tropic transformation which metallic tin undergoes at moderately low temperatures. More interesting, because of far wider importance, however, are his observations and views on what he terms the "maladie d'écrouissage"; this is, in reality, simply a process of spontaneous annealing or re-crystallisation which occurs in certain circumstances in metals which have been severely hardened by plastic strain. So long ago as 1900 Ewing and Rosenhain showed that when pure lead has been freshly crushed or rolled, the minute crystals commence to grow, even at the ordinary temperature, at a rate which produces visible changes in a few weeks. Prof. Cohen's observations show that processes of this kind are not confined to lead, but occur also in harder materials, especially in hard-drawn brass, thus accounting for the spontaneous cracking of cartridge-cases which occasionally occurs in practice after a lapse of several years from the date of manufacture, on the view that the re-crystallisation process is accompanied by a change in volume. The whole process is favoured by any rise of temperature, so that the phenomena are more readily observed in hot climates. Whether such action takes place at possibly a still slower rate in iron and steel is a problem still to be investigated. An important fact brought out by Prof. Cohen's experiments, however, is that the process of re-crystallisation is initiated and accelerated by intimate contact with a piece of the same metal in the stable or "annealed" condition; it is, indeed, this phenomenon which leads Prof. Cohen to describe the whole process as an "infectious disease" of metals.

THE *Engineer* for June 3 contains a description of the Druitt Halpin system of thermal storage recently installed at the King's Road works of the St. Pancras Borough Council Electricity and Public Lighting Department. Each of four water-tube boilers has been fitted with a storage vessel, and some figures regarding the performance of the plant are certified by Mr. Baynes, the borough electrical engineer. Each boiler, as originally installed, had a maximum normal evaporation of about 11,000 lb. per hour. One boiler fitted with a thermal storage drum was run for 2h. 51m., the storage drum being full at the start and empty at the finish. During this time the average evaporation per hour was found to be 17,542 lb., or an increase of 59·5 per cent. more than the normal. During this test the average working pressure was 185 lb. per square inch, the temperature in the drum 360° F., and the draught at the boiler exit 0·5 inch by water-gauge. With this system it is found that deposits from hard water are found in the storage drum rather than in the boiler, and are therefore not subjected to the heat of the furnace, which would bake them to a hard scale. Such deposits are very easily blown off from the storage drum in a soft powdery state.

MESSRS. LONGMANS, GREEN AND CO. have published a third edition of Dr. F. Mollwo Perkin's "Qualitative Chemical Analysis: Organic and Inorganic." The first edition of the work was reviewed in our issue of August 22, 1901 (vol. lxiv., p. 397), and it is sufficient to point out that to the present issue has been added a short section dealing with some of the rarer elements and a new chapter on ethereal salts.

A THIRD edition of Mr. Walter B. Priest's "Scheme for the Promotion of Scientific Research" has been published by Messrs. Stevens and Sons, Ltd. We dealt with the second edition somewhat fully in our issue of January 21, 1909 (vol. lxxix., p. 345). In the present edition the administration of grants has been further explained, and the author of the book proposes terms of allocations of grants in relation especially to electrical science. The author hopes that the advantages to be gained by legislating for the promotion of scientific research, where it affects purposes of general utility and advantage, will receive serious consideration.

OUR ASTRONOMICAL COLUMN.

THE METEOR OF JUNE 1.—Further observations of the large meteor of June 1 9h. 40m. have been received by Mr. Denning from various parts, and they are in very fair agreement with each other and with the values given by him for the height, radiant, &c., in NATURE for June 9.

The meteor was seen from Clapham Common passing from a few degrees below the pointers in Ursa Major to a place just north of "The Twins." The trail was a reddish-yellow colour, while the nucleus was a brilliant electric-blue. At Loughton, Essex, the meteor was viewed during a portion of its flight over the western sky. The object appeared extraordinarily brilliant, with a blue head and red tail.

As an instance of the erroneous impressions of nearness occasioned by the startling lustre of fireballs of this kind, it may be mentioned that the observer at Loughton estimated it as seventy yards distant, and thought it must have fallen behind a house near him. Search was made for fragments, but without avail. As a matter of fact, the meteor was more than 100 miles distant. The shower of Scorpiids to which it owed its origin is singularly rich in fireballs in June, and they form probably the débris of some dissevered, periodic comet the materials of which are now distributed into a wide stream.

COMING TOTAL ECLIPSES OF THE SUN.—From Dr. Pio Emanuelli we have received an abstract from the *Rivista di Astronomia e Scienze affini* (April) in which he discusses in detail the conditions of the total solar eclipses of the sun on May 9, 1910, April 28–29, 1911, and April 17, 1912. The eclipse of 1911 will have a period of totality of nearly five minutes, and the line of totality will completely traverse the Pacific Ocean; commencing on the east coast of Australia, it will terminate at a short distance from the west coast of Central America. A small chart given by Dr. Emanuelli shows the path of the shadow touching the islands of Nassau, Samoa, and Tonga. Vavau Island will probably afford the best *locale* for observations, and at the port of Neiafu, on the south-west coast, totality will last for 3m. 36·8s. with the sun at an altitude of 43°. At Tau, in the Samoan archipelago, totality will endure for 2m. 13s., the altitude being 51°. The last island to be traversed by the shadow will be Nassau, which is practically an uninhabited desert 1280 metres long and 914 metres across; but here the duration of totality will be 4m. 10s., and the altitude of the sun 57°.

THE NEW CANALS ON MARS.—In No. 422 of the *Observatory* (p. 215) M. Jonckheere states that, from observations made at Hem, there can be no doubt as to the reality of the two new canals recently described by Prof. Lowell. Independent observations by M. Jarry Desloges and himself disclosed these features, which were carefully studied at the Hem Observatory.

THE OBJECTIVE-PRISM DETERMINATION OF STELLAR VELOCITIES.—In No. 4, vol. xxxi., of the *Astrophysical Journal* Prof. R. W. Wood reports further progress in the preparation of light-filters for use in the objective-prism, radial-velocity work recently described by Prof. E. C. Pickering. It will be remembered that by employing a neodymium-chloride filter, Prof. Pickering introduced a fine absorption line into the spectra to which the stellar lines could be referred for measurements of velocity in the line of sight. Prof. Wood now finds that the addition of erbium chloride introduces another good reference line at λ 382, whilst, with isochromatic plates, the narrow interspace between two neodymium bands at λ 5220 might be employed. With vapours he believes better results could be obtained, and he is also experimenting on the manufacture of solid screens by using a solvent which would solidify, such as styrol. The success attained so far is very promising for the final application of this method.