REPORT FOR THE STRUCTURAL
AND LAND FORMS COMMITTEE.

(a), (b), and (c).

Tasmania apparently existed as a land mass from the close of the Triassic (possibly extending into Jurassic) sedimentation, the close being probably associated with the enormous intrusions of dolerite (diabase) and considerable faulting until Miocene time. Little or nothing can be said, therefore, as to the geological history of the State during Cretaceous, Eocene and Oligocene times. It is quite probable that the surface was reduced to a peneplain including the Central Plateau, which peneplain has since been largely destroyed by subsequent faulting and earth-movements in general, and erosion.

(d)

Few, if any, pre-Miocene alluvial and lacustrine deposits are known to exist in Tasmania although small thicknesses of gravels, clays and brown coal under certain of the plateau basalts, e.g. Waratah, may represent such deposits.

Pre-Miocene basalts are present probably at a number of localities, but the first definitely determinable one (at Marrawah) was only discovered in 1932. It is fairly certain that some basalts in the north-eastern and midland districts belong to the same series of intrusions. Others such as those at Waratah and Middlesex are probably of the same age.

These basalts certainly suggest that they were extruded over level surfaces such as a peneplain.

There has been considerable denudation since the extrusion of the basalts, and while much has been of late Tertiary to Recent times, it is evident that from the evidence at Marrawah some occured before the Miocene marine transgression. At this locality the basalt forms a small plateau 300 feet in height, around which the Miocene sedimentation occurred.

(e)

The Miocene marine transgression affected only the far north-western coastal regions (to a distance of 10 miles from the present coast) e.g. Temma, Marrawah, Mt. Cameron West, and Wynyard; King Island; and probably parts of the Furneaux and Kent groups of islands in Bass Strait. The lateral transgression was small and only small thicknesses of sediments were laid down.

(f) and (g)

The Miocene transgression probably occupied only a portion of that period and did not extend into the Pliocene, and it is difficult to state the nature of the earth movements which caused the cessation. It is quite certain, however, that large scale earth movements and faulting had taken place before the Pliocene period, but whether these were pre or post Miocene cannot be determined. Such earth movements

would probably be responsible for the partial destruction of any pre-Pliocene peneplain and they would correspond with the block faulting with differential uplift and depression of Eastern Australia.

(h)

The Pliocene period in Tasmania was one of erosion following the above earth movements, the rejuvenated streams cutting youthful valleys in the uplifted blocks, with perhaps deposition of alluvial materials in the depressed regions. At a later stage the land was apparently depressed as a whole to the extent of several hundred feet and alluvial deposits were formed in the wider portions of the youthful valleys, e.g. Ringarooma Valley.

Still later the late Pliocene basalts were extruded, chiefly in the valleys and covered the recently formed alluvia deposits. At least three flows have been found in some districts, e.g. Ringarooma Valley and Smithton, with small thicknesses of sediments between the flows.

After the last flow there was in some districts a slight elevation of the land but not as great in amount as the depression before the sub-basaltic alluvial deposits were laid down.

Pleistocene. It has not been definitely established that the land was further uplifted during the Kosciusko Epoch, but such may have been the case and if so it was probably differential. Any such uplift would have ushered in the Glacial Epoch. Three phases have been recognised in the glacial epoch, the first being the most intense and wide spread.

During Weerikooian to Pleistocene times marine transgressions occurred along parts of the northern coast, and on Flinders Island. In bays and estuaries, sands, clays and perhaps limestones (partly fresh water) were deposited while raised beaches and gravelly clay deposits are found along the more precipitous parts of the coast line. Such transgression took place to at least 100 feet above present sea-level, and as some of the deposits are probably still below sea-level, may have been greater.

Post-Pleistocene. Since the glacial epoch there has been considerable erosion particularly around the edges of the Central Plateau, very youthful valleys having been formed. Around the coasts there is evidence of gorge-cutting to a depth of 100 to 200 feet, due to relative elevation of the land, but this may correspond to that terminating the Pleistocene transgression.

Still later depression of the land occurred with flooding of these youthful valleys to depths ranging up to 100 feet.

The latest movement has been a relative elevation of the land to the extent of 10 to 15 feet.

In general it would appear that a pre-Miocene

peneplain was formed in Tasmania. The higher mountains of the State probably rose as monadnocks above this peneplain and may represent remnants of an older (Cretaceous) one. The pre-Miocene peneplain was partly covered by Older basalt flows and was deformed about that time and before the Miocene marine transgression.

The Pliocene period was apparently one of vigorous erosion and towards its close included a relative depression of the land with deposition of alluvial material in the lower parts of the valleys. It was brought to a close by the extrusion of the newer basalts (chiefly in the valleys) and slight elevation of the land.

The effect of the Kosciusko Epoch is not known, but any earth movements were probably differential in nature and resulted in further elevation of the Central parts of the State. A glacial epoch ensued three phases "being recognised", the first being the most intense and widespread. A slight marine transgression occurred during a part of the Pleistocene or Weerikootan time.

In general the Upper Pliocene to Recent peneplanation cannot be recognised.

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