

2. The achenes of the earlier and later flowers are as a rule not viable.
3. The seedlings are especially sensitive to heat and temperature changes.
4. The period of the vitality of the achene is rarely more than two years.

Detailed report is reserved until more extended experiments are made.

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THE MYCORRHIZE OF APLECTRUM. BY D. T. MACDOUGAL.

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THE TENDRILS OF ENTADA SCANDENS. BY D. T. MACDOUGAL.

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THE ERICACEÆ OF INDIANA. BY ALIDA MABEL CUNNINGHAM.

In determining the distribution of the Ericaceæ in Indiana there is encountered the same difficulty as in the case of so many other families. A complete and thorough botanical survey of the State would be a task involving untold labor, and, however enthusiastic the collector, the time and expense involved in such an undertaking will necessarily delay for some time the accomplishment of the work. As a result, comparatively few localities in the State have yet been fully reported. But it is a matter of still greater regret that so much of the work done in the past has been a mere waste of energy, the reports left so incomplete, and even the name of the worker, in many cases, is unknown. The last State catalogue\* reported twenty species of Ericaceæ and six have since been added by various collectors. These species represent nineteen counties, and eleven have no collector named from any county in the State.

The only species I have been able to find in Tippecanoe County is *Monotropa uniflora* L. In the summer of 1895 I found eight specimens. They were growing in a thick growth of timber, chiefly white oak and black oak, on a heavy clay soil. The next year the same timber land was visited and they were found there of the most perfect character and in the greatest profusion all over the tract of

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\* Of these twenty species, *Oxydendrum arboreum*, D. C., *Kalmia angustifolia* L., *Rhododendron nudiflorum* Torr., and *Pyrola secunda* L. are not found in Monroe County, as recorded in the State catalogue, and are to be excluded from State Flora. This leaves the number of known species twenty-two.

land; while last summer, 1897, but two specimens were discovered, and they very imperfect ones. It is probable that the difference in their occurrence was due to the varied supply of moisture. The summer of 1895 was unusually dry, while in 1896 there was an extremely heavy rainfall a few days prior to the appearance of the plants, and 1897 being again exceptionally free from moisture. However, this species has a greater distribution than has any other one found in the State, being reported from fourteen different counties.

The following list represents the different species reported as found in the State:

*Gaylussacia frondosa* Torr. and Gray is reported from Clark county only. (B. and T.).

*Gaylussacia resinosa* Torr. and Gray. Reported from Jefferson county (C. R. B.), Monroe county (W. S. B.), Clark county (B. and T.), Noble county (Van G.), also in counties about Lake Michigan.

*Vaccinium* is represented by seven species.

*Vaccinium stamineum* L. is reported from Johnson county (C. R. B.), Clark county (B. and T.), Monroe and Lake counties.

*Vaccinium Pennsylvanicum* Lam. Monroe and northern tier of counties.

*Vaccinium vacillans* Solander. Reported from Lake county.

*Vaccinium corymbosum* L. is reported from Cass county only, by Mr. Hessler.

*Vaccinium corymbosum* var. *pallidum* Gray. Reported from Noble county (Van G.) and from Lake county.

*Vaccinium oxycoccus* L. Only record is in Lake county.

*Vaccinium macrocarpon* Ait. Reported from Cass county (R. H.), Noble County (Van G.), Jay county (P.).

*Arctostaphylos Uva-ursi* Spreng. Counties about Lake Michigan.

*Epigaea repens* L. is reported from Monroe county (W. S. B.), Laporte County (McD.), "Montgomery and Lake counties."

*Gaultheria procumbens* L. is reported from Cass county (R. H.), Noble county (Van G.). "Counties about Lake Michigan."

*Andromeda polifolia* L. is a northern form, being reported from Cass county (R. H.), Noble county (Van G.).

*Cassandra calyculata* Don. is another northern form, and is reported from Cass county (R. H.), Noble county (Van G.), and "counties about Lake Michigan."

*Kalmia latifolia* L. Reported from Monroe county only.

*Chimaphila umbellata* Nutt. Reported from the following counties: Noble (Van G.), Jefferson, Monroe and Lake.

*Chimaphila maculata* Pursh. is reported from Putnam county (McD.), Franklin county (M.), Jefferson and Monroe counties. "Counties about Lake Michigan."

*Pyrola chlorantha* Swartz is reported from Lake county by E. J. Hill.

*Pyrola rotundifolia* L. Found in Noble county by Van G.; also reported from Lake county.

*Monotropa uniflora* L. is reported from the following counties: Franklin (M.), Clark (B. and T.), Jay, Delaware, Randolph and Wayne (P.), Putnam (McD.), Monroe (W. S. B.), Jefferson (J. M. C.), Cass (R. H.), Noble (Van G.), Gibson and Posey (S.), Tippecanoe (A. M. C.).

*Monotropa hypopitys* L. is reported from the following counties: Clark (B. and T.), Noble (Van G.), Vigo and Monroe (W. S. B.), Cass (R. H.), Franklin (M.), Jefferson and Monroe.

In the distribution of the Ericaceæ throughout the State we find the following species confined entirely to the northern part, *i. e.*: *Vaccinium corymbosum* L., *Vaccinium Orycoceus* L., *Arctostaphylos Uva-ursi*, Spreng., *Andromeda polifera* L., *Cuscuta calyculata* Don., and *Pyrola chlorantha* Swartz.

*Gaylussacia frondosa* Torr. and Gray is found only in Clark county (B. and T.).

The remaining species, with the exception of *Kalmia latifolia* L., are of general distribution.

#### INDIANA'S GENTIANACEÆ. BY ALIDA MABEL CUNNINGHAM.

Gray's Manual includes ten genera of Gentianaceæ, seven of which come within the range of Indiana; therefore, we might reasonably expect to find one or more species in nearly every county in the State. Unfortunately a comparatively small portion of the State has, as yet, been thoroughly botanized, and we find reports from only nineteen of the ninety-two counties. As reported the range by counties is from Lake on the north to Clark and Jefferson on the south, and from Jay on the east to Vigo on the west.

The reports show that six genera and fourteen species have been found in Indiana. Of these the genus *Gentiana* is represented by eight species, leaving the remaining six species to represent five genera.

Of the different species named in the list below but four have come under my own personal observation, and in the reports of some of the others I find wanting much that is required to make them of any great value. For instance, those reported from Marion, Harrison and Washington counties fail to show when or by whom collected. Other counties, however, report the same plants with