

THE GRASS FLORA OF ILLINOIS

EDNA MOSHER, UNIVERSITY OF ILLINOIS

The grasses of the State have been listed several times in connection with various published floras of the State, but as far as I know only one paper has been devoted solely to this subject. This is a paper by I. A. Lapham of Milwaukee, who in 1857 listed and described 50 genera and 114 species of grasses, excluding those cultivated for grains. He also published a flora of the State in the same volume of the Transactions of the Illinois State Agricultural Society. Additions to this list were made from time to time by Dr. Brendel, M. S. Bebb, S. B. Mead and Dr. Vasey. The first extensive local flora was published by H. H. Babcock of the plants found around Chicago. He listed 58 species of grasses. H. N. Patterson of Oquawka published a flora of the State in 1876, in which he included 52 genera of grasses and 124 species. In 1878 W. C. Flagg compiled from these previous lists a flora of Illinois, having in addition some material collected by Dr. Burrill and others in the vicinity of the University. He included 55 genera and 139 species of grasses, which is probably the largest list of grasses of the State up to the present time. There have been a number of other local lists published. Some of them contain very few grasses. The most important of the local lists are Dr. Brendel's of Peoria, in 1887, including 70 species of grasses, a flora of Cook county by Higley and Raddin, including 85 species, and a flora of LaSalle county by Huett with 79 species. In undertaking to work over the grass flora of the State, the collections of the previously mentioned writers have been consulted as far as possible.

The University of Illinois has many specimens collected by Mead, Webb, Vasey, Hall and Patterson, beside the entire collections of Dr. Brendel of Peoria, Dr. Schneck of Mt. Carmel, and Dr. Welsch of Mascoutah. The later collections of V. H. Chase of Stark county, F. E. McDonald of Peoria, and Chas. Robertson of Carlinville, contained many interesting species. The Field Museum in Chicago contains Patterson's entire collections with many others collected by Wolf, Mead, Bebb and others. Babcock's herbarium is at Northwestern University and has been consulted, but the entire collections of Dr. Vasey have not been seen nor that of Prof. E. J. Hill of Chicago, who has made some new records for the State.

A careful study of this material succeeded in verifying 125 out of the 139 species mentioned in Flagg's list, which includes practically everything mentioned by other authors.

There are in all, 22 species reported from Illinois of which no authentic material has been seen. Some of these are reported in Gray's Manual and Brittain and Brown's Illustrated Flora as occurring in Illinois, but no Illinois specimens are found either in the Gray Herbarium, the New York Botanical Garden, nor the herbarium of the U. S. Department of Agriculture. Many of these were plainly wrong determinations, but others may yet be found when more material is examined.

Of the 125 species mentioned in Flagg's list there are 25 species introduced from Europe. My own list at present contains 187 species, of which 36 are introduced, making 62 species more than have been reported in a State list up to this time, or an increase of 50 per cent. It will perhaps be interesting to consider for a moment where these 62 new species have been obtained. As is well known, the majority of species in our Illinois flora belong to genera which are most abundant in warmer climates and of our 151 species native to Illinois, two-thirds belong to genera which are most abundant in the southeast and some are also found in Mexico. Nearly all of our species found in sandy or very dry soil have such an origin, and these, for the most part, are confined to such areas throughout the State. Apparently they have spread from one sand area to another, but of that we have no certain knowledge. Such are most species of the genera *Sporobolus* and *Aristida*, some *Panicums*, certain *Eragrostis* species, *Triplasis purpurea*, *Cenchrus carolinianus* and many others. Of the remaining third we have a large number which are found all over the eastern United States, such as *Andropogon scoparius*, *Seersia oryzoides*, *Festuca octoflora* and others. In the northern part of the State, particularly around the lakes, we have several species which are more abundant to the north of us, such as *Phalaris arundinacea*, *Ammophila arenaria*, *Bromus Kalmii* and others. We have very few typically western forms, probably our *Bouteloua* species are more so than any others in our grass flora.

Of these 62 species not included in the earlier lists 9 are species introduced from Europe. These include *Bromus incanus* and *tectorum*, the latter of which is spreading very rapidly in the State, *Lolium tementulum* or bearded darnel, *Hordeum nodosum*, *Panicum miliaceum*, the old world millet, *Arrhenatherum elatius* or tall oat grass, *Helochloa schoenoides* and *Sorghum halapense* or Johnson grass, which has

been cultivated in the south and has been found in various localities in the state and as far north as Chicago. A few species have apparently come into Illinois from neighboring States, and the most remarkable fact is that most of them come from the west. Among these are *Agropyron tenerum* and *Smithii*, *Bromus pumpellianus*, *Sporobolus asperifolius* and *Hordeum Pammelii*. Another *Agropyron* species, *dasy-stachum*, has come in from the north, while the south has given us *Agrostus Elliotana*, *Muhlenbergia capillaris*, *Sporobolus clandestinus* and *Eragrostis Wiegeltiana*. Most of these have never been reported from the State. The majority of new species, however, has come from revision of material collected by the early botanists, a great deal of which had not previously been determined. The genus *Panicum* has made the greatest gain as to number of species, now including 34 instead of 9. These have all been published by Hitchcock and Chase in their revision of the genus. The genus *Sporobolus* gains 7 new species, *Paspalum* 4, *Aristida* 2, and *Poa* 2. Of the *Poas* one is the rare species *P. wolfii*, the type of which was collected in Illinois, the other native species, *P. Chapmaniana*, which resembles the introduced species, *P. annua*, so much that they are usually all labelled *annua* in the various collections examined. Dr. Brendel, Peoria, had noticed the difference, however, and his specimens of *Chapmaniana* were all unnamed with a note "A *Poa* with the habits of *annua* and the spikelets of *pratensis*," which is a very good definition of the species.

There have been many species collected in adjoining States very near the boundary lines which may occur in Illinois now, but have never been collected. In fact, there are representative collections from very few counties in the State and from nearly half the counties there are no specimens at all. It seems quite probable, with further study of the material in existence and with new collections which may be made, that the number of grasses now occurring in Illinois, or that have occurred here, may be very materially increased.