

THE BARR AND LOWER ARDMILLAN SERIES (CARADOC) OF THE GIRVAN
DISTRICT, SOUTH-WEST AYRSHIRE, WITH DESCRIPTIONS OF
THE BRACHIOPODA.¹

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SUMMARY

A revision of the stratigraphy and the brachiopod faunas of the Caradoc rocks exposed in the Girvan district of south-west Ayrshire suggests that the current classification of the successions, both north and south of the Stinchar Valley, is misleading because it is based on the fallacy that the Caradoc comprises a small number of rock types which are repeated by isoclinal folding. This type of folding, however, is rare, and the recurrent impersistent conglomerates and limestones, for example, do not exclusively represent anticlinal cores but mainly rapid facies changes. The succession accordingly is very much thicker than was previously believed and as amended includes four additional conglomeratic members and one extra limestone horizon that have hitherto been mapped as the Benan or Balclatchie Conglomerate and the Stinchar Limestone respectively. It is also involved in a strong unconformity northwards from the Stinchar Valley that has eliminated all but the onshore correlatives of late Ardwell age in the Craighead area. Members of the Barr Series which are associated with the unconformity do not thin out gradually northwards but disappear rapidly along very steep gradients in certain parts of the district. This suggests that deposition took place in basins defined by step-faults and retained by continual slip below wave-base to accommodate the greywackes which make up much of the succession.

The Tappins Group, south of the Stinchar Valley, consists of three thick sedimentary belts, one of which, the Albany division, is known from faunal evidence to be equivalent to the Stinchar Limestone and Benan Conglomerate. Another, the Traboyack division, is known to be mainly older than the Kirkland Conglomerate. It includes cherts and spilites that are probably Llandeilo in age. The third, the Dalreoch division, is possibly a lateral equivalent of the Albany facies.

Rich shelly faunas have been collected from most of the succession up to, and including, the lower Ardwell Group and a systematic revision of the brachiopods has entailed the description of 180 species (27 of them new) and 11 new subspecies, belonging to 99 genera (5 of them new). The study provides a detailed correlation not only between various members of the Barr and Lower Ardmillan Series within the district but also between those Scottish rocks and the standard Ordovician sections of Alabama, Tennessee and West Virginia.

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