

and the principal areas where corn, rice, and other food stuffs are at present grown are indicated by shading.

MESSRS. WATTS AND CO. have published for the Rationalist Press Association, Ltd., a carefully revised, popular edition of "Supernatural Religion. An Inquiry into the Reality of Divine Revelation." The new edition runs to 920 pages, and is issued at 6s. net.

DR. ADOLF MARCUSE, Privat-docent at the University of Berlin, having taken charge of the section of geographical surveying in the "Geographischen Jahrbuch," edited by Prof. Wagner, asks astronomers, geographers, and explorers to send him papers or other publications containing results of which notice should be taken.

AT the request of teachers of chemistry in secondary schools, Messrs. J. and A. Churchill have published separately, at 2s. 6d. net, the chapters on general chemistry contained in the "Elementary Practical Chemistry" of Dr. Clowes and Mr. J. B. Coleman. In its present form the book provides a really good course of experimental chemistry, in which the broad principles of the science are gradually presented to the student.

DR. F. BASHWORTH has prepared a pamphlet of thirty pages, published by the Cambridge University Press, containing "A Historical Sketch of the Experimental Determination of the Resistance of the Air to the Motion of Projectiles." The pamphlet gives a general survey of the author's experiments and results, which have extended over many years, and for which he devised his chronograph, and shows their relationship to other investigations.

A NEW edition of Dr. Alfred Russel Wallace's book, "The Wonderful Century. The Age of New Ideas in Science and Invention," has been published by Messrs. Swan Sonnenschein and Co., Ltd. The book has been revised and largely rewritten. Among the most important changes may be mentioned the addition of a chapter on electricity, of four chapters on astronomy, and the omission of the long chapter on the vaccination question which was included in former editions. In its new form the book provides an excellent survey of the development of science during the nineteenth century.

THIS year's issue of "Chemical Handicraft," the illustrated catalogue of chemical apparatus and reagents manufactured and sold by Messrs. John J. Griffin and Sons, Ltd., is attractively arranged and very complete. Among new apparatus we notice vessels of quartz glass scheduled on pp. 45-6. These vessels may be treated in the blow-pipe flame without previous warming, and, whilst hot, be plunged into cold water without being fractured. Teachers of chemistry should find this catalogue of assistance in ordering the apparatus necessary for their laboratories and lecture-rooms.

WE have received copies of the first three publications de circonstance of the Conseil Permanent International pour l'Exploration de la Mer, published by MM. Høst & Fils, of Copenhagen. The first booklet is a preliminary communication, by Dr. C. G. Joh. Petersen, on how to distinguish between mature and immature plaice throughout the year; the second, by M. Martin Knudsen, deals with the standard-water used in the hydrographical research until July, 1903. The third is a larger book of 107 pages, and includes ten compendious monographs on the literature of the ten principal food fishes of the North Sea, illustrated by ten plates, and preceded by a useful index.

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THE Tuesday evening popular science lectures at the Royal Victoria Hall, Waterloo Bridge Road, have been the means of creating scientific interest and activity among many people who have attended them. Many men of science have given their services as lecturers at the hall, and have helped to make known the work that is being carried on there. An appeal is now being made for subscriptions to assist the committee to meet the expenditure of 300l. for alterations which had to be undertaken in order to make the building fireproof to the satisfaction of the London County Council. Donations should be sent to Miss Emma Cons, honorary secretary, Royal Victoria Hall, London, S.E.

THE additions to the Zoological Society's Gardens during the past week include two Sacred Baboons (*Papio hamadryas*), two Variegated Jackals (*Canis variegatus*), two Spotted Hyænas (*Hyaena crocuta*), a Striped Hyæna (*Hyaena striata*), a Lion (*Felis leo*), a Leopard (*Felis pardus*), an Abyssinian Duiker (*Cephalophus abyssinicus*), three Somali Ostriches (*Struthio molybdophanes*) from Somaliland, presented by Mr. William Northrup McMillan; a Diana Monkey (*Cercopithecus diana*) from West Africa, presented by Mr. A. G. Turner; two Pig-tailed Monkeys (*Macacus nemestrinus*) from Java, presented by Mr. — Eussens; an Otter (*Lutra vulgaris*), British, presented by Miss Boughey; two Gold-fronted Finches (*Metoponia pusilla*) from India, presented by Mr. H. C. Harper; two Black Salamanders (*Salamandra atra*) from Switzerland, presented by Mr. W. C. Worsdell; three Indian Chevrotains (*Tragulus meminna*), nine Starred Tortoises (*Testudo elegans*) from India, a Mayotte Lemur (*Lemur mayottensis*), a Fringed Gecko (*Uroplates fimbriatus*), six Green Geckos (*Phelsuma madagascariensis*), twelve Blackish Sternotheres (*Sternotherus nigricans*), a Sharp-nosed Snake (*Lioheterodon madagascariensis*) from Madagascar, four Angulated Tortoises (*Cersina angulata*) from South Africa, fourteen Stink-pot Terrapins (*Cinosternum odoratum*), two Prickly Trionyx (*Trionyx spinifer*) from North America, a Spiny-tailed Mastigure (*Uromastix acanthinurus*) from North Africa, three Cuban Snakes (*Liophis andrae*) from Cuba, a Merrem's Snake (*Rhadinoea merremi*) from Brazil, deposited.

#### OUR ASTRONOMICAL COLUMN.

##### ASTRONOMICAL OCCURENCES IN OCTOBER:—

- Oct. 5. 13h. 48m. to 17h. om. Transit of Jupiter's Sat. III. (Ganymede).
6. Partial eclipse of the moon.  
5h. 32m. Moon rises obscured by the penumbra.  
6h. 7m. Last contact with the penumbra.
10. 8h. 18m. to 9h. 11m. Moon occults  $\alpha$  Tauri (Aldebaran, Mag. 1.1).
15. Venus. Illuminated portion of disc = 0.188, of Mars = 0.907.
18. 9h. 41m. Minimum of Algol ( $\beta$  Persei).
- „ 15h. om. Mercury at greatest elongation ( $18^{\circ} 13'$  W.).
- „ 19h. om. Mercury in conjunction with moon, Mercury  $1^{\circ} 57'$  N.
- 19-22. Epoch of Orionid meteoric shower (Radiant  $91^{\circ} + 15^{\circ}$ ).
21. 6h. 30m. Minimum of Algol ( $\beta$  Persei).
22. Saturn. Polar diameter =  $15''.7$ . Minor axis outer ring =  $13''.62$ .
24. 3h. Mars in conjunction with Uranus, Mars  $1^{\circ} 13'$  S.
- „ 12h. Venus at greatest brilliancy.
31. 7h. Jupiter in conjunction with moon, Jupiter  $3^{\circ} 39'$  S.



REPORT OF THE PARIS OBSERVATORY FOR 1902.—In his report of the Paris Observatory for 1902, M. M. Lœwy, the director, describes in detail the various important series of observations made at that observatory.

In announcing that the last two volumes of the "Catalogue de l'Observatoire de Paris" are ready for publication, M. Lœwy gives a detailed account of the circumstances which led to the inception and prosecution of the work necessary for the publication of such a complete stellar catalogue.

For the determination of the latitude of the Paris Observatory, 6530 measures of the absolute polar distances of fundamental stars were made with the large meridian circle during the year, and, in accordance with Sir David Gill's proposals, 5063 observations of reference stars for the astrographic chart were made.

The observations for the redetermination of the difference of longitude between Paris and Greenwich were completed, and the concordance between the observations of the Paris and Greenwich observers in the first series, which has been completely reduced, is very striking.

504 photographs of the moon for the "Atlas Photographique de la Lune," of which the sixth section has been published, were taken with the large equatorial coudé. A 6-inch grating, for use with the smaller equatorial coudé, has been ordered from America, and when this is received it is proposed to carry out, systematically, similar researches

ports for meridian circles. It will perhaps be remembered that in the last report of the superintendent of the United States Naval Observatory it was stated that since the substitution of a brick pier for the marble pier that was formerly used, the previously reported changes in azimuth of the 6-inch Repsold meridian circle had entirely disappeared. The experience of Prof. Hough is opposed to the principle contained in that statement, viz. that brick piers are superior to stone for this purpose.

By a table of comparative expansions he shows that those of granite, sandstone, &c., approximate more nearly than that of brick to the expansion of iron, and therefore, with iron fastenings, a stone pier will ensure a greater rigidity of the instrument in regard to the pier; from the same table it is seen that brass fastenings are far more likely to produce lack of rigidity than those made of iron.

#### RECENT PAPERS ON METEORITES.

THROUGH the courtesy of Prof. Henry A. Ward, of Rochester, New York, we are able to reproduce for our readers a photograph which gives a good idea of the form and dimensions of the large mass of meteoric iron lying at a place called Ranchito, near Bacubirito, in the province of Sinaloa, Mexico. The existence of the mass was made known to the scientific world by Prof. Barcena more than a

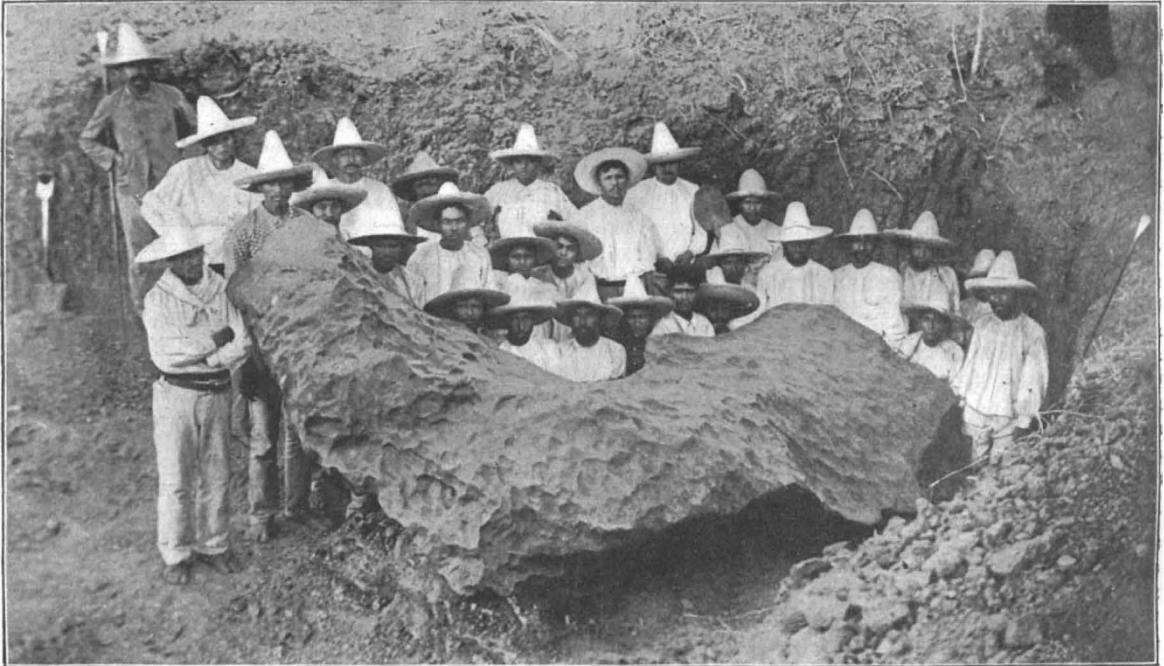


FIG. 1.—The Meteoric Iron of Bacubirito, Sinaloa, Mexico.

in solar physics to those which are already prosecuted in England and America.

In connection with the "International Astrographic Chart and Catalogue" fifty-six plates for the chart and twelve for the catalogue were secured; the printing of the catalogue for zone  $+24^\circ$  was completed, and it contains the positions of 64,264 stars, whilst the publication of zone  $+23^\circ$  was commenced and the section oh. 4m. to 6h. 20m. completed. Altogether the positions of 21,855 stars were completely measured for the catalogue, and the magnitudes of 35,630 stars belonging to zone  $+23^\circ$  were determined during 1902.

THE RIGIDITY OF PIERS FOR MERIDIAN CIRCLES.—In No. 3902 of the *Astronomische Nachrichten*, Prof. G. W. Hough, of the Dearborn Observatory (U.S.A.), discusses in detail the relative merits of brick and stone piers as sup-

ported a quarter of a century ago, and, later, its dimensions were recorded by Prof. Castillo; but until after the visit of Prof. Ward there had been no published information as to the particulars of the occurrence. Prof. Ward, who is greatly interested in meteorites, travelled from the city of Mexico to Bacubirito, an extremely long, arduous, and expensive journey, for the special purpose of examining the meteorite *in situ*. It was found by him to be lying at the place specified, but to have only one end projecting from the ground. Twenty-eight labourers were employed by him to excavate round the mass and make it possible to determine the complete form. After two days' work not only had this been done but, through removal of the support from one side, the large mass had been made to turn itself over. It is 13 feet 1 inch long, 6 feet 2 inches wide, and 5 feet 4 inches thick. Its irregularity of form and the character of the surface are manifest from Fig. 1. The mass is estimated to weigh