

CHAPTER XI

Miscellanea (Cliffs, Rivers, Channels)

There remains for consideration the special treatment of certain particular types of terrain to which no detailed allusion has yet been made. These include cliffs by the sea, the banks of creeks and tidal rivers, stony river beds liable to sudden floods and migration of channel, &c. Of these by far the most important in practice are the sea cliffs, in view of their liability to erosion by the sea.

Sea Cliffs.—Two principal causes combine in the destruction of cliffs, viz. sub-aerial agencies and the undercutting of the base by direct wave action.

The sub-aerial agencies include especially land drainage, percolation, frost, and chemical action. Where these operate in the absence of wave action the face of the cliff tends to assume the angle of repose proper to the materials. By appropriate treatment, especially of the drainage from the land, such cliffs may be rendered relatively stable, for under these conditions a spontaneous vegetation will arise, protecting the surface and minimizing or obliterating all liability to erosion from rain impact and the like. The inherent tendency of all sloping ground to undergo a certain amount of slip cannot be entirely eliminated, as all hygroscopic movements of the soil must under the action of gravity tend in the downward direction. Apart, however, from special cases in which the soil becomes viscous with imbibition of water, sloping ground at the angle of repose may, if properly covered with vegetation, be regarded as substantially at rest.

The frontages where Tertiary deposits abut on an exposed