

reference containing important constants and facts, and also a diary arranged by Messrs. Charles Letts and Co. The price, bound in leather with gilt edges, is 2s.

MESSRS. J. AND A. CHURCHILL announce for early publication "A History of Chemistry, from the Earliest Times till the Present Day," by the late Dr. J. Campbell Brown; "Notes on Chemical Research: an Account of Certain Conditions which Apply to Original Investigation," by Mr. W. P. Dreaper; "A Text-book of Anatomy for Nurses," by Dr. Elizabeth Bundy; and "Who's Who in Science (International), 1913," edited by Mr. H. H. Stephenson.

OUR ASTRONOMICAL COLUMN.

THE ANNULAR SOLAR ECLIPSE OF APRIL 17.—Those interested in the phenomena of the annular eclipse which took place in April last will find forty-eight columns of records and discussion in No. 4615 of the *Astronomische Nachrichten*. Herr Ladislav Beneš describes the observations of contact times, &c., made at the Strassburg Observatory, and, after discussing them, arrives at corrections for the places of the sun and moon; the central line deduced lies between the lines given by the *Connaissance des Temps* and the *Bureau des Longitudes*, rather nearer to the latter.

The observations made at the Leipzig Observatory are described by several observers, and Herr F. Hayn gives a set of curves showing the measured irregularities of the moon's limb. Prof. Luther brings together a very large number of observations made at various stations in the Rhine province, and derives a central line passing through $\lambda = 6^{\circ} 45' 40.35''$ E., $+51^{\circ} 25' 6''$, giving a correction of $-0.4'$ in latitude to the central line published by Prof. Battermann. He also gives a good photograph taken by Herr P. Bohnen. Prof. Wilkens publishes the results of the Kiel observations, giving the true sun and moon positions for the moment of each observation, and finds the corrections published in the American ephemeris were very near the truth.

An interesting paper by Drs. Elster and Geitel, dealing with the sun's observed light-curve during the eclipse, appears in the *Physikalische Zeitschrift*, pp. 852-855.

A REMARKABLE SHOWER OF METEORIC STONES.—IN NO 203, vol. xxxiv., of *The American Journal of Science*, Mr. W. M. Foote gives a preliminary account of the shower of meteoric stones which occurred near Holbrook, Navajo County, Arizona, on July 19. Mr. Foote has collected a large mass of evidence which appears to settle the question of authenticity favourably. A large meteor was seen to pass over Holbrook at 6.30 p.m. on the date mentioned, and created a loud noise, which lasted for half a minute or more. Numerous stones were seen to fall near Aztec, raising puffs of dust for over a mile of the sandy desert, and subsequently a great number of these stones were found by the local people; the largest found weighed more than 14 lb., while several of about 5 lb. each were picked up over an elliptical area about three miles long and half a mile broad. The preliminary physical and chemical tests point to an undoubted meteoric origin, and a sample taken from twelve individual stones was found to contain 3.68 per cent. of nickel-iron, with 96.32 per cent. of silica. The principal constituent appears to be enstatite, olivine and monoclinic pyroxene making up the balance; in one section a patch of spinels set in quartz was found.

Altogether more than 14,000 stones, weighing, in all, more than 481 lb., were picked up and preserved,

but of these 8000 weighed less than one gram each; 29 stones had weights ranging from 6665 grams to 1020 grams, and some 6000 ranged between 1000 grams and one gram.

THE ORBIT OF COMET 1910a.—In No. 4605 of the *Astronomische Nachrichten* M. S. Mello e Simas publishes definitive elements of the orbit of the bright comet 1910a. The author has discussed an enormous number of observations, and sets out in full detail the numerous points he has taken into consideration, finally arriving at the conclusion that the orbit is a parabola with an inclination of $138^{\circ} 46' 55.78''$, the time of perihelion being 1910, January 17⁰⁹⁴⁶⁴ (M.T. Paris). He also discusses the question of the multiple solutions of problems of cometary orbits, which so confused a number of calculators in endeavouring to find a satisfactory orbit for comet 1910a during the time of its apparition.

THE "GAZETTE ASTRONOMIQUE."—It is with pleasure that we learn that the *Gazette Astronomique*, published by the Antwerp Astronomical Society, is again to appear each month. The gazette fulfils a very useful purpose in publishing monthly ephemerides and notes for observers, and, also, in popularising astronomical subjects.

THE NEW PHARMACOLOGICAL LABORATORY AT UNIVERSITY COLLEGE, LONDON.

WHEN University College was incorporated in the University of London, a scheme was formed to replace the old laboratories of the medical sciences by more adequate institutes in the south quadrangle. The first part of the plan was completed in 1909, when the Physiological Institute was opened. A second instalment has been rendered possible by a donation of 5000l. by Mr. Carnegie, and the Pharmacological Institute was opened on Wednesday, December 4, by Sir Thomas Barlow, president of the College of Physicians. It is to be hoped that the third institute, for Anatomy and Anthropology, may follow in due course and complete the buildings for the medical sciences.

The new pharmacological laboratory has been built from the plans of Prof. F. M. Simpson, of University College, and occupies an area of 42 ft. by 50 ft. immediately adjoining the physiological building on the east. It contains three complete floors and a mezzanine floor, besides the basement, the actual floor space amounting to about 6000 sq. ft., besides the stairway and passages. The building is lighted on three sides by large windows, which occupy the maximum amount of space permissible under the Building Acts. The ground floor is lined with white glazed brick throughout, and contains a reading-room 24 ft. by 18 ft., and the pharmacological-chemical laboratory, 24 ft. by 30 ft., fitted with two large chemical benches and fume cupboards. It communicates with an open-air balcony on the south side, which is arranged for investigations on noxious gases. On this floor there are also a balance-room, a dark-room, and an attendant's workshop. Between the ground and first floors a mezzanine floor contains lavatories and a hospital-room for animals under observation. The animal houses proper lie behind the building.

The first floor contains private rooms for professor and assistant, and two large experimental rooms, 24 ft. by 18 ft. and 24 ft. by 30 ft. respectively. The smaller of these is designed for work with the large kymograph, while the larger is used for smaller movable apparatus. A heavy beam runs through

both rooms at a height of $8\frac{3}{4}$ ft. from the floor, and serves to support shafting and pulleys, which are set in motion by an electric motor in the larger room. Gas and water pipes also run along this beam, which carries, in addition, wires from an electric clock, and a tube supplying artificial respiration, so that these are all available throughout the laboratory. A floor channel running beneath the beam carries off waste water, and, in addition to wall switches, a number of floor plugs are inserted in its neighbourhood to supply light and power where necessary. This laboratory is fitted up with the ordinary experimental apparatus, and with a small centrifuge and incubator for hæmolytic work.

The second floor contains a small preparation and

places in the body of the laboratory and stand round and above the demonstration table. In this way it is hoped to be able to correlate the lecture, the practical work, and the demonstrations more closely than is possible when these are all given in different courses and in different rooms.

MATHEMATICS AND PHYSICS AT THE BRITISH ASSOCIATION.

THE presidential address was delivered by Prof. H. L. Callendar at 10 a.m. on Thursday, September 5. This was published in full in NATURE of September 5 (p. 19).

Wireless Telegraphy.

The principal discussion arranged was a joint one with Section G on the scientific theory and outstanding problems of wireless telegraphy; it was opened by Prof. J. A. Fleming. Dr. Fleming had drawn up a list of twenty-four questions to which definite answers are still required. In the short time available to him it was impossible to go seriatim through these. After outlining the general methods of signalling now employed, he pointed out that the chief question was how such waves, if they are true Hertzian waves, are propagated a quarter of the way round the earth. The mathematical investigations of Prof. MacDonald, Lord Rayleigh, the late Prof. H. Poincaré, and of Dr. Nicholson seem to have proved that diffraction alone will not account for the phenomenon, even though the waves as used by Marconi have a wave length of nearly four miles. Prof. Sommerfeld had come to the conclusion that there must be "surface waves" at the boundary of the earth and atmosphere, and that these vary in amplitude inversely as the square root of the distance, and are sufficiently feebly damped in a horizontal direction to be propagated long distances, irrespective of irregularities of surface. Another theory has been based by Dr. Eccles upon the ionisation of the atmosphere. If the velocity increases with the ionisation, the upper part of a wave may travel faster than that near the surface, and the direction of propagation will be deflected downwards.



New Pharmacological Laboratory, University College, London.

drug room for use in the lectures and demonstrations and the large lecture-room laboratory. This measures 48 ft. by 25 ft., and is fitted up with lecture desk, blackboards, and projection lantern, and with practical room benches for elementary work in pharmacology. A recess off the lecture-room, 18 ft. by 13 ft., is furnished with three tiers of standing places rising one above another, from which the spectators look down directly on the experimental table below. The students are expected to perform the simpler experiments in the laboratory, and these will be discussed and elucidated from the lecture table. The more complicated experiments will be done by the demonstrator on the special table in the recess, and when these are in progress the students will leave their

Closely connected with this is the inhibiting effect of daylight. Absorption due to ionisation is not sufficient. Refraction owing to varying dielectric constant arising from ionisation may be operative here. Many other problems require elucidation, such as the greatly reduced signalling distance at dawn and dusk, the inequality in north-south and east-west transmission, the theory of directive antennæ, and the location of the direction of the arriving waves.

In the discussion Dr. W. Eccles directed attention to his paper read before the Royal Society in June last. In order to account for the great difference between day and night transmission it seems necessary to suppose that there exists in the upper atmosphere a permanently ionised layer that is not dependent on