

## CORRESPONDENCE

## Silurian Volcanic rocks of the Mendip Hills, Somerset

Sir, — The recent paper by Dr P. C. van de Kamp on the above topic (*Geol. Mag.*, 106, 1969, 542–53) is of considerable interest. The author claims that the main rock type is rhyodacite whereas all previous publications and our own researches have suggested that the main lava flows are of andesitic composition. The main reason for the new opinion would seem to be a high quartz content in the rocks based on chemical analyses and it is pertinent to enquire whether this could be due to secondary enrichment.

In his petrographic descriptions the author notes that “in places, the andesite has been extensively brecciated and the fractures filled with calcite, quartz and laumontite” (p.546) and “quartz is confined to the groundmass and small fractures and amygdules” in the rhyodacites (p.548). Unpublished work by Dr R. Dearnley of this Institute records lava having a “brecciated zone with considerable development of epidote, chalcidony and chlorite as secondary alteration” and “the matrix is microcrystalline (?chalcidony)”. There is therefore evidence of secondary silicification in the lavas.

This phenomenon is well known on the Mendips, the Liassic and Inferior Oolite limestones being converted to chert (Green & Welch 1965 p.95). A hydrothermal source for the silica has been favoured, based on the wide stratigraphical range of the affected sediments, which, it has been suggested (Ponsford 1970) may possibly include the Upper Greensand, locally rich in chert. The apparent concentration of silicification (like the mineralization) along the anticlinal belts, supports the theory that the solutions rose through the anticlinal cores, in this case the Moonhill lavas and vent rocks. The interpretation of the silica analyses of these rocks would therefore seem to need cautious treatment.

A further interesting point in connection with the Silurian volcanic rocks of the Mendips concerns the origin of the rounded lava masses found in the tuff beds and referred to by Dr van de Kamp as “abundant bombs in ash matrix”. Since their first discovery by Reynolds (1907) they have been called conglomerates but I agree that they should be termed agglomerates. However, like Reynolds, I could not accept that they are bombs and could offer no better alternative until a recent paper by Dr Doris Reynolds (1969) which has supplied, in my opinion, the true explanation, namely gas-fluidization whereby tuff fragments, moved by gas under pressure, become an erosive agent in the volcanic vent. The agglomerate was reported to occur in strength 0.8 Km (½ mile) east of Moons Hill and interpreted by Reynolds (1907) as marking the site of a vent. His ideas would now seem to be confirmed but many details remain to be resolved.

## REFERENCES

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Sir – I have just read with much interest Dr van de Kamp's account of the Silurian rocks of the Mendips. While I congratulate the author on the completion of a detailed study of the petrography and chemistry of these rocks I must seriously object to the sentence in his first paragraph (p.542) that reads "The only published recent work on these rocks is by Green (1965) which adds little to previously existing knowledge about them".

As the Geological Survey field geologist responsible for the current official map of these rocks I suggest that the author has done less than justice to my work which was carried out there during part of the Summer of 1961. The results of this work were embodied in the official six-inch Geological Survey maps ST 64 NW and ST 64 NE and a very brief account of the Silurian sequence was given in the Summary of Progress of the Geological Survey for 1961 (Green 1962). The author states (p.544) that he has made use of information from the six-inch maps but he makes no reference to the 1962 summary. The latter was only a preliminary report of the most important findings and did not of course show detailed sub-divisions of the lavas as in Table 1 of Dr van de Kamp's paper; nevertheless it provided for the first time ever, a complete stratigraphical section of these very interesting Silurian volcanic and sedimentary rocks and I feel sure that as such it should not be dismissed as work that "adds little to previously existing knowledge".

## REFERENCES

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