

the echelon, the Fabry and Perot interferometer, &c. Those workers wishing to learn more of the latest forms of these special apparatuses should get section B of the catalogue, issued separately, in which, in addition to the descriptions, figures, and prices, complete bibliographies concerning them are given.

We have received the new edition of the "Descriptive List of Photographic Dry Plates, Filters, and Safelight Screens" manufactured by Messrs. Wratten and Wainwright, Ltd. (Croydon). The firm have recently installed apparatus for the critical examination of the effect of colour screens upon definition, a matter too often left to chance. With regard to the plates, &c., prepared specially for all kinds of scientific work, we notice specific statements as to those best adapted for photographing various parts of the spectrum, and the "high resolution plates," for which a "limiting separation of about $1/150$ th mm." is claimed, as against a separating power equal to about $1/40$ th mm. for ordinary plates. These special plates are slow panchromatic plates.

OUR ASTRONOMICAL COLUMN.

DETONATING METEOR IN MESSINA.—On Monday evening, April 10, at 7 p.m., people at Messina noticed a brilliant illumination of the sky, succeeded in about three minutes by four loud explosions like artillery discharges. The idea was that one of the ammunition magazines in a fort had exploded, but telegraphic despatches from Palermo, Catania, and Reggio di Calabria announce that a similar phenomenon had been remarked there, and that it had its derivation from a large bolide or some other meteoric disturbance. The interval of three minutes between the flash and sounds show that the disruption of the fireball occurred at a distance of about forty miles from the observer at Messina. More information is awaited. At other stations the object may have approached much nearer, if it did not, indeed, shower some of its disintegrated fragments to the ground. April 10 is a rather special date for large fireballs; it has furnished many fine specimens in past years.

HALLEY'S COMET.—Writing to the *Astronomische Nachrichten* (No. 4489), M. Antoniadi shows that whilst Prof. Eginitis recorded the tail of Halley's comet as being directed towards the sun at 6h. 40m. (G.M.T.) on May 20, 1910, five observers who saw it at various short intervals before that time, and five who saw it after, recorded the tail as directed from the sun; only twenty-nine minutes separated the times of observation at Sonnwendstein and Athens, the former being 7h. 9m. (G.M.T.). Mr. Evershed, observing at Kodaikánal about 2h. (G.M.T.) on May 20, saw no trace of a tail directed towards the sun, although he looked specially for it.

The same number of the *Astronomische Nachrichten* contains a long series of observations of the comet made at Besançon (December 10, 1909, to June 29, 1910) and at Berlin (December 16 to June 10); M. Chofardet reproduces a drawing showing the magnificent fan which preceded the sharp nucleus on May 27.

CIRCULATION IN THE SOLAR ATMOSPHERE.—From an examination of 3323 prominences shown on photographs taken between January, 1904, and December, 1910, with the Rumford spectroheliograph at the Yerkes Observatory, Dr. Slocum has derived some valuable data concerning the circulatory currents in the solar chromosphere; the light of the H calcium line was always employed. Of the total examined, 1094 prominences, either by their shapes or movements, indicate a horizontal current, and as the average height to which these extended was 0.7, or 30,000 km., the results represent the average poleward components of the solar atmospheric circulation from the lower surface of the chromosphere up to that height. Dr. Slocum finds that in middle latitudes there is a tendency for movement towards the poles, and in high latitudes a tendency towards the equator; near the equator the motion is practically negligible. The contrast between the two tendencies is greater in the northern hemisphere in the ratio of at least 2 : 1.

Among the earlier plates there were few which afforded data from which the velocities of the motions could be determined, but during the past year suitable plates for this purpose have been taken regularly. There is some difficulty in determining which of the observed movements may be ascribed to systematic circulation and which to local explosive outbursts, but ten selected cases give velocities of from 0.5 km. to 10 km. per second for the component of the circulatory movement which is perpendicular to the line of sight; one detached cloud, floating at an elevation of $442''$, or 320,000 km., showed a velocity of 50 km. per second. Dr. Slocum points out that these results are not necessarily a contradiction to those obtained by Dr. St. John, who failed to detect any currents of appreciable velocity parallel to the solar surface; the two researches deal with different levels in the solar atmosphere. He further suggests that as his results depict the movements at an average height of 30,000 km., they probably apply to an upper current analogous to terrestrial anti-trades; a later discussion to deal with the different levels is promised (*Astrophysical Journal*, vol. xxxiii., No. 2, p. 108).

THE POPULARISATION OF ASTRONOMY.—From *The Yorkshire Weekly Post* for April 8 we learn that the excellent idea of out-of-door astronomical talks has also been suggested by Mr. J. H. Elgie as a useful item in the programme of the Leeds Astronomical Society. For the past three weeks the society has been waiting, in vain, for a favourable sky so that they might hold the proposed Saturday evening meeting. Such meetings, open to the public, might easily be organised, and would probably do a great deal to dissipate the lamentable ignorance concerning the stars which is so frequently displayed by the general public.

THE ANTWERP ASTRONOMICAL SOCIETY.—Among the many interesting matters recorded in the sixth annual report (1910) of the Antwerp Astronomical Society, it is of interest to learn that the society's observatory is being very generally used by a large number of students in the local schools, who, under the guidance of their tutors, visit the observatory and have the equipment, &c., explained to them. A new communal observatory is to be placed on the top of a school which is in course of erection in the city. An analysis of the observing weather during 1910, made by M. Felix de Roy, is also of interest. Of the 365 days in 1910, observations of the sun were possible on 269 days, and night observations were possible on 142; for 1909 the figures were 292 and 151; in 1908 there were 156 good nights; in 1907, 145; and in 1906, 102.

SPECTROSCOPIC BINARIES.—The Journal of the Royal Astronomical Society (Canada, vol. iv., No. 6) contains the orbits of the spectroscopic binaries 93 Leonis and ϵ Ursæ Minoris as determined by Messrs. J. B. Cannon and J. S. Plaskett, respectively, from plates taken at the Dominion Observatory, Ottawa.

Mr. Cannon made two determinations, using micrometer measures in the first and the comparator in the second, and, judging from the probable errors of an average plate, there is but little difference between the two methods; fainter spectra may be measured with the micrometer than in the comparator, but with poor lines for measurement the latter instrument probably affords a better agreement among the measures. The period of 93 Leonis is found to be 71.7 days, and the eccentricity of the orbit is very small.

For ϵ Ursæ Minoris Mr. Plaskett finds a period of 39.482 days, a range of velocities of 63 km. per sec., and a small eccentricity; the velocity of the system is -11.398 km. per sec.

EXPERIMENTS WITH COAL DUST IN FRENCH COLLIERIES.

SOON after the dangers due to the presence of coal dust began to be realised in this country, and, as a consequence, regulations regarding the composition and methods of employing explosives in dusty mines had been added to the Statute-book, the number of great explosions occurring within a given time underwent such a remarkable diminution that for several years it seemed almost as if they were about to cease altogether. But a partial