greater extension of the society. We have but thirty chapters, an increase of but ten in the past ten years or more. There are at least a hundred institutions in America that need such encouragement as we can give. We have hesitated to extend our society, not because we are aristocratic, but because we earnestly desire to keep its ideals high, and know no way by which to ensure their preservation.

A step has been taken, one that I have hoped for for years, to define more precisely our ideals that we may entrust them fearlessly and safely to every institution where a few of us are gathered together. And I am still further encouraged to believe that in the end, even though it be slowly, it will lead to the results I have long hoped for, the extension of our society throughout our nation. Other organizations are doing much for the promotion of scientific research; ours is the nobler duty to train men and women for research in science, both pure and applied, to sustain, to encourage the university in the development of the science of the nation. Yale has done very much in the past, I am sure it will take its full part in the advancement of the future. Its ideals have always been high and they have been reflected in the chapter of the Sigma Xi. I can say with assurance that in no chapter of the society is the honor of election to membership greater.

In conclusion, I would say a few words to the initiates of this evening. You have pledged yourselves to uphold and sustain the ideals of the Sigma Xi. An honorable, a useful future lies before you. The world needs you as it has never needed such men as you before. Your vocation in life is more honorable than it ever has been before in the estimation of the world. I am sure that when you shall have reached my age, science will have won far greater honors yet for its earnest and sincere devotees, even as it has changed marvelously since the time when I was as young as you are.

New facts and new laws awaiting your discovery are as numerous as ever. Your work may be greater, but you are equipped to do that work more easily than we were a score or two years ago; your footsteps will be more direct, and the harvest that awaits your reaping is very, very great. And I would encourage you with the assurance that, no matter how humble that work may seem to you, if you have learned rightly to observe, to discriminate, and above all, to judge, there are no limits but your energy and your ambition to the heights you may climb.

Samuel W. Williston
University of Chicago

THE WORK OF DEAN H. L. RUSSELL

During commencement week his colleagues, friends and former students celebrated the twenty-fifth anniversary of the doctorate of H. L. Russell, dean of the College of Agriculture of the University of Wisconsin. In 1892 Johns Hopkins University honored Professor Russell by conferring this degree upon him. This year (1917) also marks the completion of twenty-four years of service to the University of Wisconsin. The last ten years of this period have been occupied in directing the activities of the College of Agriculture and the Experiment Station.

At the anniversary last week bound records of the results of the work accomplished by Dean Russell were presented to him. Three sturdy volumes there were—nearly two thousand pages.

"What Dean Russell has meant to Wisconsin and her farmers purely as an investment cannot be estimated, so extensive have been his activities and so far-reaching their results," said E. G. Hastings, professor of bacteriology, in speaking of the relation of Dean Russell's work to Wisconsin and her farming industry. Professor Hastings has been closely associated with Dr. Russell in his work as a bacteriologist, having worked with him when he was head of the department of bacteriology

and becoming head himself when the position was vacated by Dr. Russell. Professor Hastings said:

At the time Dean Russell was graduated from the University of Wisconsin in 1888, bacteriology was just being developed at the university. The history of what bacteriology has done for the control of many animal diseases, such as hog cholera, anthrax, black leg and bovine tuberculosis—diseases which formerly killed off thousands of head of live stock annually; of what it has done for the production of milk and the consequent lowering of the nation's death rate, especially among infants; of what it has done for the control of plant diseases, thereby saving millions of dollars to the country annually by increased crop production; of how the cheese industry has grown with increasing knowledge of bacteria, of what has been learned about the power of nitrogen-fixing bacteria, to enrich the soil and thus increase the crop yields, of how it has brought about improved sanitary conditions, and how it has helped with the canning industry and the preservation of food by other methods—the history of all this, which is the history of agricultural bacteriology during the past twenty-five years, speaks for the wisdom of spending money and time on the study of bacteriology in any state, and especially in a state with the dairy and crop record of Wisconsin.

The introduction of bacteriology at the University of Wisconsin was due to the efforts of Dr. Wm. Trelease, now of the University of Illinois, and to Dr. E. A. Birge, dean of the College of Letters and Science of the University of Wisconsin. The first announcement of courses in this subject was contained in the university catalogue issued in 1887–1888. It may seem strange that even before the science of "bacteriology" had received its name, it had found a place at this then far-western institution. This was due to the fact that those persons in charge of the university were men with the spirit of the pioneer. A pioneer must be a progressive man, a man who is always on the job, a man of good judgment as to the road to follow. Such men Wisconsin had.

Dean Russell became interested in bacteriology early in his career as a student, and under the influence of his teacher, Dr. Birge, he decided to go to Europe for instruction under the masters of what was then a comparatively new subject. He studied at Berlin while Robert Koch, the great pioneer of medical bacteriology, was actively engaged in teaching and investigating, and at Paris while Louis Pasteur was still busy in his laboratory. He returned to America and spent one year under Dr. William Welch of the Johns Hopkins University, thus completing the eighth year of his preparation for work—a long time in getting ready to work but the wisdom of this is shown in the things accomplished in the next twenty-five years.

About this time, in northern Germany and Denmark, the relation of bacteria to dairying, especially to the manufacture of butter and cheese, was beginning to attract attention. W. A. Henry, then dean of the College of Agriculture, with true pioneer spirit, realized that Wisconsin was destined to be a great dairy state if matters were rightly directed; it had great natural resources in lands, in climate and in men—for it had within its borders such men as Governor W. D. Hoard and Hiram Smith. Dean Henry's task was to make his institution do its share in the development of this industry. Looking back upon his work from the present day, no one can question his success.

Dean Henry decided that dairy bacteriology was something he must introduce in the work of the experiment and the college. It was most natural that his attention should be directed to the first student of the university to adopt it as a life work. Dean Russell came to the College of Agriculture in 1893, and immediately began work on the relation of bacteria to dairying and to bovine tuberculosis. The tuberculin test was just being introduced into this country, the Experiment Station herd being the first one west of the Alleghenies to be thus examined. This test revealed a sorry state of affairs; twenty-five out of thirty animals were found diseased. The herd was slaughtered. The new herd, which was assembled has been kept practically free from tuberculosis for twenty years. Animals have been introduced that later have reacted to the test, but the consistent and persistent use of the test has prevented any spread in the herd. True, expense has been involved in this work, but returns have been brought, both in money to the state and satisfaction to those in charge of the herd. Back in 1894, if the breeders of Wisconsin had adopted the advice given in Bulletin 40 of this station published that year, the state would have been in a far more enviable position as far as tuberculosis goes than at present.

Another subject which received much attention and which has accomplished an endless amount of good, was the study of the contamination of milk —the sources of such contamination and its prevention. The work done in pasteurization of milk outlined the method which is used so widely at the

present time for the treatment of market milk, a method that was not actually put into practice until ten or more years later because the industry was not ready for it. It is certain that the credit that should be given Dean Russell for his work on pasteurization of milk has not been bestowed because it came at too early a period in the development of the industry.

Various other fields of farming investigation have engaged Dean Russell's attention, including the study of bacterial diseases of plants, especially the black rot of cabbage. One of the lines of effort in which study of bacteriology has yielded results of great practical value was the relation of bacteria to the ripening of cheddar cheese. The discovery that cheese could be ripened at much lower temperatures than was previously thought possible was a by-product of scientific work, a by-product that adds hundreds of thousands of dollars to the income of the cheese industry in Wisconsin yearly, and will do so as long as cheese is made.

The state of Wisconsin has invested much money in work that has been accomplished by Dean Russell during these twenty-four years of service as a bacteriologist and director of the work of the College of Agriculture and Experiment Station. The question of importance to-day is the soundness of the investment and the returns it brings. Those who are best acquainted with the matter would cease to worry about the high cost of living and of dying if they could feel that their investments were one half as sound and would bring them one thousandth part of the returns that the state of Wisconsin receives from the money it has invested in this man.

THE PRIESTLEY MEMORIAL OF THE AMERICAN CHEMICAL SOCIETY

By resolution of the council of the American Chemical Society adopted at its meeting in Urbana in April, 1916, the president was requested to appoint a committee to devise and carry out a plan for a suitable memorial to Joseph Priestley. After careful consideration of various plans, the members of the committee desire to present the following recommendations to the Society:

1. That a bust portrait of Joseph Preistley be secured, to be a copy of the best available portrait; that this be retained as the property of the American Chemical Society, but be deposited as a loan in the National Museum in Washington. Also,

2. That a gold medal be awarded at intervals of probably more than one year for superior achievement in chemical research; the award to carry with it the requirement that the recipient shall deliver an address before the general meeting of the society at the time of the presentation or at such other time and place as the council of the society may direct.

Carful inquiry has convinced the committee that, in order to carry out these plans, a fund of at least $2,000 should be secured. It is requested that subscriptions be sent to the chairman or to any member of the committee. Contributions of sums from $1.00 upwards are asked.

Joseph Priestley was born at Fieldhead in England in 1733. Although educated for the ministry, he became noted as a teacher and lecturer on natural science, and especially as an investigator in chemistry, devoting his attention largely to the study of gases. Persecuted and shunned as a result of popular prejudice for his theological views as a dissenter from the Established Church, he migrated to America in 1794 and settled with his family in Northumberland, Pennsylvania. Here he established a laboratory and continued his work as an investigator in chemistry.

While famous throughout Europe and in America for his historical and philosophical writings, for his important work on the History of Electricity, and many other contributions to scientific literature, he is more especially known to modern chemists for his researches on the chemistry of gases, which culminated in 1774 in the discovery of oxygen, described in his treatise entitled "Experiments and Observations on Different Kinds of Airs."

He continued in America to be a contributor to scientific and theological literature until his death in Northumberland in 1804.

On July 31, 1874, many of the leading chemists of America met near the grave of Joseph Priestley at Northumberland to honor