

GRASSES
OF
NORTH AMERICA



FOR
FARMERS AND STUDENTS

COMPRISING

CHAPTERS ON THEIR PHYSIOLOGY, COMPOSITION, SELECTION, IMPROVING,
CULTIVATION, MANAGEMENT OF GRASS LANDS; ALSO CHAPTERS
ON CLOVERS, INJURIOUS INSECTS, AND FUNGI.

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PREFACE.

This volume may appear fragmentary and disconnected and may contain repetitions, and there may be important omissions. This is partially owing to the fact that much of the work has been performed at odd hours, sometimes with many days intervening. A full index will enable any one to find the topics which are mentioned.

It is hoped that the farmer or general reader who has never studied botany, will find much to interest and help him, while it is believed the agricultural student will find still more.

While many points are mentioned and illustrations freely used, no attempt has been made to write a complete account of the structure and physiology of grasses.

Although not grasses, after some misgivings of the author, a chapter on clovers was added, because the farmer would doubtless be disappointed if he did not find one.

An effort has been made to give credit to everyone who has been of much assistance in contributing to the volume, first, because it is due to such persons, and second, because if accurately quoted, it makes them responsible for the statements which are made.

In the chapter on bibliography will be found most of the sources of information, aside from the studies and experiments of the author. I have freely used, without quotation marks, my own contributions made at various times during the past seventeen years, to the Rural New Yorker, Philadel-

phia Press, New York Tribune, Prairie Farmer, the Clover Leaf, also using my reports as printed in the Michigan Board of Agriculture. Liberal quotations have been made from the publications of Baron J. B. Lawes, Charles Darwin, Maxwell T. Masters, George Bentham, Wm. Caruthers, Prof. James Buckman, Dr. A. Voelcker, of England; M. J. Duval-Jouvé, of France; Ernest Hackel, of Germany; J. S. Gould, C. W. Howard, Dr. D. L. Phares, Joseph Harris and J. B. Killebrew, of our own country.

My colleague, Prof. A. J. Cook, contributed the long and valuable chapter on Insects Injurious to Grasses and Clovers, while Prof. William Trelease, D. Sc., contributed that on Fungi injurious to the same orders of plants.

My friend, Prof. F. Lamson Scribner, has shown much interest in the work, and to him I am especially indebted for many of the excellent drawings of grasses. Mr. G. B. Sudworth also made many drawings and copied others.

The Levytype Company, of Philadelphia, and the Lewis Engraving Company, of Boston, prepared most of the plates from the drawings illustrating the work.

Frequent quotations have been made from the Rural New Yorker, Country Gentleman, New York Tribune, Prairie Farmer, Farmers' Review, and many agricultural reports of this country and of Europe.

The following persons also prepared more or less manuscript for these pages, and credit is given on the pages where the contributions appear: Prof. E. M. Shelton, of Kansas; Dr. H. P. Armsby, of Wisconsin; Prof. C. G. Pringle, of Vermont; Dr. C. E. Bessey, of Nebraska; Prof. J. J. Thomas, Major H. E. Alvord, Prof. I. P. Roberts, Dr. E. L. Sturtevant and J. S. Woodward, of New York; A. W. Cheever, of Massachusetts; Prof. J. W. Sanborn, of Missouri; Prof. F.

A. Gulley, of Mississippi; Professors Latta and Troop, of Purdue University, Indiana.

The following list should be added as freely quoted: Prof. F. L. Scribner, Clifford Richardson and Dr. G. Vasey, of Washington; Dr. R. C. Kedzie, of Michigan; Dr. A. Gray, Prof. N. S. Schaler, and Prof. F. L. Storer, of Massachusetts; Secretary W. I. Chamberlain, now president of Iowa Agricultural College; Mr. L. N. Bonham, of Ohio; E. S. Carman, of New York; Prof. Wm. Brown, of Ontario; Prof. G. E. Morrow, of Illinois, and Mr. De Laune, of England.

For reading portions of proof I am indebted to my colleagues, Prof. A. J. Cook, Dr. Lewis McLouth, Prof. E. J. MacEwan, Prof. L. H. Bailey, jr., also to Prof. V. M. Spaulding, of Ann Arbor, and Prof. F. L. Scribner, of Washington. Thorp & Godfrey, of Lansing, Mich., are credited with the mechanical part of the work.

A second volume is in preparation. This is to contain the description of all known grasses of North America, 700 or more species, with illustrations of one species in each genus, and in some cases more than one. Full notes in regard to their value for cultivation will be given. A chapter on Geographical Distribution and other information likely to interest the student of grasses will be presented.

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