
Chapter 11 Recapitulation of the Mona Complex

The Mona Complex falls into two divisions, a Gneissic Suite and a Bedded Succession, the latter occupying much the greater part of the surface. Not only can the order of the succession be made out<ref>It will, of course, be understood that this brief recapitulation is subject to the cautions and reservations with regard to the Succession and the Tectonics that are expressed in the Preface and on pp. 152, 170, as well as on pp. 169, 176, 178, 180, 182, 206, 221, 224, 227, 233, 242, 256, and at other places.</ref>, but there is good evidence in favour of reading it chronologically from the Fydlyn Beds to the Holyhead Quartzite, and of placing the Gneisses below the whole.

The Gneisses are deep-seated products, in which are found the highest grades of . permeation-structure. The Bedded Succession falls into six main sub-divisions, and almost every type of deposit is represented, mechanical sediment being dominant, and rapidly alternating conditions tending to recur on horizon after horizon. Interbedded with the sediments are large suites of volcanic rocks, both pyroclastic and effusive, rhyolitic and spilitic lavas being poured out on a large scale. The thickness of the whole succession is roughly estimated at about 20,000 feet. Four of the members develop different facies in different regions. There are also plutonic intrusions that range in composition from acid granites to dunite-serpentines. Albite and other sodium minerals (among which glaucophane is notable) are extremely abundant, so that the Complex as a whole may be called a sodium complex. A tendency to green colouration, which is very general, is due chiefly to chlorite of anamorphic evolution, but also to a green anamorphic biotite, and to chlorite of catamorphic dissolution.

The whole succession is (with a few local exceptions) more or less foliated: the crystallisation varying from the lowest possible, through moderate grades (which are the most widespread) in which original textures survive, to that of complete crystalloblastic reconstruction.

The Bedded Succession rests upon a still more ancient foliated complex, of which it is believed that the Gneisses are a part. There must therefore be a great unconformity between this Ancient Floor and the Bedded Succession, though known only by inference, the base being, apparently, cut out everywhere by thrusting. A break occurs also at the base of the Skerries Group, but it is both slight and local.

Land seems to have lain to the north-west, its direction shifting, however, about 90° in the latter part of the period. Vulcanicity slowly wanes upwards, and the highest known member of the series is completely free from it. Life must have been in existence throughout the whole period of the succession, for annelid remains are known in the Gwna Beds and Tyfry Grits as well as in the South Stack Series, and carbonaceous shales occur in the Gwna Beds, besides which there is reason to suspect an organic origin for the jaspers.

The dominating structure of the Complex is recumbent folding, combined with which is thrusting on a large scale. Three maximum recumbent folds are believed to exist, with horizontal amplitudes of many miles. These, with their thrust-planes, are thrown into major secondary folds of great vertical amplitude, upon which minor and minimum folding are in turn imposed. Thrusting develops upon those of all scales, and on the higher tectonic horizons produces a general state of autoclastic mélange. Three chief episodes of earth-movement, with three corresponding periods of dynamic metamorphism, are known; and the distribution of the varying grades of this metamorphism, which appears at first sight entirely capricious, can be shown to be conditioned by tectonic horizon.

That the Complex is Pre-Ordovician is certain. It is equally certain that some at any rate of it is Pre-Cambrian, and there is heavy cumulative evidence that the whole is of that age.

The foregoing chapters convey, in reality, a very inadequate picture of the Mona Complex, of its well-nigh inexhaustible wealth of detail, and of its labyrinthine structures, which are far from being fully understood. There is no exaggeration in saying that every one of its districts, and every one of its horizons, will present for a long time a rich field for further research.