North Dakota Honors Two Agricultural Scientists

THROUGH the generosity of Mr. Arnold M. Christensen, of Minot, North Dakota, clay busts of Dr. H. L. Bolley, botanist and plant pathologist of the Experiment Station and of Dr. L. R. Waldron, plant breeder, were presented to the Institution at the Fiftieth Spring Commencement held May 22, 1944. The busts, modeled from North Dakota clay, were the work of Mrs. Ida Bisek Prokop, sculptress, of Lidgerwood, North Dakota. Suitable stands for the busts were designed by Mr. Knute Henning of the NDAC Department of Architecture and were presented by the Greater North Dakota Association.

Henry Luke Bolley

The first Annual Report of the Agricultural Experiment Station dated February 1, 1891, lists H. L. Bolley, M.S., as the botanist of the Experiment Station. Bolley joined the staff of the North Dakota Agricultural College in 1890. He did his first work in the basement of one of the Fargo College buildings before any building was yet erected on the Agricultural College campus. He came to North Dakota from Purdue University in Lafayette, Indiana, from which institution he graduated with a B.S. in 1888 and an M.S. in 1889. After serving Purdue for a short time after graduation he became one of the first five founders of the Station staff which included H. E. Stockbridge, Ph.D., director; E. F. Ladd, B.S.. chemist; T. D. Hinebauch, M.S., V.S., veterinarian; C. B. Waldron, B.S., arboriculturist; and H. L. Bolley, B.S., botanist. These men, of whom only Bolley and C. B. Waldron are living, became the first permanent staff of the Station on October 16, 1890. W. M. Hays, the first agriculturist, did not arrive until 1891.

Henry Luke Bolley, who may justly be called one of the founding fathers in agricultural science in America, is known throughout the world as a plant pathologist and botanist of the first rank. The first edition of "American Men of Science" stars Bolley on its list of the thousand leading men of science in America, as one of the 100 botanists on that list. Ten leading students of botanical science rated the order of merit of each of the 100 botanists, assigning a No. 1 rating to Dr. Bolley. Bolley's name and accomplishments are listed in detail in American Men of Science, in Who's Who in America, and in Bailey's "'Rus", the biographical list of agricultural leaders in America.

Bolley's place in American science and agriculture is secure for many reasons, the chief of which follow:

(1) Discovery of the parasitic cause of potato scab and the development of the corrosive sublimate treatment for its control.

(2) Discovery of the parasitic cause of flax wilt, and development of methods of natural selection in getting wilt-resistant varieties.

(3) Selection, breeding, and distribution of new varieties of flax including NDR 52, NDR 114, Buda, Bison, B-Golden, Victory (No. 5585), No. 5128, and other valuable strains. He has been assisted by O. A. Heggeness since 1922. His work and that of his associates has led to the conquest of two of the worst diseases of flax, wilt and rust.

(4) Selection in Russia of the first hard spring wheat stocks having a degree of stem rust resistance. Kota wheat traces to this selection.

(5) Selection in Russia of the highly stem rust resistant red durum D-5 (Pentad) and of the D-1 durum (Monad).

(6) Application of formaldehyde solution as a practical measure for the control of oat smut and stinking smut (bunt) on wheat.

(7) Author of the North Dakota barberry eradication act (1916-1917).

(8) Author and administrator of North Dakota pure seed laws 1908-1929. The potato producers of North Dakota as well as the producers of certified seed grain owe him a debt they can never pay. Their industry now rests secure upon the solid foundation he built.

(9) Advocate of soil sanitation—a special student of the numerous blight and rot fungi which infest the soil. His bulletin 107 on Soil Troubles and Seed Deterioration, on Causes of Soil Sickness in Wheat Lands, on Possible Methods of Control, and on Cropping Methods with Wheat, published in 1913, demonstrated that purifying the soil and the seed are the first steps toward maintaining high yields of good quality. The soundness of his reasoning has gained wider acceptance with the passing years.

(10) Tester and early advocate of the use of chemicals in control of weeds.

Some men are able to make only one scientific contribution of importance in a lifetime—Bolley has ten important major contributions to his credit, not to mention a long list of other contributions and of service to the Station, the College, and to the farmers of the State and nation. And the end is not yet for he still has an unflagging interest in the possibility of getting still better varieties of flax and continues to work toward that end.

Lawrence Root Waldron

Lawrence Root Waldron, plant breeder, was born in Michigan. He followed his elder brother, C. B. Waldron to North Dakota where

he enrolled in the N.D.A.C., graduating in 1899. He then returned to the Michigan Agricultural College, from which institution he received the M.S. degree in 1902. He completed his post graduate studies later at Cornell University, where he was awarded the Ph.D degree in 1928. Waldron was an instructor in botany at the N.D.A.C. from 1899 to 1905, when he was named superintendent of the Dickinson (N. Dak.) substation, which position he held until 1916, when he was called to the main Station at Fargo to serve as plant breeder.

Dr. L. R. Waldron's reputation as a plant scientist has reached far beyond the borders of the United States—the high quality of his work was recognized internationally in 1933 when he was elected a fellow of the Linnaean Society of London.

Dr. L. R. Waldron's contributions to North Dakota and Northern Great Plains Agriculture covers a wide field but has had its greatest economic impact in the many new wheats which he has produced in his systematic wheat breeding program. Dr. Waldron's chief contributions to the agriculture of North Dakota can be summed up briefly as follows:

(1) Demonstration of the superior hardiness of Grimm alfalfa under Western North Dakota conditions, especially studies with Charles J. Brand on "Cold Resistance of Alfalfa and Some Factors Influencing It," published in 1910. His studies on drouth resistance and seed production in alfalfa were published as Experiment Station Bulletin 95 in 1911. The 21 alfalfa maxims he announced then are still good alfalfa doctrine for North Dakota.

(2) Proved that common alfalfa (Medicago sativa) and sickle lucern, yellow flowered alfalfa (Medicago falcata) cross-fertilize in experiments reported in 1919.

(3) Demonstration of the effectiveness of bumblebees in causing fertilization of red clover (Experiments described in the First Annual Report of the Dickinson Substation 1908).

(4) First systematic investigations comparing summer fallow and corn as previous treatments for land intended for spring wheat including a systematic discussion of the principles of dry-farming — published as North Dakota Experiment Station Bulletin 96 in 1912.

(5) Investigated the inheritance of rust resistance in a family of wheats derived from crossing Kubanka durum and Power Fife, a common wheat (Results reported in Experiment Station Bulletin 147 in 1921).

(6) Investigated the degree of variability of common brome grass and made extensive genetic studies on this common grass. (Results published in Experiment Station Bulletins 152 and 153 in 1921).

(7) Introduced Ceres wheat in 1926 from a cross between Kota wheat and Marquis made in 1918. By 1933 over

5,000,000 acres of this new wheat were being grown in the United States and Canada. Komar wheat, product of the same cross, but another selection was introduced at the same time, has found favor in the more southern portions of the areas producing spring wheat, notably in Iowa.

(8) Introduced Rival wheat in 1939, the product of a Ceres-Hope - Florence combination which he made in 1929. Rival wheat has consistently demonstrated its resistance to leaf and stem rust. At the present time it is the dominating common wheat over a considerable portion of the spring wheat area.

(9) Introduced Mida wheat in 1944, produced from breeding work first done in 1933. Over 18,000 bushels of this new wheat were distributed to over 800 North Dakota farmers in 1944. Mida wheat possesses both stem and leaf rust resistance and resistance to stinking smut.

(10) Dr. Waldron is actively pursuing fundamental studies investigating the laws of inheritance of the characteristics desired in a flax plant.

H. L. WALSTER,
(Director.)

Variations in Kinds of Weeds From Year to Year

O. A. STEVENS[1]

WET summers increase weed growth and also hamper field operations. Dry summers are favorable to a few weeks which can grow with less moisture than crop plants.

The past 10 years have provided good examples of these effects. By 1934, Russian thistle had become very predominant and was common even in the Red River Valley where it usually is rarely seen. Since 1936, it has again disappeared and is not prominent in even the dried parts of the State. Perennial sow thistle, which first claimed wide attention in the years following the wet year of 1916, nearly disappeared during the dry period probably due to a combination of dry weather, weed control programs and grasshoppers. For several years past, it has been re-appearing and many new patches are seen this year on account of unusually good opportunities for new plants to become established from seed last summer.

Two plants have shown a direct response to the wetness of last year in the Red River Valley. Marsh yellow cress (*Rorippa palustrisa*), usually restricted to wet spots, made a strong growth in fields and attracted considerable attention. The docks (*Rumex spp.*) were able to establish many new plants and to make a heavy growth. Neither of these weeds should cause trouble when the summer is dry enough to permit normal field work.

[1]Associate Botanist