

REVIEW.

THE GEOLOGY OF THE ORKNEYS. By G. V. WILSON, and WILFRID EDWARDS, JOHN KNOX, R. C. B. JONES, J. V. STEPHENS, with chapters by Professor D. M. S. WATSON, Professor W. H. LANG, and Sir JOHN FLETT. pp. i-viii, 1-205, with 36 text-figures and 8 plates. H.M. Stationery Office, 1935. Price 5s.

THIS memoir describes the geology of the Orkneys and the Island of Stroma, and covers a land area of about 376 square miles, represented on the 1-in. colour-printed maps, 117 (Hoy), 118 (Copinsay), 119 (Kirkwall), 120 (Stronsay), 121 (Westray), and 122 (Sanday). The first four chapters deal with the history of geological research on the islands, the topography and scenery, and summarize the geology of the islands as a group. The intermediate chapters give more detailed descriptions of individual districts and islands, while the last three chapters give a valuable account of the fossil fishes, fossil plants, and petrography respectively. The memoir is provided with a glossary of Orkney place-names, a bibliography, and an index.

CORRESPONDENCE.

LIFE-HISTORY OF THE SUDBURY NICKEL IRRUPTIVE.

SIR,—In the June number of the *GEOLOGICAL MAGAZINE* appeared a review of Dr. Collins's paper, by D. L. R., in which reasons are given for questioning some of Dr. Collins's conclusions regarding the origin of the Sudbury irruptive. Dr. Collins's paper is of such great importance that possibly another point of view concerning the validity of his conclusions may be of interest.

Dr. Collins favours liquid immiscibility as the most important process by which the mass was differentiated. The reviewer states that "Greig has shown on experimental evidence that the separation of such a rock magma into two immiscible fractions is not possible". This is in accord with the common interpretation of Greig's work, but Greig himself did not make such an unqualified statement; he expressed a much more conservative opinion. His experimental work dealt with dry melts; regarding the effect of water his statement reads: "To venture an opinion as to the result of its introduction on the limits of immiscibility would be simply to guess," and he goes no farther than to say that "if its addition is to change the limits of immiscibility . . . its effect must be entirely different from that of any of the oxides studied".

Greig's investigations have been widely quoted as proof of the impossibility of liquid immiscibility as an important factor in petrogenesis. The present writer would emphasize that his conclusions should not be extended beyond what the experimenter himself regarded as justified. There is still room for differences of opinion in the interpretation of field data, and we must await further evidence from either field or laboratory. There are geologists who believe that the volatile constituents (not water alone) modify greatly the behaviour of magmas. Dr. Collins evidently belongs to this group, and the great amount of work embodied in the Sudbury paper is of the kind needed to assist geologists in reaching a decision on a matter of great importance. His views should not be summarily rejected through misunderstanding as to what has been shown by previous investigation.

D. L. R. recognizes the force of Dr. Collins's arguments as to the inadequacy of crystal fractionation and other processes that have been invoked to account for the relations at Sudbury, but, as we have seen, he rejects also the alternative idea of liquid immiscibility. Instead, he favours assimilation of quartzite and the rise of alkali-rich emanations into the roof, with resulting feldspathization. He recalls the work of Quirke and Collins himself on the Killarney granite, and regards it as curious that Collins has not applied the same idea here. This seems curious to the present writer also; in fact, in a paper published eight or nine years ago the writer suggested that available data on the Sudbury mass indicated such granitization effects. The new data supplied by Dr. Collins do not appear necessarily to exclude this process as an explanation of certain phenomena of the roof rocks, but they make it questionable whether all the relations of the irruptive can be thus explained. More than one process may have been operative. Dr. Collins stresses immiscibility as the chief process. Whether or not he has proved the case, it seems to the writer that he has been amply justified from his evidence in bringing it forward for consideration.

C. N. FENNER.

GEOPHYSICAL LABORATORY,
WASHINGTON, D.C.
21st June, 1935.

ERUPTIVE ROCK NAMES.

SIR,—The attention of petrographers is invited to a new compendium of rock names (*Spezielle Petrographie der Eruptivgesteine: ein Nomenklatur-Kompendium*) which has been prepared by Dr. W. E. Tröger and published by the Deutsche Mineralogische Gesellschaft.¹ The number of names listed by Dr. Tröger for eruptive

¹ The book was reviewed in our last number, p. 332.—ED.