

Age of the Skomer Volcanic Rocks

Sir, – A recent paper by A. M. Ziegler, W. S. McKerrow, R. V. Burne & P. E. Baker (1969) on the Skomer Volcanic Group of Pembrokeshire draws heavily on the work of the geologists who carried out the primary six-inch survey of South Wales during the early part of this Century. The authors' indebtedness to the Geological Survey is satisfactorily acknowledged but, in their introduction to the main theme of the paper, the age of the volcanic rocks, they fail to give the reader a fair picture of the background of open-minded discussion and debate that surrounded the age-problem both prior to and subsequent to the period of the primary survey. Nowhere do they make it clear that a Silurian age for the Skomer Volcanic Series was a recurrent theme of past literature.

Their first and only reference to the long and impartial dissertations of earlier investigators is in their first paragraph and it reads as follows:– '(Howard & Small, 1896a, b, 1897; Thomas, 1911; Cantrill, Dixon, Thomas & Jones, 1916). All these authors considered the Skomer Volcanic rocks to be of Arenig (Lower Ordovician) age'. The impression is immediately given that five or six of the best known workers on Pembrokeshire geology were single-minded advocates of an 'Arenig-age dogma, on the correlation of the Skomer Volcanic Series, and this impression is nowhere corrected in later parts of the authors' text. The following extract from a contribution by T. C. Cantrill and H. H. Thomas to the Geological Survey Memoir on the country around Milford (1916, p. 20), which is probably one of the most forthright pro-Arenig statements in the literature, will illustrate the tentative and qualified phraseology in which these authors debated the problem:–

'Unfortunately, however, the relations of the igneous rocks to adjacent sedimentary deposits of known age are generally obscure; faulted junctions are not uncommon, and the sediments included in the Skomer Series are barren of organic remains. The determination of the age of this series, therefore, can only be effected after a consideration of the structure of the district as a whole, and by weighing carefully the probabilities suggested by the geological sequence in neighbouring areas. The Arenig appears to be the most likely period of eruption. On the Smalls, Grassholm, Skomer, and Midland Islands neither the base nor the summit of the volcanic series is reached; but on the mainland – at Wooltack, Musclevick, and Marloes Mill – fossiliferous sediments are seen in juxtaposition to the Skomer Series. The sections provided by the cliffs of Wooltack Park have furnished in the past, as they still do, the chief evidence for the age of the volcanic rocks; but that these sections are capable of different interpretations is obvious from the fact that De la Beche and Murchison, as well as Messrs Howard and Small, have variously attributed the volcanic episode to the Llandilo, the Bala, and the Upper Llandovery period. The issue has undoubtedly been complicated by the fact that, within the same district, volcanic rocks are represented on a definite horizon in the Upper Llandovery formation, and these were not distinguished by earlier writers from the Skomer volcanic series, which occupies a lower position. A careful study of the sections exposed in the cliffs of Wooltack Park proves more or less clearly that the Skomer Series lies beneath deposits of Upper Llandovery age, and that the Upper Llandovery rocks rest unconformably with overlap on the Skomer volcanic rocks below'.

A final point, the significance of which the reader may not appreciate, is that the Skomer Volcanic Group of the authors includes strata that were specifically excluded from the Skomer Volcanic Series of Cantrill and Thomas. The authors have redefined the formation so that their Group now includes the pyroclastic rocks, lavas and some sediments of undoubted Llandovery age that overlie the main volcanic Series. Thus they have ensured that part at least of their Group can never be removed from the Silurian.

REFERENCES

- Cantrill, T. C., Dixon, E. E. L., Thomas, H. H. & Jones, O. T. 1916. The Geology of the South Wales Coalfield, Part XII, The Country around Milford. *Mem. geol. Surv. U.K.*

Ziegler, A. M., McKerrow, W. S., Burne, R. V. & Baker, P. E. 1969. Correlation and Environmental Setting of the Skomer Volcanic Group, Pembrokeshire. *Proc. Geol. Ass.* **80**, 409-439.

Institute of Geological Sciences
5 Princes Gate
London SW7
24th July 1970

J.R. Earp