flashed across southern Ontario and northern Ohio, and possibly regions farther south. It was seen by the writer from Ann Arbor, Michigan, and was reported from Cleveland as having been seen in western Pennsylvania. It left a reddish train, parts of which were visible for some seconds. The brilliancy of the meteor lasted perhaps three seconds as seen by the writer, and was equal to that of a very bright flash of lightning, the surrounding landscape being strongly illuminated. The writer did not see the entire path, because a building obstructed the view. An observer in Detroit states that the meteor burst into a number of fragments. His data, coupled with the writer's observations, would appear to indicate that the burst occurred over central or southern Ohio.

The writer is desirous of obtaining as much information as possible concerning this body. Such data should include the altitude and azimuth of the point of burst or of the mid-point or ends of the luminous train or all these, if possible. The apparent angle between the path or train and the vertical should be given. The best kind of observation would be a plot of the apparent path of the meteor relative to identifiable stars. Even rough values, if obtained at points one hundred miles or more from Ann Arbor, would be of value, and observations of the meteor passing directly overhead, or nearly so, are also desirable. It is evident that a person need not know even the barest rudiments of astronomy in order to furnish some of the data mentioned. Undoubtedly many who saw it have refrained from giving any notice of it because they feel that their observations would be of no value.

If the observer recalls the place where he stood when the meteor was seen and remembers the relation of its path to the neighboring terrestrial objects, he may be able to determine fairly reliable data by going again to the point of observation with a transit or clinometer and compass, or even with no instruments at all except his eyes and a little good judgment. From some localities even the bare statement that the meteor was seen to burst in the northern sky would be of value, since it would set a limit to its flight.

If enough information can be obtained it should be possible to calculate the orbit of the meteor, both relative to the earth and to the sun. The point of burst especially should be well determined, and it might be possible to indicate within rather close limits the area within which fragments might be found.

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SYNCHRONOUS FLASHING OF FIREFLIES

SYNCHRONOUS flashing of fireflies is noted in the Philippines December 6, and with the seven preceding notes published in SCIENCE since E. S. Morse raised the question February 4, 1916, the phenomenon has been frequently recorded. Since none of these references mention Mexico I call attention to Terry's Guide, page 568:

"A singularly beautiful insect is found in and near the Palonque ruins." Then follows a quotation from early Spanish chroniclers and statements: "This insect, which is common to the tropical forests bordering the Gulf of Mexico, belongs to a family of beetles known as the Elateridae, and is called by the Indians cucuji. . . . The insects congregate by the thousands on certain forest trees, and as if at a given signal simultaneously flash their lights; then darken them and flash them again," etc.

R. H. MERRILL

BUSUANGA HERRE, NEW GENUS

THIS genus is distinguished from other genera of the Belonidae by the anterior extremity of the mandible, which extends beyond the snout and terminates in a thick, spongy, somewhat flexible tip, much thicker than the rest of the mandible and forming a continuation of the upper profile of the beak.

The type is *Busuanga philippina* Herre. It has been described and figured as *Tylosurus philippinus* Herre, in *Philippine Journal of Science* 35 (1928), 31, plate 2, and in *Philippine Journal of Science* 36 (1928), 228, plate 3.

Busuanga, from the island where the fish was first found. Busuanga is one of the Calamianes, an island group in the Philippines between the Sulu and China Seas.

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SCIENTIFIC BOOKS

The Problem of Krakatoa as Seen by a Botanist. By C. A. BACKER, formerly government botanist for the flora of Java. For sale by Martinus Nijhoff, The Hague. 18 by 26 cm. 299 pp.

THE volcanic island Krakatoa, devastated in 1883 by a terrific eruption, has greatly interested botanists ever since Treub published his observations on revegetation. This universal interest was due to the fact that it was considered certain that the original flora and fauna had been wholly destroyed by the eruption.

Hence it was considered that Krakatoa presented an exceedingly rare opportunity for tracing the colonization of new soil by living beings.

Backer, who has been interested in the problem for many years, having studied the new vegetation on the spot as long ago as 1908, now comes forward with a critical review of all the work that has been done on the "new" flora.

As, unfortunately, so often happens in the progress of science, Backer now finds that the observations of the first years upon which all subsequent work must be predicated were neither exact enough nor extended enough to support the conclusions that have been built upon them. Treub and the other early workers apparently assumed, without considering it necessary to examine thoroughly, that so violent an eruption must necessarily have destroyed all vegetation and left the island sterile throughout. Certainly they did not explore all parts of the island or even representative habitats of all sorts but confined their attention to relatively small areas in the lowland. And certainly they did not submit any detailed data supporting their assertions of complete sterilization.

Backer now points out a number of circumstances which make it seem probable that the new vegetation consisted largely of holdovers rather than entirely of immigrants.

His reasons for this conclusion are three:

(1) The hot ejecta never accumulated on the steeper parts of the island but rolled off to the flats leaving the slopes relatively little injured.

(2) Plants large enough to be observed from the deck of a ship were seen on the slopes within three years after the eruption. (These were not examined close up and it was many years before the volcano was actually ascended.)

(3) While the flora of the strand demonstrably consisted of water-borne pioneers, the flora of the heights was of very different complexion. No careful studies have ever been made to determine its origin.

The ferns which played an important part in the colonization of the lowland back of the strand may, Backer thinks, quite as likely have come from adjacent cliffs as from a distance.

As to the probable weight of Backer's criticism the reviewer may add that his own experience at Katmai showed that the most careful investigation is necessary before it may be safely concluded that a volcanic territory has been completely sterilized. In Katmai Valley abundant plants of many species came up from old roots in places which had been buried under several feet of ash for three years and were later cleared by flood waters. One such habitat was found well up the slopes of the volcano and others at its foot. Certainly we would not have believed it possible for plants to survive under such conditions if we had not demonstrated it. In view of the similarity in character of the two eruptions it would seem likely that plants also survived here and there on Krakatoa.

As a result of his critique Backer concludes:

(1) It is not at all proved that by the eruption of 1883 all vegetable life on Krakatoa was destroyed.

(2) Even if this could be proved, we know—with the exception of the littoral flora—nothing at all about the manner in which the new vegetation has appeared. Only guesses without scientific value have been made but no reliable observations or experiments.

(3) Therefore, the Krakatoa problem can neither now nor in the future either be proved or solved and is of no importance at all for botanical science.

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Die Biologie der Moore. By O. HARNISCH. Bd. VII of Thienemann's Binnengewässer, 1929, 146 pp., 3 pl., 30 figs. Published by E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart.

A MOOR is defined as a continuous tract of land from whose moisture-loving plants there is forming (a living moor) or has formed (a dead moor), under the influence of terrestrial or telluric water, a massive accumulation of decomposition products rich in carbon. European moors have been studied extensively during the past two decades, and a considerable volume of literature dealing with this field of science has been published. The present volume gives a good résumé of the more important results contained in these publications. The ecological phases of the subject are especially emphasized.

Moors are discussed under two general heads, (1) as habitats and (2) the plant and animal societies that are found therein. The character of a moor as a habitat is determined largely by the character of the water supply; that is, whether the water holds a large or a small amount of mineral salts in solution which will serve as plant food material. The quantity of salts, in turn, is dependent upon the character of the rocks with which the water has come into contact. The amount of salts also determines whether the moor is eutrophic or oligotrophic. The abundance of the water supply, the temperature, the light intensity and the hydrogen-ion concentration are important factors also. By means of the method of pollen analysis the history of a moor from the time of its formation to its present stage may be ascertained.