

topography, the detailed irregularity and juvenile drainage, on the other hand, is a characteristic of the youthful stages of physiographic development.

TOPOGRAPHIC DEVELOPMENT.

Introductory Statement.

The great Canadian shield of which the Laurentian plateau is the physiographic expression constitutes one of the ancient nuclear land masses or positive elements in the earth's crust and has retained the low relief, so striking in its present topography, continuously from Pre-Cambrian time. The physiographic development of the Laurentian plateau, therefore, goes back to a very early period in the earth's history.

Geological investigation of the rocks which underlie the plateau, except in a few isolated areas, has not proceeded far enough to afford even an approximate record of its Pre-Cambrian physiographic history; and Palæozoic and later rocks deposited since Pre-Cambrian time are so generally limited in extent and range that the topographic record of the plateau during these later geological periods is necessarily fragmentary. For these reasons the following account of the topographic development of the plateau must be regarded as merely an approximate outline based on imperfect knowledge of an incomplete geological record.

Pre-Cambrian History.

Wherever the rocks of the plateau have been studied in detail, evidence has been found that during the Pre-Cambrian, just as in later geological periods, mountain-building movements accompanied by batholithic intrusions occurred from time to time, here and there throughout the plateau, and that between these uplifts, intervals of erosion occurred, with the development in some cases at least, of peneplains; but whether or not the whole plateau was mountainous at any time during the Pre-Cambrian, or whether or not any of the peneplains developed during the Pre-Cambrian extended over its whole surface, is not known.

Owing to later geological processes—uplift, igneous intrusion, denudation, and deposition—the physiographic forms developed during these early Pre-Cambrian erosion intervals, for the most part, have been long since replaced by more recent topography. In certain localities where flat-lying Pre-Cambrian sediments occur, however, the ancient erosion surfaces beneath the sediments are once more being exposed by denudation so that buried peneplains or palæoplains correspond in places with the present surface of the plateau. In this way the palæoplain beneath the Cobalt series in Timiskaming region and that beneath the Keweenawan and Animikie sediments in the region north and west