

the levels of the two lakelets. An ice barrier extending to the north and west of Covey hill caused the waters along its front to escape through the pass on the south side of the hill. When that ice barrier withdrew from the northern slope of the hill it would have at once allowed the waters to take a lower channel around the northern slope of the hill and at the same time it would have removed the barrier which on the east of the hill retained the glacial lake at its high level. It can not be supposed therefore that any part of the Gulf was excavated after the ice sheet withdrew from the northern side of Covey hill. The occurrence of the high beaches on the northwest corner of the Mooers quadrangle at a level above the lower lake in the Gulf chasm, together with the line of beaches along the northern border of the Altona flat rocks—there lying above the lower limit of these rocks—makes it reasonable to suppose that after the scouring of the flat rock spillways had been well begun there was, at least at the northern end of the Champlain valley, a local relative rise of the water level as the ice receded and this would be a consequence of the downsincking of the land in this northern region. An uplift of the country about the lower Hudson would have accomplished the same result. That there was a local change of the first description is probable since as will be brought out more fully later, the shore lines in the Champlain district are more steeply inclined to the south than are the earlier water levels between New York and Albany. The reversed direction of tilting of the land to the south which has since taken place would produce the observed discordance if the land were tilted more and more to the north while the glacial lake advanced northward in the face of the retreating ice sheet.

*Evidence from the northern face of Covey hill* [see pl. 25]. As is shown in more detail in the report on the Mooers quadrangle, the northern face of Covey hill is a critical field for the study of water levels in the upper St Lawrence valley. Mr Gilbert appears to have been the first to perceive this point and was I believe the first to make critical though unpublished observations on this interesting locality. Covey hill and the Gulf are localities at which most lines of evidence presented in this paper come to a focus; hence the various features which are there presented will be found often under separate headings in this report.