

NOTES ON GRASSES.

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In order better to understand the relationships of the maize plant the writer has for several years carried on a taxonomic study of the grasses as a group, this work necessitating a somewhat thorough examination of the floral structures of many species. In these studies there have been observed a number of characteristics which might significantly be included in descriptions or considered in studies of the evolution and relationships of the grasses. The purpose of this and succeeding papers is to place on record some of these peculiarities.

1. The habitat of *Paspalum repens* Berg.—This plant is abundant along the banks of Eel River at the northern edge of Greene County, Indiana, this marking the most northern occurrence of the species that has been reported for the State. The plants in this location differ from most descriptions of the species in being distinctly terrestrial. This locality has been under observation nearly every year since 1918, and although conditions for growth of the plant in the water are ideal, not a single specimen has thus far been found in the water. They occur rather in shady places, on rich, moist sandbars, five or six feet above the ordinary level of the water at this season. The plants are more erect than those seen elsewhere in the typical habitat, and the sheaths are little or not at all inflated.

2. Laminate lemmas in *Phleum pratense* L.—On a hill near the Indiana University waterworks reservoir, northeast of Bloomington, Indiana, there have been observed in September and October for four or five years, timothy plants whose inflorescences are more or less rough and leafy in appearance. Examination of these shows that the lemmas of many of the spikelets have well developed leaf blades and ligules. The flowers of these spikelets seem to be normal, and partly developed seeds have been found in a number of them.

In the cases observed, several spikelets were missing from the lower part of each abnormal inflorescence, the mutilation resembling the work of grasshoppers. The presence of numerous bacteria in the minute yellowish exudations from the scars left by the removal of these spikelets, however, suggests the possibility of a diseased condition, which might also account for the unusual development of the lemmas.

Cases similar to this have been reported for other grasses. Britton and Brown¹ note that in arctic regions and in the mountains of New England there is found the so-called variety *vivipara* of the species *Festuca ovina* L., "with the scales wholly or partly transformed into small leaves." Kerner and Oliver² mention several, chiefly arctic, "viviparous" grasses, in which small plants develop in the spikelets. Collins³ has reported a similar occurrence in maize. This anomaly in timothy is probably an expression of the same tendency of floral struc-

¹ Illustrated Flora, 2d Ed., Vol. 1, p. 271, 1913.

² Natural History of Plants, 2:818-820, 1895.

³ Contributions from the National Herbarium, 12:453-456, 1909.

tures to revert to a vegetative condition. A detailed comparison of these different grasses showing the anomaly would make an interesting study.

3. Sex in the sporophyte of *Eragrostis hypnoides* (Lam.) B.S.P.— This species, which is a prominent part of the floras of muddy sand-bars in late summer, is generally described as dioecious, and as such it was thought to offer promising material for experimental work. However, an examination of several hundred specimens from three localities in Indiana, and one in Georgia, showed not a single imperfect-flowered specimen. In the variety *capitata* of this species there is said to be a pronounced difference between the staminate and pistillate spikelets, but no specimens of this have been available for examination.

Duplicates of the specimens of *Paspalum* and *Eragrostis* upon which these notes are based were identified by A. S. Hitchcock.