

so bright as to remind him of a great rocket. He describes it as a great white light, with a brilliant head and a long, spreading, and shimmering tail, which cut its way across the whole expanse of the sky. From his position in Manchester the meteor appeared to travel in a direction slightly north of west from a point not far from south. Further details of this phenomenon should prove of interest.

EPHEMERIS FOR GALE'S COMET, 1912a.—In No. 4618 of the *Astronomische Nachrichten*, Dr. Ebell publishes a daily ephemeris, extending to February 5, 1913, for Gale's comet. The comet is now high up in Draco, and is reported to have a nucleus of magnitude 10 or 11. The following is an extract from Dr. Ebell's ephemeris, which is based on the elements published in Lick Observatory Bulletin No. 218:—

Ephemeris 12 h. (M.T. Berlin).

1912-13	α (true) h. m.	δ (true)	$\log r$	$\log \Delta$	Mag.
Dec. 27 ...	17 17.6 ...	+64 54.5 ...	0.2245 ...	0.1374 ...	8.6
31 ...	17 30.0 ...	+68 14.8 ...	0.2389 ...	0.1426 ...	8.6
Jan. 4 ...	17 45.5 ...	+71 34.9 ...	0.2529 ...	0.1490 ...	8.8
8 ...	18 5.9 ...	+74 51.8 ...	0.2663 ...	0.1568 ...	8.9
12 ...	18 35.1 ...	+78 1.0 ...	0.2792 ...	0.1661 ...	9.0
16 ...	19 20.1 ...	+80 53.9 ...	0.2917 ...	0.1766 ...	9.1

THE SPECTRUM OF NOVA GEMINORUM, No. 2.—Having secured a number of photographs of the spectrum of Nova Geminorum, No. 2, Messrs. Adams and Kohlschutter give their measures and discussion of the radiations in No. 4, vol. xxxvi., of *The Astrophysical Journal*. The plates were taken with the Cassegrain spectrograph attached to the large reflector (80-foot focus) at Mount Wilson, and cover the period March 22-May 27. During this period considerable changes took place in the spectrum of the nova, and these are discussed at some length in the paper: the chief nebula line, λ 5007, was first certainly seen on April 6.

The authors have measured some hundreds of apparently dark and bright lines in the spectrum, and give observed wave-lengths for four groups of negatives, each group covering a definite period; thus in addition to the wave-lengths for the centres of the bright bands they give wave-lengths for the dark lines which some observers consider to be only parts of the structure phenomena of the bright bands. Generally speaking, the wave-lengths for the centres of the latter agree fairly well with those determined from the Madrid spectra, and published in *NATURE* on April 25 (No. 2217, vol. 89, p. 201), and, possibly, might bear the same interpretation. Ten wave-length values of bright bands are given as reasonably identified with helium lines, although it is somewhat difficult to see, from the list of observed wave-lengths, exactly the type of line, or band, some of them represent. The presence of radioactive substances in the nova's atmosphere is not indicated by the Mount Wilson photographs, and the authors consider that the presence of nitrogen, as suggested by Mr. Wright in the case of Nova Lacertæ, is probable but scarcely proven.

The widths and displacements of the bright and dark hydrogen lines are also discussed, and the paper is accompanied by reproductions of a number of excellent spectrograms.

OBSERVATIONS OF SATURN.—*L'Astronomie* for December contains the results of some observations of Saturn made by M. J. Camus, with the Mailhat equatorial of 0.19 m. aperture, at the French Astronomical Society's observatory, on November 7. M. Camus used a power of 230, and he reports that, in front of the planet, the exterior edge of the crape ring showed

marked irregularities appearing in profile as grey patches on the yellowish background of the globe. He was also able to recognise the various tints of the same ring.

IMPROVEMENTS IN MICROSCOPES.

SOME time ago (*NATURE*, December 14, 1911) we referred to several improvements which Messrs. Beck had introduced into their microscopes, and we noted especially the "handle" model as one in which all risk of damage is avoided to the working parts and adjustments when the instrument is moved. Messrs. Beck now inform us that they have revised the make of their well-known "London microscope" on the handle model. In addition to this, the base and pillar are so designed that although the Continental model has been retained, the position of the centre of the inclining joint has been so placed as to give greater stability when the instrument is in a horizontal position, whilst not interfering with its vertical rigidity, and the size of the base has been increased to that of their large models to insure perfect steadiness under all conditions. The stage is square and specially large, measuring 4 in. in each direction. The coarse adjustment is by a spiral rack and pinion, so accurately fitted that even comparatively high powers can be focussed thereby. The fine adjustment is of the lever type. The adjustment is obtained by a fine micrometer screw actuating a supplementary pointed rod which impinges upon a hardened steel block working upon the lever. The body tube is 140 mm. long, with a graduated draw tube, in a carefully packed fitting, which extends to a length of 200 mm.

We have received a catalogue of microscopes from Messrs. W. Watson and Sons, 313 High Holborn, W.C., in which the well-known instruments manufactured by this firm are fully described. Their microscopes are British, both in design and construction, with the result that such points as a tripod foot to ensure rigidity in any position, and sprung fittings with adjusting screws to compensate for wear and tear, are insisted on. On the optical side, perhaps no firm has devoted more attention than Messrs. Watson to the substage condenser. In this connection it is noteworthy that they are now supplying an aplanatised Abbe illuminator, which has an aplanatic cone of 0.65 N.A., that is, 0.15 N.A. in excess of the ordinary type, its total N.A. being 1.20. At the price of 17s. 6d. such an appliance is obtainable by all microscopists, and will substantially increase the utility of any optical combination. It is interesting to see that such an improvement in substage illuminators is called for; at least it is reasonable to infer that such a demand has arisen. If it indicates that the average microscopist is at last awaking to the fact that in this direction he has the power greatly to increase the possibilities of his instrument, even if it is of a simple form, then there is much hope in the future for microscopy.

There is another matter of interest referred to in the catalogue. Messrs. Watson are now providing, under the designation *1/12 in., an objective which is really a 1/14 in. They state that many of the 1/12 in. lenses produced by other makers have really the magnification of a 1/14 in., so they determined to supply objectives of similar power. Tested with a Reichert 1/12 and a Leitz 1/16, the magnification of the new lens is half-way between the two. Its N.A. 1.30 and its wonderful definition enable it to resolve difficult test objects. The dots of *Surirella gemma*, for instance, are easily seen with oblique illumination, and the definition is good enough to

allow them to be seen, as dots, under a magnification of more than 3000. The colour correction leaves little to be desired, Carpenter's deal test has been applied, but no more than a very feeble trace of colour has been seen in any of the rings. This lens will be a valuable addition to a battery of objectives, and when its actual magnification is taken into account accurate statements of the actual power used can be made.

PRIZE AWARDS OF THE PARIS ACADEMY OF SCIENCES.

THE president of the Paris Academy of Sciences has announced the prizes awarded for the year 1912 as follows:—

Geometry.—Grand prize of the mathematical sciences divided between Pierre Boutroux (3000 francs), Jean Chazy (2000 francs), and René Garnier (2000 francs); the Francoeur prize to Emile Lemoine, for the whole of his mathematical works; the Poncelet prize to Edmond Maillet.

Mechanics.—The Montyon prize to Ad. Doutré, for his inventions in connection with the stability of aeroplanes; the Fournayron prize between G. Eiffel (1000 francs), for his experiments on the resistance of the air, and Armand de Gramont (700 francs), for his books on aerodynamics; the Boileau prize to A. Lafay, for his experimental studies on various problems concerning the action of the wind on solid bodies.

Navigation.—The extraordinary prize for the Navy between M. Le Page (2000 francs), Captain Ronarch (2000 francs), and M. Marbec (2000 francs); the Plumey prize between Victor Garnier (2000 francs), for his invention of a periscope for use in submarine navigation, and Henri Fabre (2000 francs), for his studies on the hydroaeroplane.

Astronomy.—The Lalande prize between H. Kobold and C. W. Wirtz, for their work on the determination of the motion of nebulae; the Valz prize to A. Schumasse, for his observations on comets; the Janssen medal (astronomy) to M. Perot, for the application of interference methods to the study of the solar spectrum; the Pierre Guzman prize was not awarded.

Geography.—The Tchihatchef prize to the Duke of the Abruzzi, for the results obtained in his expedition to the Himalayas; the Binoux prize to M. Fichot, for his geodesic researches; the Delalande-Guérineau prize to Captain Tilho, for his geographical work in Central Africa; the Gay prize was not awarded, but Lieut.-Col. Delauney receives an honourable mention.

Physics.—The Hébert prize to M. Houllévigie, for his researches in magnetism and thermoelectricity; the Hughes prizes to Arnaud de Gramont, for his spectroscopic work; the La Caze prize to Marcel Brillouin, for the whole of his researches in physics.

Chemistry.—The Jecker prize to M. Bourquelot, for his work on the chemistry of plants and plant ferments; the Montyon prize (unhealthy trades) to Paul Adam, for his work on the reduction of nuisance in the manufacture of superphosphate and his improvements in the storage of petrol and other dangerously inflammable liquids; the Cahours prize between Mme. Ramart-Lucas, Paul Clausmann, and M. Ostwald; the La Caze prize (chemistry) to M. Urbain, for his researches on the rare earths.

Mineralogy and Geology.—The Victor Paulin prize to Henri Arsandaux, for his chemical and petrographical work on silicate rocks.

Botany.—The Desmazières prize to Elie and Emile Marchal, for their work on mosses; the Montagne prize between Mme. Paul Lemoine (1000 francs) and H. Collin (500 francs); the de Coigny prize to Camille Servetaz, for his monograph on the Eleagnaceæ.

Anatomy and Zoology.—The Da Gama Machado prize to J. Duesberg, for work relating to spermatogenesis of mammals; the Thore prize to Antoine Grouvelle, for his work on the Coleoptera; the Savigny prize to Louis German, for his researches on the malacological fauna of tropical Africa.

Medicine and Surgery.—Montyon prizes (2500 francs each) to V. Pachon, for his memoirs relating to the measurement of arterial pressure in man, Charles Nicolle, for his work on exanthematic typhoid, and O. Josué, for his researches on arterio-sclerosis; mentions (1500 francs each) are accorded to H. Carré, M. Mathis and M. Léger, and Etienne Ginestous; citations are accorded to Jean Troisier, Henri Claude and Stephen Chauvet, Albert Sézary, A. Magitot, Louis Renon, Noël Fiessinger, Georges Schreiber; the Barbier prize to Eugène Léger, for his pharmacological researches; the Breant prize was not awarded, but the arrears of interest were divided between C. J. Finlay (2500 francs) and A. Agramonte (2500 francs), for their work on the relation of mosquitoes to the propagation of yellow fever; the Godard prize to Jacques Parisot, for his work on the functions of the kidney and the suprarenal capsules; the Baron Larrey prize to Dr. Troussaint, for his memoir on the direction of the sanitary service in war, very honourable mentions being accorded to Ch. Teissier, M. Talon, R. Pigache and M. Worms, A. Conor; the Bellion prize to Mme. Banda-Legrain, for her work against alcoholism, J. Cavallé receiving an honourable mention; the Mège prize is not awarded, the arrears of interest being given to Mme. Long-Landry, for her researches on Little's disease.

Physiology.—A Montyon prize (experimental physiology) to Paul Portier, for his studies on the digestive zymases, very honourable mentions being accorded to Max Kollmann, Théodore Rosset, and Jules Glover; the Philipeaux prize divided between E. F. Terroine and Marcel Lisbonne; the La Caze prize (physiology) to E. Wertheimer, for the whole of his work in physiology; the Martin-Damourette prize to Maurice Arthus, for his researches on the physiology of snake poisons; the Lallemand prize between Gabriel Petit and Léon Marchand, for their memoir on the comparative pathology of the nervous system, and Giuseppe Sterzi, for his work on the nervous system of the vertebrates; the Pourat prize to F. Maignon, for his experiments on the function of albumen as a food.

Statistics.—A Montyon prize (statistics) between Henri Auterbe (800 francs), Louis de Goy (600 francs), M. Janselme and M. Barre (300 francs), and Broquin Lacombe (300 francs).

History of the Sciences.—The Binoux prize to J. L. Heiberg, for his works on the history of mathematics; an additional prize (1000 francs) to Marcel Landrieux, for his book on the life and work of Lamarck.

General Prizes.—The Arago medal to Prince Roland Bonaparte; Berthelot medals to M. Bourquelot, Paul Adam, M. Clausmann, M. Ostwald, and Mme. Ramart-Lucas; the Gegner prize (400 francs) to J. H. Fabre; the Lannelongue prize between Mme. Cosco and Mme. Ruck; the Gustave Roux prize to Armand Billard; the Tremont prize to Charles Frémont; the Wilde prize to M. Ferrie, for his work in the development of wireless telegraphy; the Lonchamp prize between M. Grimbert (2000 francs), M. Bagros (1000 francs), and Jules Wolff (1000 francs); the Saintour prize to Maurice Langeron (with 2000 francs), and a mention (with 1000 francs) to Will Darvillé; the Bordon prize is not awarded, but R. Robinson receives an encouragement (2000 francs); the Houllévigie prize between Henri Lebesgue (3000 francs) and M.