

SOME NOTES ON THE FORESTS OF OGLE COUNTY.

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The principal rocks of Ogle County are the loose and porous St. Peter's sandstone, limited to the vicinity of Rock River, and the Trenton and Galena limestones. The latter formations underlie most of the county and are covered with a thin layer of Illinoian and Iowan drift, which is rarely so much as twenty feet thick.

It is shown by Leverett that before the Glacial Epoch the channel of Rock River lay in the eastern part of the county, but at the retreat of the ice it adopted a new course, such as to occasion a rearrangement of most of the drainage channels of the county. The insignificant Mud Creek appears to be about the only pre-glacial stream in the county. Kyte River occupies its ancient valley in part, but with direction of flow reversed. Under these circumstances it will be understood that the topography adjacent to the river is very new and immature. In general, the region near the river and other important watercourses consists of a gently rolling upland trenched by narrow and deep ravines.

The soil is the alternation of loam and clay common to glaciated regions, together with some limestone residual soil and the sand along the river arising from the disintegration of the sandstone. The most marked contrast is between the rich black soil of the gently rolling prairies remote from the river and the humus-poor clays of the rapidly eroding area nearer to the streams.

Consideration is here given principally to that part of the county lying west of Rock River and south of Mud Creek, including the basins of Mud Creek, Pine Creek, and adjacent parts of the valley of the river.

PLANT SOCIETIES.

Any consideration of the prairie societies is excluded by the scope of this paper. There may be distinguished four forest associations: (1) Oak, (2) Maple, (3) Pine, (4) a characteristic Bottom Association. Only the first and fourth are of general occurrence. In the absence of suitable physiographic situations, swamp forests are wholly wanting from the part of the region under consideration.

1. *Oak Association.*

The oak association is the characteristic one of the country—

it everywhere gives character to the woodland. The list of trees occurring in it with sufficient frequency to be considered a part of the general formation includes the following: *Quercus velutina*, *Q. coccinea*, *Q. alba*, *Q. macrocarpa*, *Q. rubra*, *Q. Muhlenbergii*, *Carya ovata*, *Prunus serotina*. If one may venture an opinion from the fragmentary data now available, the following would appear to be the original distribution of the species mentioned.

(a) A group of relatively xerophytic species occupied the rapidly eroding lands and formed a zone of considerable width on the prairie side of all forested areas. The Black and Burr Oaks and the Shellbark Hickory are most prominent. Wherever the original line of contact between the prairie and the forest can yet be found, the Burr Oaks make up the outer fringe, and where cutting has exposed the Black Oaks to the sweep of drying westerly winds they are usually dying.

(b) A more mesaphytic group (*Q. alba*, *Q. rubra*, *P. serotina*) occupied most of the forested region not yet deeply eroded, showing a tendency to occur also in the more protected central part of large forests, the margins of which were occupied by Black and Burr Oaks.

2. Maple Association.

So far as the present conditions of the timberland show, the maple formation is restricted to an area of less than a square mile near the head of Mud Creek and a similar area reported from Kyte River. The latter I have not been able to visit. It will be recalled that, according to Leverett, the valleys of both streams are preglacial, and in this particular the situation differs from that of most other forest areas in the county.

This association is doubtless to be correlated with the Beech-Maple formation of other localities. The most plentiful species are *Acer sacharum*, *Ulmus americana*, and *Fraxinus americana*. *Ostrya virginiana* is almost as common as the preceding, and there are many large trees of *Quercus alba* and *Q. rubra*. *Tilia americana*, both species of *Juglans* and a few specimens of *Prunus serotina* make up the remainder of the forest. Beech is of course wholly absent. Abundant seedlings of basswood, elm, ash, *Ostrya* and maple promise a continuation of the same type of forest if properly protected. The oaks and the wild cherry, mostly mature trees, are doubtless to be interpreted as relics of a former condition not yet wholly past.

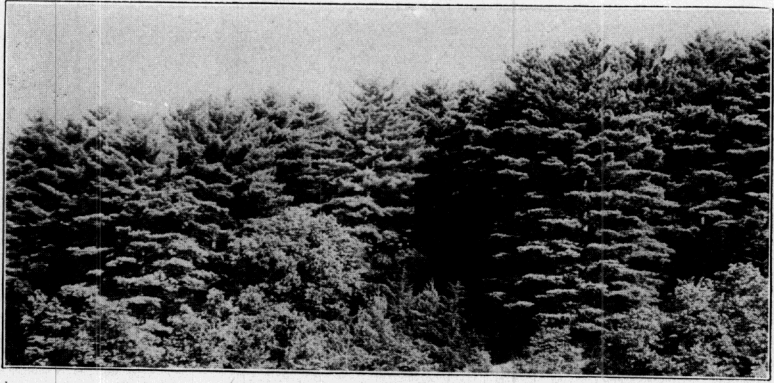


Figure 1. Grove of White Pine on Pine Creek near C. B. & Q. railway bridge.

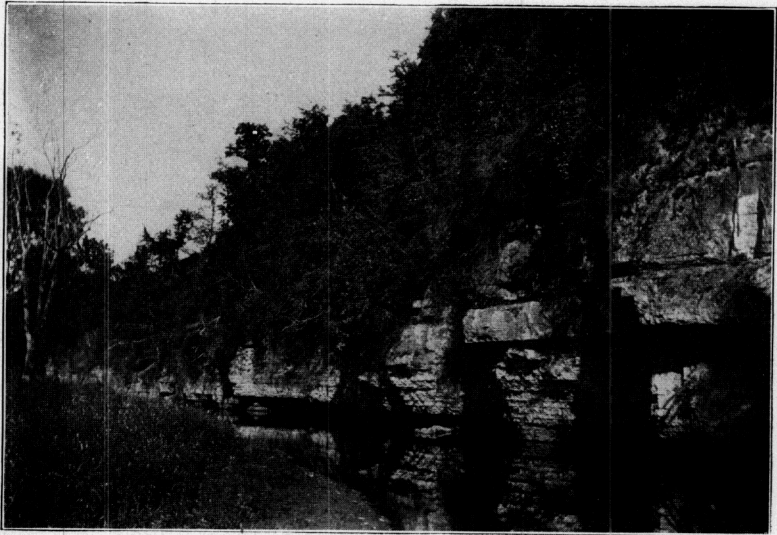


Figure 2. Bluff overhanging Pine Creek. *Acer*, *Tilia*, *Ostrya*, *Taxus*, *Cornus*.

It can hardly be doubted that this formation is a pioneer rather than a relic, and therefore an expression of the climate of the region. In the course of nature it would doubtless have become the dominant type in much of the region.

3. *Pinus strobus*.

The most unusual feature of the plant geography of Ogle County is the occurrence within its limits of a grove of unmixed White Pine. This species contributes a very picturesque feature to the scenery of Pine Creek but is not numerically important, with this single exception. On the eastern side of the cañon-like valley of the creek immediately south of the C., B. & Q. Railway the bluffs are occupied by a fine growth of pine which is so dense as to exclude every other tree and shrub. The grove covers about twenty acres. Adjoining it, on the same side of the creek, is a rectangular timber lot of about 160 acres, much of which is not pastured. This growth consists almost wholly of white oak, though there are a few scattered cherries and pines. The undergrowth is unusually heavy, including, besides the young oaks, *Cornus*, etc., which is common in such places, also a really surprising growth of young pines of all sizes. In many places they are literally coming up like grass.

It is evident that if the pines are here a disappearing type, it cannot be because the factors of soil and climate are unfavorable to them, and one feels in looking at the sturdy growth of young pines that they stand about as good a chance as the young oaks of conquering the region. It is the testimony of old residents that this grove did not exist in early days but that it has been produced naturally since the settlement of the country. It is said to be less than seventy years old, and this is corroborated by the age of the trees and other biological evidence.

So far as the writer is informed, this is the only stand of the species in the State. Associated as it is with scenery of great natural beauty, it is to be hoped that some way will be found to preserve this unique feature from destruction.

4. *Bottom Associations*.

The bottom associations are such as are familiar everywhere. I shall merely remark that they show no points of special interest excepting that the scarcity of sycamore, hackberry and cork elm indicates that this may be near the northern limit of these species in the valley of Rock River.

THE LIMESTONE CLIFFS.

There are certain peculiarities in the zonation of the vegetation on the limestone cliffs which must be mentioned, since the same phenomena seem not to have been noted in descriptions of similar regions. The Galena formation on Pine Creek furnishes the best examples.

The course of Pine Creek is entrenched in a generally horizontal upland. Vertical cliffs of considerable height are common. On the upland above one of these cliffs is commonly found the usual oak forest, and this approaches to within a few rods of the cliff. At about the point at which the surface begins to round downward to meet the vertical face below, the trees are replaced by a very xerophytic grass and shrub zone of which a characteristic member is *Physocarpus*. Below the *Physocarpus* zone, and immediately above the vertical face of the cliff, where the slope is so steep that only a few handfuls of soil are able to find lodgment in the crevices, is an assemblage of mesophytic plants. The most characteristic forms are *Tilia*, *Ostrya*, *Acer saccharum*, *Taxus canadensis* and *Cornus stolonifera*. *Pinus* and *Juniperus* may also be present. *Taxus* is practically restricted to this sort of habitat. *Tilia*, *Ostrya* and *Acer* occur together here as on the talus slopes and in the climax forest. *Ulmus* may also be found. Beneath this zone there is the bare vertical rock face bearing only the usual very limited vegetation.

There are no experimental data upon which to base an explanation of the occurrence of a mesophytic society at the top of a cliff, but general observation leads to the following suggestion. The water table must fall as it approaches the cliff, but owing to the heavy bedded character of the underlying rocks, it does not fall rapidly. The much larger number of horizontal channels than vertical ones leads the percolating waters in an almost horizontal direction. The water-table therefore falls far enough below the surface near the edge of the hill to make its shoulder rather xerophytic, but intersects the steeper lower slope near the top of the vertical face. The steepest slope is therefore the dampest and the vertical face may in wet weather become a dripping cliff. The argument is strengthened by the independence of this plant formation of all accidents of exposure, or any other factor of the sort and its persistent recurrence upon every cliff of this description, large or small. Its complete correlation with this peculiar physiographic situation would indicate that its explanation is to be found within the substratum.

The sandstone cliffs on Rock River are quite in contrast. These cliffs are porous. On their tops stunted pine, cedar and black oak are almost alone. Basswood, maple, hop hornbeam and yew are *never present*, and the growth is never dense.
