INVASION OF FOREST LAND BY PRAIRIE ALONG RAILROADS

ARTHUR G. VESTAL, EASTERN ILLINOIS STATE NORMAL SCHOOL, CHARLESTON

The Big Four, Clover Leaf, and other railroads in central Illinois, in crossing the numerous and generally forested stream valleys, make treeless paths through many wooded areas. The rights of way in these cleared areas become vegetated from nearby plant populations, which are of three types, forest, prairie, and ruderal. The forest immediately adjoins these cleared areas, and would in most cases quickly reproduce itself if the railroad companies would allow seedling trees to reach tree size, which they do not. However, many forest herbs and certain forest shrubs, including sumac, blackberry, hazel, and Symphoricarpos, make up the dominant vegetation in such places, especially on the east side of streams, where the forests are more extensive, having there been well protected from former prairie fires, as shown by Gleason.

Certain other cleared parts of the rights of way are not far from areas of prairie vegetation, and have received abundantly the seeds of prairie as well as forest plants. In numerous small areas one finds mixed communities of prairie and forest herbs. It is probable that these mixed growths may in places be relatively enduring. The new growths of mixed forest and prairie plants which must have followed the original felling of the trees were probably unstable, as many of them now are. Their development either into forest growth minus the trees or else into typical prairie, probably depended, as it does now, upon a number of factors. Among those which favor the development into prairie are: coarse well-drained soil; considerable exposure to wind and sun, as presented by certain topographic situations; deficiency of rainfall during one critical or several successive growing seasons; and the destructive effects of burning or of mowing, both of which are common on rights

of way. The opposites of these influences would favor development into forest.

The ruderal plants are in too many places able to get in and successful in establishing themselves, forming pure weed growths or ruderal components in forest or prairie.

The forest clearings most likely to be successfully revegetated by prairie plants are those to the west of streams, since there the prairie is better preserved, and the forest fringe is narrower and broken. The right of way approaches a stream on a down grade through broken country dissected by ravines. In

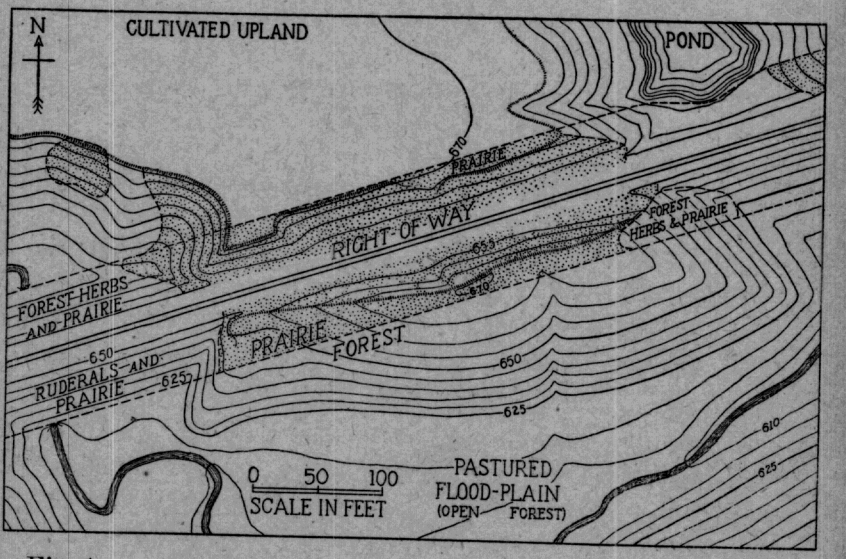

Fig. 1.

most places the original boundary between prairie and forest on the west side of streams was at or near the edge of the flat upland, but there were usually tongues or islands of prairie even in the broken country near the stream, within the general forest area. These have spread into the rights of way, occupying them almost continuously from the prairie upland to the end of the embankment which runs to or part way over the flood-plain, thus making a narrow lane of prairie through the forest. In a few places it appears that prairie vegetation is established on the east side of the stream as well.

A sample area in the broken country a quarter-mile west of the Embarras river was mapped (Fig. 1). The originally forested area, much of it still wooded, extends a third of a mile west of this area. The upland shown was probably entirely forested; it is now a cultivated field. Its steep southwest and west side-slopes are partly forested; there are rather well-developed patches of prairie also, and prairie plants among scattered trees. The Big Four railroad makes a cut eighteen feet deep through the end of this upland, and its right of way is now all prairie, both over what remains of the original surface and on the steep clay banks of the cut. Of the numerous prairie species, Andropogon furcatus, Brauneria pallida, Parthenium integrifolium, and Euphorbia corollata, are conspicuous. The hillside just over the fence from the prairie in the right of way is closely covered with trees; the boundary at the fence is quite sharp.

North and northeast-facing slopes in the right of way have the mixture of prairie and forest herbs previously mentioned. Notable plants are Smilacina (two species), Polygonatum, Taenidia integerrima, Specularia, Gillenia stipulata, and in one station, Pteris aquilina.

If the prairie growths remaining along railroads are to be of use as typifying former conditions of prairie vegetation, care must be taken to distinguish areas of original prairie from those recently developed on forest land. The rather frequent occurrence of such new growths, established as they seem to be, makes it necessary to reconsider the fairly common notion that prairie vegetation, once destroyed, is gone forever, and to realize that in its struggle for survival against cultural, ruderal, and forest plants, the prairie, in some areas at least, is putting up a not altogether losing fight.