec. = 61° 10' S. (1875).

The geodetic work has been actively prosecuted throughout the year, the geodetic arc of meridian having now been carried to the Zambesi, and an effective service of time signals has been distributed throughout the Colony.

WORK AT THE ATHENS OBSERVATORY.¹

YEARS ago, under the vigorous direction of the late Prof. Schmidt, the Athens Observatory acquired a distinction that was denied to some kindred institutions more favoured with instrumental equipment and substantial endowment. Since that time evil days have fallen on the National Observatory of Greece and its record of useful work has been broken; but it is now a pleasant task to record that a period of renewed activity appears likely to make itself felt in the future conduct of this ancient centre of scientific work. The third volume of the

¹ "Annales de l'Observatoire National d'Athènes." Publiées par Démétrius Eginitis, Directeur de l'Observatoire. Tome iii. Pp. 376. (Athènes: Imprimerie Royale Raftanis-Papageorgiou, 1901.)