

of feeds and nutrients, and such work may be expected in the future.

In the thirteen years of the twentieth century the progress of agricultural chemistry has been such as to satisfy even the pessimist that we are moving forward. Our facilities for scientific investigation have been increased by the Adams Act. Our supervision over foods, drugs and feeds has been enlarged and rendered more effective through the Federal Food and Drugs Act. We have made great progress in the survey and mapping of soils and in our knowledge of their properties and chemical composition. The science of animal nutrition has made such advances as to render it necessary to revise almost all books dealing with the subject, and to modify our methods of stating the nutritive values of feeds, and our methods of calculating rations for feeding animals. These have been the four chief lines of advance of agricultural chemistry in recent years. The members of the Association of Official Agricultural Chemists may well take pride in the part they have taken in the progress that has been made.

G. S. FRAPS

THE NEW YORK STATE VETERINARY COLLEGE AT CORNELL UNIVERSITY

THIS occasion¹ is to commemorate the opening of a suitable hospital for large and small animals and halls for the teaching of veterinary medicine. It has greater significance than the mere addition of new buildings to our working equipment, for it introduces into the teaching of clinical medicine methods of precision which heretofore could not be employed. We believe it is desirable that the public should know what the university and the state are doing

¹ Opening of hospital and clinic buildings, New York State Veterinary College at Cornell University, November 15, 1913.

to increase the efficiency of the veterinary profession.

In the development of veterinary medicine in America, Cornell University holds a conspicuous place. It was the first institution of higher learning to place veterinary medicine on par with other sciences. When its doors opened in 1868, there was among its professors a veterinarian. A department of veterinary medicine was established and it continued as such until 1896. During those twenty-eight years, the head of that department, our distinguished and beloved Dr. Law, was not only an adviser in university affairs, but also a leader in the important work of the nation in eradicating those diseases of cattle that cost Great Britain and her colonies hundreds of millions of dollars. Had it not been for the broad views of Ezra Cornell and President White relative to the teaching of applied sciences in Cornell University, where Daniel E. Salmon, Theobald Smith and Leonard Pearson were trained, the losses on British soil from contagious pleuropneumonia, piroplasmoses and foot and mouth disease might easily have been duplicated in this country.

At the time the department of veterinary science was organized in the university, it was not thought in this country to be necessary to expend large sums of money for veterinary education. The American people experienced with the resignation of the fatalist a steadily increasing loss from diseases of animals. Because of the enormous live stock industry and export trade in cattle and animal products, this loss was not generally felt. The time was approaching, however, when our meat and dairy products would be required to feed our own people and when the losses sustained from disease would be added to the cost of living. This condition was as inevitable here as it had been in Great Brit-

ain and Germany. It was with prophetic insight that the founders of this institution planned to meet the needs of the approaching situation. It was clear to them that when the law of supply and demand raised the price of meat to a certain height it would be necessary to save the thousands of animals that were annually falling victims of preventable disease. In recognition of this, veterinary teaching at the university began in a small way, but from the beginning its growth was assured.

A second advance was made when the university and the state formed a partnership in which the university was to give toward a veterinary curriculum such instruction as it possessed and the state was to furnish the other necessary teachers, buildings and equipment to complete a veterinary college. By this act, the veterinary department was transformed into a college and a greater work was undertaken. The statute establishing the New York State Veterinary College at Cornell University states that its function shall be the pursuit of such researches and the preparation of such diagnostic and prophylactic agents as may be necessary to protect our domesticated animals against disease and to give instruction in veterinary medicine and surgery. The framers of that law saw with great clearness that the live stock interests of the state required for the control of disease men with a thorough training in the sciences upon which the art of medicine rests. They recognized that the high purpose of the veterinary profession was to prevent quite as much as to treat diseases of animals. This required that students of veterinary medicine should have a preliminary education sufficient to intelligently study those sciences which have revealed the nature of disease. To provide for this, the law requires that in order to enter a veterinary college in this state, the

student shall have satisfactorily completed a four-year high school course or its equivalent. This was a long step in advance educationally, although many considered such a preparation unnecessary. There seemed to be a feeling that the successful practise of veterinary medicine in this country did not require the knowledge or discipline that experience had demonstrated as necessary for its success in Europe. However, the great champion of higher veterinary education in this country firmly insisted on the higher entrance requirements. For his perseverance in this cause alone, future generations will look upon Dr. Law as the foremost veterinary educator in America.

This college opened in 1896 with the main building, one story of the north wing and a small clinic building and hospital. These cost the state \$150,000. For reasons mentioned, the number of students was small, a total of eleven, and the faculty consisted of eight teachers. For several years, there were no additional buildings and the students increased in number very slowly. The principle of higher veterinary education was on trial. Finally growth was in evidence. The Flower library was endowed with \$10,000. An operating room was built on the surgical hospital and the second story of the north wing was added. These cost \$27,050. In 1908, the trustees of the university set aside for the veterinary college a farm of one hundred acres for use in the study of animal diseases. And finally, there has just been completed, but not equipped, the hospital for large and small animals and clinic halls for teaching veterinary medicine. These have cost \$140,000. The state has a total of \$317,050 invested in buildings and \$54,000 in equipment. The college, however, is not yet completed. There remain to be added the south wing to the main building and a

diagnosis and pathological laboratory. It is estimated that they will cost \$200,000. While these appropriations may seem large, it is well to know that the little country of Norway, with far less live stock than the Empire State, has recently built a national veterinary college at a cost of 2,300,000 krona (\$644,000) or a hundred thousand dollars more than the plans of this college call for.

The completion of suitable hospitals for large and small animals, clinic halls and diagnostic laboratories adapted to the teaching of clinical medicine justifies our calling this the beginning of the third era in the development of veterinary medicine at Cornell University. The opening of these splendid wards is significant not only from the pedagogic point of view but also from the standpoint of better veterinary service in the state. The thought of the leading educators in human medicine has been that the teachers of medicine should have adequate hospital facilities to study disease in all of its phases and that they should not be distracted by private practice. This ideal toward which our best medical colleges have been striving has been attained in but few institutions. In this particular, we are fortunate. With ample hospital and clinical facilities and men eminently fitted for teaching veterinary medicine, it is confidently expected that greater efficiency will not only characterize the teaching of students but also increase the application of better methods for the treatment, prevention and control of animal diseases in the state. In rejoicing that such opportunities have been provided, we must not be boastful, for in the acquisition of such facilities, the states of Iowa, Ohio and Pennsylvania have led the Empire State. We do rejoice, however, that America is beginning to realize that if the fearful losses from animal diseases are to

be checked here as they are in Europe, veterinary medicine must be taught and practised along equally scientific lines.

The work of the veterinarian is not generally understood or appreciated. It is not the only purpose of a veterinary college to teach men how to treat the accidental ills of animals. In addition to this, the veterinarian has to advise the owners how to protect their flocks and herds from the diseases which are liable to attack them. In New York state there are \$290,000,000 invested in animals. The annual revenue from this investment is \$140,000,000 or nearly two fifths of the total agricultural product of the state. It has been conservatively estimated that the loss from disease is ten per cent. One of the problems for the veterinarian is to save to the live stock industry all that is preventable of the \$29,000,000 loss on investment and to restore as much as possible of the loss in production due to disease. The control of the diseases of animals communicable to man is not a task of small proportions. The inspection of dairy cattle to detect and eliminate those whose milk is dangerous, to inspect the meat from diseased animals that are killed for food, and the many other services of a sanitary, humane or economic significance require a large fund of technical knowledge. It is not my desire to dwell upon the multitude of needed services the trained veterinarian can render but rather to call attention to the efforts that are being made to qualify men for such work.

I have already mentioned the purpose of the founders of this college and the somewhat discouraging outlook at its opening. Starting with an initial enrollment of eleven students in all classes and a faculty of eight, we have now a registration of one hundred and twenty-three undergraduate students and five graduates and a faculty of nine-

teen men who devote their entire time to teaching and research. Knowing that the state would not require a large number of veterinary graduates in any one year, the college was planned, as you can see from your inspection, to teach from fifty to seventy-five students in each class. This is all the veterinarians that the live stock interests of the state will require for many years.

The general tendency toward increased efficiency has been exemplified in this college by the adoption of certain procedures to extend its usefulness. An optional four-year course has been offered and several students are taking it. This was done to make it possible for those who desire to devote more time to their preparation for professional work. We hope in the near future to make the four-year course compulsory. There is a difference of opinion on this point. It is thought by some that it would be better to have one year of university work required for entrance than to have a four-year professional course with the present lower entrance requirements.

A combined course with the college of agriculture has been arranged so that students may receive both degrees in six years. A few students are already taking this course.

The ambulatory clinic was established to enable senior students to visit with an instructor sick animals in the near vicinity of the college. This gives a touch of actual practise in connection with class-room and laboratory work.

In 1908 there was established an annual conference for veterinarians. The faculty appreciated its opportunity to assist the practitioners of the state by introducing a short course of instruction on the most important veterinary subjects of the day. Every licensed veterinarian of the state is invited. Last year fully 15 per cent. of

the active practitioners of the state attended this conference.

In June of this year a course in practical horseshoeing for the horseshoers of the state was authorized. This is under the immediate supervision of an experienced horseshoer who was trained in the leading schools of Europe.

The research work that is being done at the veterinary experiment station as well as in the laboratories is not only of great value to the live stock owners of the state and of much teaching significance, but it also brings the students in contact with the actual problems with which the practitioner has to deal in the active warfare against disease. It is by these and other methods that the New York State Veterinary College at Cornell University is striving to be a positive factor in alleviating the suffering among domesticated animals and in saving to the owners the losses from disease.

VERANUS A. MOORE

STEREOSCOPIC EFFECTS IN PHOTOGRAPHY

THE exhibition of scientific photography which was recently held at Vienna in connection with the Austro-German Medical Congress contains, according to an article in the *London Times*, an exhibit which marks a great advance in the progress of photography. This is a series of photographs in which true plastic effect is obtained without the employment of a stereoscope or any other optical instrument. For the various objects depicted to stand out in their true relations to one another all that is required is that the picture should be looked at directly and not from one side or the other.

The method by which this result is obtained is, briefly, as follows: A double negative is made in the ordinary way by the use of a stereoscopic camera with twin lenses. Instead of the reconstruction by means of the stereoscope of the plastic image from the