

Gully Erosion

Rill and gully erosion is due to water running off sloping ground in an uncontrolled concentrated stream. In its early stages it may appear as numerous more or less parallel small rills cutting through the soil and subsoil on land which has suffered from sheet erosion. These rills rapidly grow into small gullies which grow deeper and wider thereby causing great destruction to farming and grazing lands.

Much of the land allotted to settlement is just in balance. A stock trail on the mountain or in the valley, a timber snig track, or a wheel rut is at times sufficient to develop a deep gully, even though the land adjoining, with the same soil type, same rainfall, and vegetative cover, offers sufficient resistance to remain undamaged.

Where gullies form in rich alluvial valleys it usually means the loss of the richest and deepest soils. By the washing away of the deep valley-filling loams and their covering vegetation, a watershed is being deprived of natural obstructions to "run-off" and numerous underground reservoirs which in time of scarcity fed the main streams. With the lowering of the water table, the more nutritious and succulent types of vegetation tend to die out and are replaced by coarser and hardier types on the adjoining slopes. In floor time these eroded valleys now provide more effective drainage channels, thereby enormously increasing the carrying power and the cutting force of the current. Finally, floods released from retardation will carry heavy burdens of silt and debris to deplete reservoirs of their storage capacity or bury rich lowlands beneath barren infertile sands.

As gullies increase in size they vary in shape according to the character of the soil, from narrow bottomed "V" shaped cuts to those broader depressions with more gently rounded sides. Between these types there are those with vertical sides which cave in as the current undermines them. This type is the most spectacular, develops with great rapidity and is the most difficult to control.



9. Severe gully erosion in wheat paddock near Wychitella. Ploughing with the slope has first caused sheet erosion, though slope is not very steep, and later on gullies have developed along furrows, cutting the paddock into awkward shapes, reducing the cultivable area, and sending down large quantities of silt to cover lands below. Land owners say that production from areas has fallen off considerably.



10. Gullying at Vaughan, south-west of Castlemaine, possibly started by prospecting along the streams but now rapidly extending by headward erosion. A good example of secondary effects being more serious than the loss of land; not only is the road threatened, but the debris from this scour is being washed down to the Loddon river, to smother riverflats or choke the Laanecoorie Weir.



11. Gully through grassland at Bindi, Upper Tambo, 25 feet to 30 feet deep.



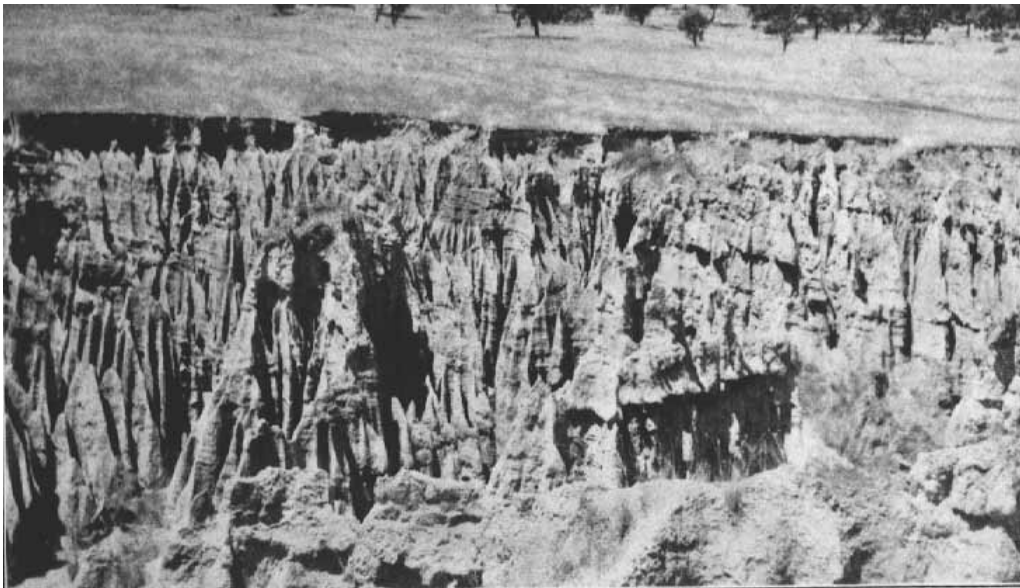
12. This gully, north-east of Benalla, has worked back for several miles through grazing properties. Structure in background was one of several installed by landholder to check it.



13. Scour in the flank of a hill near Wallan, Silurian bedrock.



14. Huggin's Gully, a scour some three-quarters of a mile long, running up from Day's Creek near Omeo. Grazing country, with metamorphic bedrock and friable subsoil, the erosion of which undermines the topsoil. Note how the tree roots have retarded scouring at one point.



15. The "Cathedrals", a huge scour in a hillslope near Towong, in the Upper Murray district. Although the catchment is not great, stormwater has in a relatively short time scoured out many thousands of cubic yards. Being formed of the wash from a granite hills, the subsoil is friable and sugary.



16. Scour below Bulla road, formed by small rectangular culvert through which storm water passes; may be seen in the left centre of the picture.



17. Head of deep scour, about half a mile long, near Toolern Vale. This is said to have started from a furrow run down a slope to lead water to a dam. It is now 15 feet deep, and has invaded a road.



18. Large gully parallel to railway embankment near Elphinstone.



19. A road in granite country, north-east of Wangaratta. The surface has been stripped off by traffic, and gulying has commenced.



26. Spring Creek comes down from the hill west of Bendigo, and used to spread over the flatter land near Derby. A drain was cut down a road, perhaps 40 years ago, to continue the waters of the creek. This has scoured till it now occupies nearly all the road.