

## THE FLOOR OF THE ARABIAN SEA.

SIR,—The “John Murray” Expedition to the Indian Ocean has been so prolific of important scientific results that it may seem somewhat ungracious to call into question any of the deductions drawn from actual observation. Nevertheless, the geological interpretations given in the article by Dr. J. D. H. Wiseman and Col. R. B. Seymour Sewell in the *GEOLOGICAL MAGAZINE* of May, 1937, contain a number of statements which I feel are misleading and cannot be allowed to pass without comment.

(1) *Khorya Morya Islands*.—The statement is made on page 223 that the granite is intrusive into an overlying sandstone formation of Miocene age. I have not visited these islands personally, but I have examined the adjacent coastline at Dhofar and there the basement gneiss is overlain by a “Nubian” type of desert sandstone which in turn is overlain by Cenomanian limestones (*Quart. Journ. Geol. Soc.*, lxxxiv, p. 588). By inference from other parts of Arabia, these crystalline rocks are of pre-Cambrian age and there can be no question on the Khorya Morya Islands of their intruding an overlying formation, which according to Carter is of Eocene age.

(2) “*Scarp faulting*” along the Arabian Coast.—The soundings along the Arabian coast have given most interesting results which are described in more detail in Vol. 1, No. 2, of the main report (p. 49). “The slopes are extremely irregular, consisting of alternate slopes and valleys running out to seaward, in appearance similar to that of a mountain side. While steaming along a course parallel to the shore in the vicinity of the 100 fathom line, the soundings were never constant, varying perhaps from 60 to 360 fathoms in very short distances. The similarity to a mountain side was illustrated by the large quantities of scree dredged off the slopes of the Khorya Morya Islands.” This submarine topography is interpreted as indicating (p. 223) “in all probability extensive scarp faulting”. To my mind it is in reality what it appeared to be, namely submerged mountain sides. I have shown (*Quart. Journ. Geol. Soc.*, lxxxiv, p. 611) that there are excellent examples of drowned valleys on the Musandam peninsula, indicating negative movements of the land of at least 1,000 feet, and these recent observations seem to show that similar conditions continue along the south-eastern Arabian coast as well.

(3) *Rift Valleys in the Arabian Sea*.—It has been difficult enough hitherto to understand the structural connection between Oman and the Kirthar Ranges, and I feel that any new proposal which will not stand up to critical examination should be challenged. The discovery of a double ridge is surely an insufficient basis for the postulation of a Rift Valley. The Murray Ridge lies on the prolongation of a system of fold-ranges and there is, therefore, no justifiable analogy with the African Rift Valleys which break through ancient

rigid masses. The same objection may not be so valid in the case of the Carlsberg Ridge, but even there I should regard it as a very improbable explanation. The earthquake evidence can be equally well interpreted as indicating a fold system.

(4) *The Age of the Carlsberg Ridge System* (p. 229).—I have already questioned the evidence for faulting along the south-eastern Arabian coast, and the limestones of the Khorya Morya Islands are of Eocene and not of Miocene age. In Oman well-defined terraces with sub-recent shelly deposits have been elevated to as much as 1,130 feet above sea-level, and I agree that the present configuration of the ridges found by the expedition are probably of comparatively recent age. Undoubtedly, however, they follow the trend of older fold systems which, according to evidence in Oman, may be of any age from Upper Cretaceous onwards.

Finally, I should like to make my principal criticism of the observations of the expedition, namely that, like Oliver Twist, I ask for more. The area surveyed is intensely interesting from so many aspects and I sincerely hope that it will be possible to continue the work on a later occasion. In particular, some pendulum observations along and across these submarine ridges would be most important. The single traverse across the Carlsberg Ridge by Meinesz indicates the magnitude of the gravity differences which can be expected, and by this means only could the difficult problem of the ultimate destination of the Oman and the Kirthar Ranges approach solution.

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## ANNOUNCEMENT.

THE Council of the Institution of Petroleum Technologists, with the co-operation of an Organizing Committee in Scotland, is arranging a Conference to be held in Scotland from 6th June (Whit-Monday) to 11th June, 1938, under the Presidency of Sir T. H. Holland, K.C.S.I., F.R.S.

The objects of the Conference are mainly to provide the opportunity for a review of the present state of knowledge regarding the geology, mining, treatment, and utilization of shale and cannel in all countries where these materials occur; and to consider the problems of increasing oil supplies from indigenous sources of such materials. The programme will include visits of inspection of the operations of the Scottish shale industry.

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