is present. Member F is thus considered to be the first record of the changing conditions which brought Te Kuiti sedimentation to a close in the area. South of Matawhero, where Member F consists of very fine, sorted biosparites, special conditions are envisaged. The higher turbulence which did not allow calcite-mud to accumulate in these rocks was probably due to the shallowing of seas near the retreating oyster banks to the south.

The biosparites at the base of Member G in the west show that a period of slightly higher energy followed the deposition of the biomicrites of Member F in this region. However, continuing change is obvious, and the polyzoan detritus at the base of the member is slowly replaced by small foraminifer tests as the dominant skeletal element. It is likely that this change was accompanied by an increase in the depth of water at the site of deposition. Nearer the shore sedimentation continued at a very slow rate and in the north the biomicrites of Member F continued to be deposited under conditions of very low energy.

Terrigenous mud was supplied to the basin in increasing quantities during deposition of the upper part of Member G in the west, and finally Te Kuiti sedimentation ended. Although this change was gradual in the west, nearer the shore it was more abrupt and the zone of terrigenous mud slowly engulfed the shallower environments. The source of the terrigenous mud is not known but it is likely that it lay in lands uplifted by the tectonic events that produced the unconformable relations between the Te Kuiti and Mahoenui groups elsewere (Kear and Schofield, 1959).

Extra-basinal influences

The discussion so far has largely been concerned with that part of the Te Kuiti basin that is exposed in the west Piopio area. However, in order to explain why changes in deposition took place in the area it is necessary to know something of the depositional history of the Te Kuiti Group over a much wider area. Unfortunately, detailed regional studies have not been undertaken as yet and so the following observations are offered purely as a working hypothesis on the basis of very limited knowledge.

To recapitulate, the Te Anga–Castle Craig boundary is considered to be an approximate time boundary that resulted from a major change in the type of terrigenous material supplied and in environment energy. The banded limestones of Members A and B developed in response to a particular set of conditions that were initiated and terminated abruptly. These changes were probably related to specific extra-basinal events. However, the upper boundary of Member B is obviously time-transgressive, and thus, while the sediments of Facies B3 (and, in places, Facies B1) were being deposited in the south, Member D at least of the Otorohanga Limestone was being deposited in the north.

The answer to the question of what caused the time-transgressional relation to develop between the various members involved probably lies in the distribution of the nearby land masses at the time of deposition. Barrett's isopach map of the Te Anga Subgroup (Barrett, 1967, fig. 8) indicates that for much of the deposition of the subgroup the west Piopio area was separated from the Te Anga–Waitomo area by a low saddle. Some time before deposition of the Castle Craig sediments took place transgression had raised sea level sufficiently and the two basins became linked by a narrow sea-way. With continued transgression this sea-way must have slowly widened and it is quite possible that the depositional pattern in one basin would be significantly modified by that in the other. This, in essence, is what may be proposed to explain the facies changes observed in the middle and most of the upper part of the Castle Craig sequence west of Piopio.

The explanation offered is that the zone of terrigenous deposition (Member B) moved southwards with time owing to the initiation of a new depositional