

## FURTHER NOTES ON TIMOTHY RUST.

By FRANK D. KERN.

At the last meeting of the Academy, November 27, 1908, the writer presented a short paper on "The Rust of Timothy,"<sup>1</sup> in which the history of its occurrence in this country was discussed and its distribution at that time was given. The remark was made, although not incorporated in the paper, that this rust had not yet been reported from Indiana but that it was becoming more general in its distribution and might be expected here sooner or later. Since this prediction has come true within the year it is considered worthy of mention at this time. A collection consisting only of summer spores (urediniospores) was made in October, 1909, near Columbus, Indiana.<sup>2</sup> Last year the fungus was known in states both east and west of Indiana, so that while this report does not extend the range geographically, it is nevertheless of especial interest since it is the first definite information we have of its advent into the State. A second collection made in November at the same locality shows also a few winter spores (teliospores). It is of further interest to note that where the rust was found it was low ground with unusually rich soil. The place was originally a wet swamp but is now tile-drained. None was found on the high land adjoining. Low regions furnish more moisture in the atmosphere surrounding the plants, especially at nights, and this means better conditions for the germination of the spores.

In the paper read last year it was said that this rust was seemingly increasing in its distribution. The season of 1909 has proved the correctness of this prediction. A specimen was collected in September, 1909, in Maine by Dr. J. C. Arthur. This is the first collection that the writer has seen from the New England states. Last year Wisconsin was the most western state which had reported the rust. This year it has been found as far west as Minnesota, according to a report recently received from an official of the U. S. Department of Agriculture.

<sup>1</sup> Only an abstract of this paper appeared in the Proceedings of the Academy for 1908, p. 85, but it was published in full in *Torreya*, a Journal of the Torrey Botanical Club. Vol. 9, pp. 3-5, Jan., 1909.

<sup>2</sup> This collection was made by Mr. C. G. Hunter, on his farm near Columbus, and communicated by him to the writer.

The present known range is from Maine west to Minnesota, south to West Virginia and Indiana. Collections from the following states have been examined by the writer and are represented by specimens in the herbarium of Dr. J. C. Arthur at Purdue University, where the writer has carried on the major part of his studies. The collectors' names are included in parentheses.

Delaware (*Jackson*).

Indiana (*Hunter*).

Maine (*Arthur*).

Michigan (*Arthur, Kern*).

New York (*Webber, Reddick, Edgerton, Stone*).

Ontario (*Arthur, Dearness*).

Pennsylvania (*Sunshine*).

West Virginia (*Sheldon*).

Wisconsin (*Davis*).

During the year no additional facts have been brought out which throw any light on the specific standing of the timothy rust. The writer is still of the opinion that it is not entitled to specific rank and would include it under *Puccinia poculiformis* (Jacq.) Wettst. (*Puccinia graminis* Pers.) The statement made last year could, perhaps, be somewhat modified. Rather than calling it a race, physiological species or form species, it might be better to consider it a variety or subspecies since it does, as previously pointed out, possess some slight morphological differences from the typical form, particularly in the smaller aëcial cups and the more delicate uredinial mycelium.

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