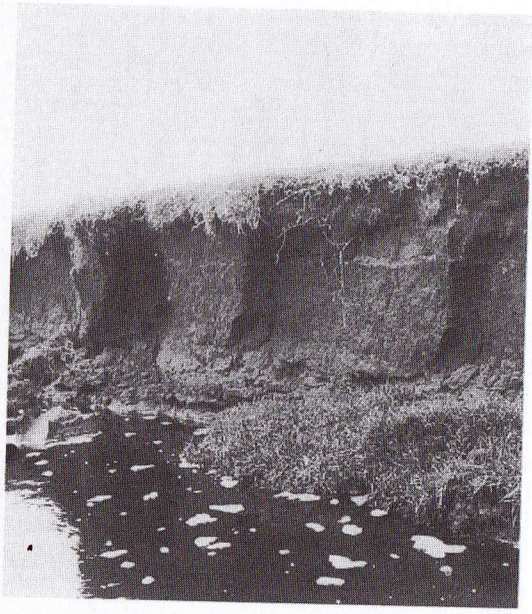
ilure of a cohe-
, River Bollin.
f failed blocks
ects the lower
on.



e channel (Plate 4.2), a process analysed theoretically by orne (1988).

eness of these several mechanisms is considerably enhanced which seeks to increase bank angle. In composite river banks material overlies non-cohesive sands or gravels, a relatively tion along rivers with alluvial floodplains, Thorne and Tovey posed a mechanism of cantilever failure. Undercutting of the hydraulic action generates an overhang or cantilever in sive layer which then fails when a critical state is reached, de of failure depending on the geometry of the overhang. as been observed under permafrost conditions where river ozen sediments and cuts a thermo-erosional niche at the ker *et al.*, 1987). The collapsed blocks produced by mass fail- on impact and be removed, or they may remain intact to by subsequent hydraulic action, meanwhile protecting the m further erosion (Plate 4.2). This pseudo-cyclic process pper bank failure, lower bank accumulation, and removal of ays an important part in controlling the form, stability and l types of river bank.

growth of ice wedges or ice crystals, *frost action* can be an nditioning process, widening pre-existing cracks and disag- e material (Plate 4.3) to leave the bank more susceptible to ck. While accepting this indirect role, Lawler (1986, 1993) rther in suggesting that frost action in the form of needle ice ocess of erosion in its own right. In his study of a Welsh river