

more a figure of eight pattern in plan (Fig. 3), perhaps due to close proximity of two 'beehive' dome extrusions (cf. Thompson *et al.* 1965).

Whatever conclusions may be reached about other rhyolite bodies in the North Wales volcanic province, my observations suggest that this one is extrusive. By analogy with New Zealand, one would expect both intrusive and extrusive rhyolite domes to be present in the province as a whole, and it would be surprising if they were not.

Acknowledgement. I thank Miss P. McCurry and Dr M. J. C. Nutt for discussion and helpful comment.

References

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- Roberts, B. 1969. The Llwyd Mawr ignimbrite and its associated volcanic rocks. In A. Wood (Ed.): *The Precambrian and Lower Palaeozoic Rocks of Wales*. University of Wales Press, Cardiff, pp. 337–56.
- Thompson, B. N., Kermode, L. O. & Edward, A. (Eds). 1965. New Zealand Volcanology, Central Volcanic Region. *N.Z. Dep. sci. industr. Res. Inf. Ser. No. 50*.

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EXPLANATION OF PLATE

Plate 1. Photograph of crystal-rich ignimbrite containing irregular fragments of sparsely porphyritic rhyolite. $\frac{1}{2}$ p coin provides scale. Main rhyolite/ignimbrite contact lies about 200 mm below this picture.

Precambrian block-faulting, Ethiopia

SIR – The paper by Kazmin, V. & Garland, G. R., 'Evidence of Precambrian block-faulting in the western margin of the Afar depression, Ethiopia' (*Geol. Mag.* **110**, 1973, pp. 55–7) is mostly based on my results and ideas discussed whilst I was working with the Geological Survey of Ethiopia in Tigre province and established the regional stratigraphy and structure of the Precambrian in the area.

In the following reports of the Geological Survey of Ethiopia known to Mr Kazmin and Mr Garland, some of these results were already in print:

(1) Beyth, M. 1970. Explanatory notes – Mekele Sheet ND 37–11 (including the stratigraphic table). Geol. Survey of Ethiopia, minor invest. Note 1970/19.

(2) The above-mentioned notes were later published under my name attached to the Geological Map of Mekele, 1:250 000 (Geol. Survey of Ethiopia, 1971).

(3) Beyth, M. 1971. The Geology of Central-Western Tigre: a final report for the Geol. Survey of Ethiopia which was finished in June 1971.

(4) As a supervisor of the regional mapping in northern Ethiopia, I put some of the data in the annual reports of the survey (1970, 1971).

The final summary of this material was put together in a small book which may not be widely known: Beyth, M. 1972. *To the Geology of Central-Western Tigre*. (In English,

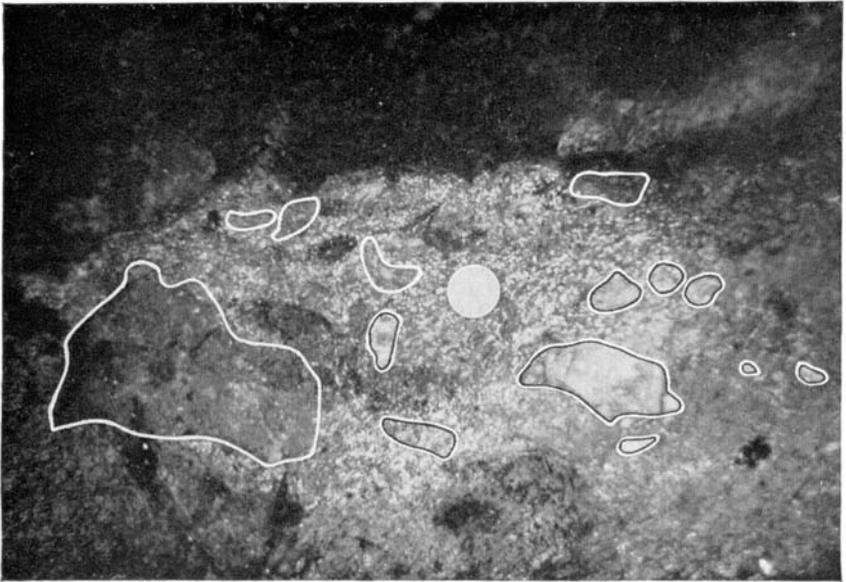


Plate 1. Crystal-rich ignimbrite from Snowdonia.

with introduction in German and Hebrew.) 159 pp., 24 figs (some folding), 8 tables. Rheinische Friedrich-Wilhelms-Universität, Bonn. Paperback. No price.

I suggested the stratigraphy of the Precambrian in the area and divided the Tambien Group (not their name) into two facies; out of one of them, the Negash Facies, the authors 'created' the 'Didikama Formation'. Although the reference for the two other groups (Tambien, Tsaliet) is Kazmin (1971), even there he took it out of my survey reports.

The structure of the basement with the so-called axial zone (I did not call it axial zone) was first suggested by me and presented in a section attached to the annual report (Beyth, 1972, fig. 4) and in a section attached to the Geological Map of Mekele (Beyth, 1972, fig. 18). Also the chapter 'Escarpmnt' (p. 77) and appendix 1 may help.

The first to observe the change in regional dips at east and west was Urdea, I. (Urdea & Alemayehu W/Ruffael, 1967).

In my report (1971) may be found the same tectonic description as is found here (p. 81) and which ended with the sentence 'This system of folding may suggest median mass under Atsbi Horst' (which is the axial zone of Kazmin & Garland). I even discussed the possibility with Mr Kazmin.

Mr Kazmin, senior author, visited Tigre only once, before publishing the paper, shortly after I left Ethiopia, and only stayed for two or three weeks and never entered the escarpment area. The main working area of Mr Kazmin until my leaving was S and W Ethiopia, where he was working with the U.N.D.P. Mr Garland came to Ethiopia about a year and a half after me. I supervised his work, and introduced him to the stratigraphy and structure of the area. I even mapped part of the sheet discussed in the paper and another part was first described by Amenti, A., 1970: Geological Report on Sheet 7053 I and II, 7153 I, II, III and IV Tigre Province. Geol. Surv. of Ethiopia, minor invest. Note 1970/4.

In a short lecture in the University of Addis Ababa I submitted the ideas concerning the basement regional structure in Tigre in the presence of Mr Kazmin, Mr Garland and others, including lecturers of the University. I would like to emphasize that by doing the work I was helped and advised by Mr Dow, previously director of the Survey. Under these circumstances I was amazed that they did not mention my name.

References

- Kazmin, V. 1971. Precambrian of Ethiopia. *Nature Phys. Sci.* 230, No. 16, 176-7.
 Urdea, I. & Alemayhu, W. 1967. Report regarding the preliminary prospections on a scale 1:500,000 in Tigre Province: Imperial Ethiopian Government, Ministry of Mines.

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M. BEYTH

[The Editors have summarized here a Letter from Dr Beyth and have since been unable to contact him in Israel.]

SIR - I would like here to acknowledge Dr Beyth's contribution to ideas which were confirmed in further work resulting in the paper referred to above by Kazmin & Garland (*Geol. Mag.* 110, (1), 1973), and apologize to him for omitting reference to his work. Dr Beyth was a pioneer of work in the north of Tigre province for the Geological Survey of Ethiopia under the directorship of Mr D. B. Dow, and he was largely responsible for the first stratigraphy and structural scheme of that area. Most of the information about this area remains unpublished in reports to the Imperial Ethiopian Government

Ministry of Mines, including Garland, 1972, the geology of sheet ND 37-7, though recently publication of maps (1) 1:250000 scale of the geology of sheet ND37-11, compiled by Dr Beyth, and (2) 1:2000000 scale of the geology of Ethiopia compiled from many sources in 1973 by Mr V. Kazmin, has shown for the first time the place of the Tigre 'upper complex', equivalent to the Tsaliet and Tambien groups (Beyth, 1971), in the geological structure of the entire country.

It is to be hoped that Dr Beyth's own recent results on his field work of previous years in Tigre province will be available to all those interested in the Geology of Ethiopia.

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The boundary between the Wenlock and Ludlow Series

SIR - The problem of recognizing the junction between the Wenlock and Ludlow Series in terms of the graptolite zones, which arises from the lack of conclusive graptolite evidence in the upper part of the Wenlock Limestone and Lower Elton Beds in the type areas of the two Series, has been discussed by Holland, Rickards & Warren (1969, pp. 679-81). They have recommended on the evidence available that the base of the *nilssoni* Zone should be taken as the base of the Ludlow Series in the graptolitic facies (p. 681). This view was reiterated by Cocks *et al.* (1971, p. 105).

The problem remains, however, whether in the type area of the Ludlow Series at Ludlow the base of the *nilssoni* Zone (a) coincides precisely with the base of the Eltonian i.e. the base of the Ludlow Series as accepted by successive authors following Holland, Lawson & Walmsley (1963) or (b) occurs above this horizon either within or at the top of the Lower Elton Beds or (c) occurs below it, either within the Wenlock Limestone or Tickwood Beds. These possibilities have been discussed by Lawson (1971, pp. 305-6).

Outside the Ludlow district, Holland *et al.* (1969, p. 678) report the presence of *Monograptus varians* Wood in the Lower Elton Beds of the Malverns, *Monograptus uncinatus orbatus* Wood in the Lower Elton Beds of May Hill, and *Pristiograptus dubius*? (Suess) together with *M. cf. varians varians* in the Lower Elton Beds of Millichope, Shropshire. To these records may be added those of *Monograptus cf. unguiferus* Perner and *M. cf. uncinatus orbatus* (identifications by Dr P. T. Warren) from the Tresglen Beds (lowest Ludlow Series) of the Llandeilo district (White 1969, p. 96). Each of these faunas provides evidence of the *nilssoni* Zone, but because the Lower Elton Beds of these areas may not be coeval with those of the type area, these occurrences cannot be taken as conclusive evidence of a *nilssoni* Zone age for the Lower Elton Beds in the Ludlow district.

The purpose of this letter is to report that during the recent survey of the Telford New Town area by the Institute of Geological Sciences a well-preserved example of *Monograptus uncinatus orbatus* (identification confirmed by Dr Warren), registered number GSM DEX8256, associated with a rich shelly fauna of low Eltonian aspect, was collected at an exposure of Elton Beds 1 km NE of Much Wenlock, Shropshire [NGR SJ 6302 0069]. Taking account of the regional dip of the strata, Mr B. C. Coppack, Institute of Geological Sciences, who surveyed the area, estimated that the horizon from which the graptolite was collected lies only 3-5 m above the Wenlock Limestone, though the outcrop of the Wenlock Limestone lies 200 m to the W.

M. uncinatus orbatus has a limited stratigraphical range, being restricted to, and characteristic of the lower part of, the *nilssoni* Zone (Warren, 1971, p. 453). Thus this