THE BEACONSFIELD AREA.

1. GEOLOGICAL SUCCESSION

Proterozoic.

This is the oldest rock system in the area and is confined wholly to the western portion thereof. The Asbestos Range is constituted wholly of these rocks, which continue southwards for some distance beyond the area mapped. They consist of quartzites and light coloured slates, together with a lesser amount of mica-schist. They are much folded and in places contorted, especially towards the southern part of the area mapped.

Cambro-Ordovician.

Succeeding the Proterozoic rocks on the east and in faulted junction therewith occurs a very important rock system referred to the Cambro-Ordovician mainly on lithological and structural grounds. It is this system which carries the suriferous lodes of the area, and contains within it the series of sandstones, grits, and conglomerates termed the "Cabbage Tree Series". The details of the succession are given by Montgomery in the Secretary for Mines Report for 1890-91 in the section opposite page 47, if the limestone on the eastern side is omitted. Beneath the blue slate shown by Montgomery as the base of the system occur the slates and sandstones of Blue-Peaked Hill and Adams Hill, which are the lowest beds of the system at present observable. The uppermost beds of the system are those penetrated by the Tasmania Mine workings just to the west of the clay band which was found to separate this system from the limestone lying to the eastwards.

In the extreme western workings of the Tasmania Mine a light-coloured limestone was encountered. A similar bed was penetrated in the lowest level of the Moonlight workings to the northwards, as described by Twelvetrees in his report dated 30th June, 1902. These occurrences are small and inconstant lenses interstratified with the sandstones and conglomerates. The lens or lenses are clearly not continuous as the section shown in the cuttings of the Flowery Gully road, which are on the line of strike of the occurrences indicated above, exposes no limestone at all.

Silurian.

There are two separate occurrences of rocks belonging to the Silurian system in the Beaconsfield area. These occur to the east of the Tasmania Mine extending northwards and southwards as shown in the Geological Map herewith, and also in the Flowery Gully extending southwards therefrom to Winkleigh.

There is no connection between these two occurrences and they neither have any definite relationship to the neighbouring Cambro-Ordovician strata. This latter has been a difficulty in the past in attempts to fix the age and relationship of this limestone series.

In the Flowery Gully area limestones only are observable but east of Beaconsfield there occur associated sandstones, slates, and quartzites. These beds are undoubtedly the geological analogues of the Gordon River and Zeehan limestones. As will be pointed out below their occurrence in this field is due to unfolding during the Epi-Silurian orogenic folding.

Permo-Carboniferous.

Unconformably overlying the older rocks there occur the sandstones, mudstones, and shales of the Permo-Carboniferous system. These are not developed to any great thickness particularly in the central and southern portions of the area, but in the vicinity of West Arm a greater thickness seems to occur. In that locality limestones are developed, which belong to the Lower Marine series. Neither coal nor oil shale has been located and it is doubtful whether these occur in the area, as nothing higher in the system than the Lower Marines seem to be developed.

Tertiary.

A deep gutter filled with Tertiary deposits of fresh water origin runs underneath the Beaconsfield township. These deposits have been described by Montgomery, and nothing further can be added. They are shown in the accompanying geological map.

Recent.

In one or two localities deposits of sands and gravels occur which are of recent age. These are unimportant, and are also shown on the geological map.

Igneous Rocks.

Serpentine, etc.

This occurrence is shown on the geological map, but another indication of its presence was found in the bottom level of one of the properties worked at Salisbury on the Blue Tier. This rock has intruded the Cambro-Ordovician sediments and does not come in contact with the Proteroseics at the surface as there is a belt of the former rocks between the serpentine and the quartzites of the Asbestos Range.

Aplite, etc.

These acid and sub-acid rocks occur as intrusions into the serpentine. They have been described by Twelvetrees.

Diabase.

There are only two occurrences of this rock in the area mapped. One of these is on the Holwell Road, and the other, in the form of a narrow dyke, cuts the Cambro-Ordovician strata in the flat near the lower end of Flowery Gully. Both of these are shown in the geological map.

II GEOLOGICAL STRUCTURE.

Applying to this area the geological history worked out in other parts of Tasmania, it is clear that the Silurian limestones were deposited on the already folded and metamorphosed Cambro-Ordovicians.

During the Epi-Silurian orogenic folding, both these rock systems were subjected to the faulting and folding process. The two reversed or thrust faults known as the cross-courses in the Tasmania Mine were produced during the operation of the compressive forces. Movement on these planes was probably repeated at intervals in slightly different directions, as there is a component vertically and another horizontally northwards on the western side of the fault.

As the result of such folding and faulting the Silurian limestone assumed a simple folded structure overlying the Cambro-Ordovician. Denudation has removed the greater part of the limestone, but the lower parts of the troughs still remain. This gives a simulation of conformability, but it simply represents the last remaining vestiges of the lime stone in the troughs.

Following on this compressive folding and thrusting, final tensional adjustment opened the fissure now filled by the Tasmania lode. This fissure passed through the eastern cross-course with considerable deflection, but the effect of the western cross-course was sufficient to adjust the tensional forces along it. Consequently the fissure never passed through this western cross-course.

These tensional forces are still operating, as is evidenced by the fissuring that has occurred during mining operations. Such fissuring is recorded by Twelvetrees in his report written in 1902.

With this explanation of the geological structure, the conclusions stated in my previous report submitted in May last, become clear.

(Signed) LOFTUS HILLS
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Mines Department,
Hobart, 29th October, 1923.