

Research Items.

THE MAORI MODE OF DRILLING.—In the last issue of the *N.Z. Journal of Science and Technology*, Mr. Eldon Best, of the Dominion Museum, contributes an article on the methods of drilling used by the Maoris. The type of drill formerly used by them was the cord drill, which was used in ancient days in India and is still employed in making the sacred fire. The pump drill and bow drill were unknown to the Maori in pre-European times. The European form of pump drill was introduced by the early European settlers. Had the Maori known the pump drill in former times, it would have been the free-bar drill used by the nations of the western Pacific. The pierced-bar form was not known in that region in ancient times, but was introduced by early European visitors and residents. Mr. Best gives three photographs showing the present use of the drill for piercing blocks of stone.

RELATION OF TRANSPIRATION TO DRY WEIGHT IN TOBACCO PLANTS.—Many experiments have been made to determine the relation between the rate of transpiration in a plant during its growth and the dry weight and ash content of the resulting plant. Lawes made some experiments on the subject as early as 1849. In a recent paper Mr. N. B. Mendiola (*Philippine Journ. of Sci.*, vol. 20, No. 6) describes series of experiments with tobacco plants grown in water culture, to determine the effect of a dry or humid atmosphere and of light or shade. He concludes that there is no absolute correlation between the percentage of ash, the relative rate of transpiration of the plant during its growth, and the total dry matter produced.

PHOSPHORESCENT LIGHT OF FIREFLIES.—Ever since the classic experiments of Langley, the light of the firefly has attracted attention on account of its presumed high efficiency and the hope that we may ultimately be able to produce synthetically substances yielding useful phosphorescent light. Some experiments by Dr. H. E. Ives, summarised in the *Journal of the Franklin Institute*, show that the brightness of the firefly is about 0.014 lumens per sq. cm. This may appear so low as to be of little practical value in comparison with the brightness of a typical white sky (about 1 lumen per sq. cm.) and it is, of course, far below the brightness of most artificial illuminants. Yet if we could obtain such a steady brightness synthetically, and cover fairly extensive surfaces with the phosphorescent substance, it would be possible to obtain a serviceable illumination. The examination of the distribution of energy in the spectrum of the firefly is attended by great difficulty owing to the feeble nature of the light. Dr. Ives employed two methods, photography with panchromatic plates and "extinction of phosphorescence," and deduced that the radiation is confined between 0.5 and 0.6 μ , which is the region of the visible spectrum where perception of light by the eye is most acute. His estimate of luminous efficiency is based partly on reasoning involving assumptions of the total energy of a glow-worm in relation to its weight, and is therefore somewhat dubious. But he conjectures that about 80 per cent. of the total radiated energy appears as visible light.

A NEW TEXTILE FIBRE.—The October issue of *Conquest* completes the third year of its publication, and throughout this period it has consistently carried out its purpose of setting forth the progress of science so far as it concerns our daily life. In this issue Mr. A. S. Moore directs attention to the possibilities of the new textile fibre "arghan," which Sir H.

Wickham noticed in native use in South America and introduced four years ago into the Federated Malay States, where the authorities granted 30,000 acres for its cultivation. It is a plant of the pineapple type, and its leaves split readily into fibres 5 or 6 ft. in length, which resemble silk and exceed the best hemp and flax in strength. It resists the action of sea water, and will be invaluable for nets and ship cordage; it spins and bleaches well and retains all dyes, and makes a firm cloth when woven either alone or in combination with cotton or flax.

INDEXING SCIENTIFIC LITERATURE.—We have received from the National Research Council of the United States the reprint of a paper by Mr. Gordon S. Fulcher on "The Indexing of Scientific Articles" which deserves notice. Mr. Fulcher does not appear to be well posted in the literature of his subject, for he places in one category the "International Catalogue of Scientific Literature," and the indexes of the H. W. Wilson Co., which are prepared on entirely different principles. For example under the scheme of "The International Catalogue" a paper on the flora of Formosa would appear under its author's name, the geographical area of its flora, and under the new genera or species described. Similarly a paper of anthropological interest would be classed under its period, locality, and subject matter. Mr. Fulcher's scheme is practically on those lines; but he goes one step further by advocating the elimination of the author and title of the paper and substituting a series of notes, dealing with the salient features of each paper, which are subsequently arranged for printing in alphabetical order. Our objections to Mr. Fulcher's system are as follows: It is "in the nature of real things to be inexhaustible in content," hence if bibliographical unities are disregarded the extent of analysis must be arbitrary, and uniformity of work and phraseology rendered very difficult. To bring it within the range of practice such a scheme must be a classification of original matter arranged under agreed subdivisions. Under Mr. Fulcher's scheme the same subject appears under two or more sub-heads, e.g. Nebulæ: origin-planetary, etc. Nebulæ: planetary-origin, etc. Neither, however, of the above methods are adapted to the indexing of scientific papers. The elimination of the author's name divests the paper of its proper authority; while the substitution of the analytical note for the author's title destroys the unity and purpose of the article. A minutely-classified file of excerpts from the scientific journals prepared by some central authority would undoubtedly prove of great national service, but an index prepared on Mr. Fulcher's lines would probably be seldom consulted.

COLOUR FILTERS IN MICROSCOPY.—Messrs. Kodak have just issued the sixth edition of their booklet on photomicrography. It has been revised so that it now deals with cut films instead of plates, bringing it into line with Messrs. Kodak's practice of making films only on account of the many advantages that they offer. It includes for the first time details of a set of Rheinberg's filters for differential colour illumination in microscopy. Although this method of illumination was introduced by Mr. Rheinberg some 25 years ago, Mr. Rheinberg says that this is the first time that the discs and rings have been made commercially in a suitable form and in suitable colours. The book gives within its 40 pages a great deal of information on the adjustment of the apparatus, the use and properties of colour filters of all kinds, exposure factors, and so on.