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John L. Tilton
Simpson College

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NOTE ON CONDITIONS AT THE HEAD OF FLOOD PLAINS

JOHN L. TILTON

Flood plains are said to exist along the courses of rivers where in time of flood deposits are laid down on the flooded areas. Following such a flood plain up-stream the plain is said to become narrower till reduced to zero. In working along tributary ravines in Warren and Clarke* counties, Iowa, a different relation is noted that it appears to the writer should be emphasized. Here in the course of four to six miles gradations may be seen from the flat surface of the upland to the alluvial flood plain by the rivers. Starting with the upland, the rain water flowing along gentle depressions previously made begins to erode in spots, first by undercutting the sod here and there, the process of undercutting working headward uniting several of the eroded patches till a small gully results. Somewhat further downstream the volume of storm water is sufficient to overflow the small trench and take short cuts from one bend to the next, eroding a shallow channel by the side of and above the small trench. A little mud is deposited, but the dominant effect is here erosional. Following down this portion of a flood plain where erosion is in excess of deposition the flood plain gradually becomes wider, and gradually changes into a flood plain of the recognized type, where deposition is in excess of erosion, and where meanders begin to be evident. This gradual change is a common feature along the chief ravines in southcentral Iowa. Degradation is in progress near the heads of the ravines and aggradation is marked along the lower courses of the same ravines. In texts generally head water erosion and erosion by mountain and other streams is described, and the building up of flood plains in the lower courses of rivers, but I do not find the *gradation* from one extreme to the other treated. Along large rivers this change may not be noticeable for many miles; but here in southcentral Iowa it may be seen in the course of a few hours' walk.

DEPARTMENT OF GEOLOGY,
SIMPSON COLLEGE.