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National Disease Laboratory Nears Completion

William A. Hagan

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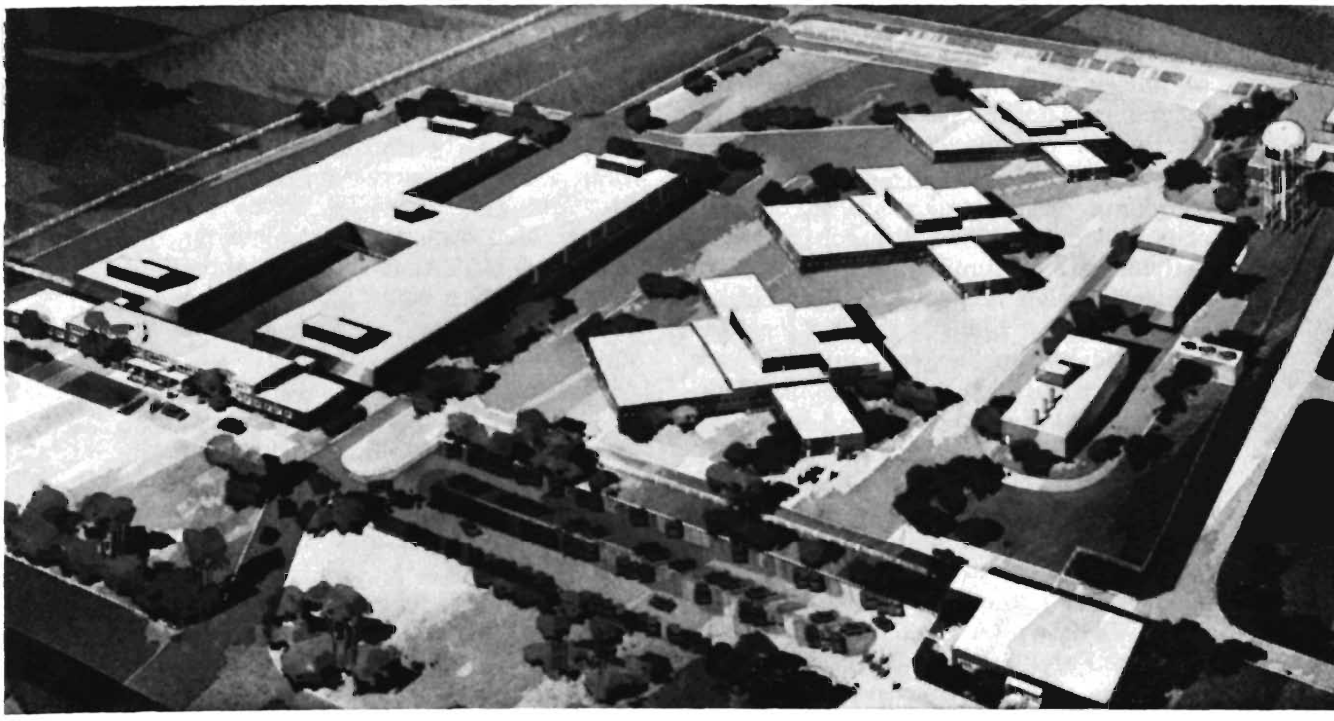
William A. Hagan, Director

THE National Animal Disease Laboratory, now nearing completion at Ames, Iowa can claim to be a direct lineal descendant of one of the first laboratories of bacteriology, and of the study of animal diseases, in America. The first laboratory was in the attic of the old red brick building of the Department of Agriculture in Washington, a structure which was razed many years ago. It was the work shop of Daniel E. Salmon, who had been a student of James Law at Cornell University. Dr. Salmon was the second person to obtain a degree in veterinary medicine from that institution. That was in 1872. Salmon went to work for the U. S. Department of Agriculture in 1880 and in 1882 became the first Chief of the newly created Bureau of Animal Industry. Salmon's first work in Washington was to study that devastating disease known as hog cholera. Very shortly he had isolated a micro-organism which he believed to be the cause. This was accomplished barely five years after Koch published his work on anthrax (1876) and was one of the first studies in bacteriology in America.

Salmon and Theobald Smith described their "hog cholera bacillus" in 1885. With cultures of this organism they inoculated pigs and produced a disease when they placed their inoculated pigs in pens with susceptible ones. The latter did not contract the disease as they always did when placed in contact with the pigs with naturally contracted hog cholera. This they



Aerial View of Laboratory

did not understand. The explanation was not forthcoming until two other men, workers in the same laboratory, DeSchweinitz and Dorset, in 1903, proved that another kind of disease agent, called a filterable virus, was the real cause. Salmon and Smith's bacterium was only a secondary invader. Later on when it was found that the "hog cholera bacillus" was one of a rather important group of pathogens, Lignieres, a French bacteriologist, proposed the group be named in honor of Salmon. And so, we have the Salmonella group of organisms.

When the new agricultural building was built in Washington early in the 20th Century, the Bureau of Animal Industry was moved into what was known as the East Wing. On the top floor of this building spacious laboratories were provided for the Pathological and Biochemic Divisions. These were the research divisions of the Bureau. As time passed and the country grew, so did the responsibilities and the work load of the laboratories. The old Bureau of Animal Industry experimental farm at Bethesda, Maryland became engulfed in the growing city and was finally sold. Around 1925 new research facilities for animal disease research were provided at the new Beltsville Research Center of the Department of Agriculture, but a major part of the laboratory facilities remained in the old location in Washington.

In the mid-forties the Department of Agriculture was reorganized, the old Bureaus which combined research and field activities were eliminated and a new organization plan was adopted. The old Bureau of Animal Industry, after a long and honorable lifetime, expired and its functions emerged under the Agricultural Research Service (ARS) which, despite its name, is active in both research and field work. The animal disease work of the Department of Agriculture now is the function of three divisions of ARS, the Animal Disease and Parasite Research Division (ADP), the Animal Disease Eradication Division (ADE), and the Animal Inspection and Quarantine Division(AIQ). The first, (ADP), is entrusted with all research work on animal diseases. The second, (ADE), is charged with all field disease control activities, The third, (AIQ), administers the virus-serum act, licenses all biologics used on animal diseases in the U.S. that go into interstate commerce, and has charge of inspection and quarantine facilities for animals and animal products at all ports of entry into the United States.

In 1955, the Research Administrator, Dr. B. T. Shaw, requested an outside group of experts to inspect and report on the adequacy and safety of the laboratory facilities in the Department of Agriculture building in Washington. The report indicated that the facilities were not adequate and were also deemed unsafe for handling infectious material much of which was pathogenic for man. Upon receipt of this report, work in these laboratories was stopped and most of the workers were transferred to the already crowded facilities at Beltsville. An appropriation of $250,000 was made by Congress for the planning of new laboratories and the design work was started.

The original intention was to build the new facilities at Beltsville and the first plans were made on that basis. In January 1956, however, a presidential order was issued requiring that new major government buildings be placed outside of Washington and other strategic areas that were vulnerable to bomb attack unless it could be clearly shown that location in these areas was necessary to the proper functioning of the work to be done in them. The decision was made in the spring of 1956 that the new animal research facilities came under the scope of the presidential order, hence planning for the Beltsville site was stopped.

The Secretary of Agriculture on June 6, 1956, issued a press release inviting all interested to submit suggestions for the location of the new laboratory and stated his intention of appointing a committee consisting of "leaders in the livestock industry representing beef cattle, swine, dairying, sheep and poultry, and representatives of the Land Grant Colleges, the veterinary medical profession, State Departments of Agriculture, livestock sanitary officials, and other livestock interests"

to recommend the site of the new laboratory. This committee was given full freedom of action but certain guiding factors were suggested as follows:

1. That it be "near a Land Grant College or University having a veterinary school or a strong animal disease research department, which would provide the advantages of library facilities and opportunity for cooperation and association with other scientific work."

2. That it be "near a community that could readily absorb 100–200 new families and have adequate personnel to fill 100–200 non-scientific positions, and not close to an industrial or metropolitan strategic area."

3. That it be "readily accessible, not in a high cost construction area, that 200–400 acres of land be available, that adequate water and sewage disposal facilities be available, and that an adequate nearby supply of cattle, swine and sheep be available for purchase as experimental animals."

The site selection committee held hearings in St. Louis on June 27–28, 1956. Sixty delegations from practically every state of the Union were heard and written proposals from 40 other groups were read. The committee then visited the University of Wisconsin, Michigan State University, University of Missouri, Kansas State University, Oklahoma A. and M. College, Texas A. and M. College, the University of Georgia, Iowa State University, and Colorado State University. They then recommended Ames, Iowa as their first choice and Fort Collins, Colorado as an alternate site in case satisfactory arrangements could not be made at Ames.

Through the efforts of James H. Hilton, President of Iowa State University, and other state and local officials, the State of Iowa agreed to purchase two farms with a total of 318 acres near Ames, Story County agreed to build a good road to the site, and the City of Ames agreed to contract with the Government for water and sewage services. These arrangements being satisfactory to the Department of Agriculture, Secretary Benson announced on July 31, 1956 that the laboratory would be located near Ames.

Funds totaling $16,250,000 for constructing the laboratory were included in the appropriation bill signed by President Eisenhower on July 27, 1956.

Work on new plans was begun immediately. Contracts were made with the Ralph M. Parsons Company of Los Angeles and the Brooks-Borg Company of Des Moines to prepare the plans for the architectural and engineering details. These required nearly two years to complete. The construction contract was let on August 4, 1958 to Henry C. Beck Builders, Inc., of Dallas, Texas, whose bid was $14,331,000. This commitment left about $2 million in the appropriation. This sum is available for additional construction, for "extras" which must be paid the contractor for correction of errors and omissions in the plans, and for equipment.

Work was begun on the project in the summer of 1958 and has continued with only short interruptions until the present time. The work is now nearing completion. The precise time when it will be finished and turned over to the Department of Agriculture for "beneficial occupancy" is still not determinable but probably will be about January 1, 1961, plus or minus 30 days. After it is taken over by the Department it will be several months before a series of safety and other tests can be completed, hence we do not expect to begin scientific work here very much, if any, before July 1, 1961.

The National Animal Disease Laboratory is known as a research laboratory and this will be its principal function, however about 20% of the facilities will be used for other purposes. The ADP Division, whose function is research on all animal diseases, both domestic and exotic, will center its principal work here. This division also administers the Plum Island Animal Disease Laboratory, located on a small island off of the easternmost tip of Long Island, New York, where work on Foot-and-Mouth Disease and other exotic diseases, is carried on, and it maintains laboratories for the study of parasitic diseases of livestock at Beltsville, Md. The laboratory at Ames will be expected to conduct studies on the more important diseases afflicting livestock in this country.

It is expected that at least 25 major research projects will be carried on continuously, and these will include diseases of cattle, swine, sheep and poultry with some attention being given to horses and minor species.

The ADE Division will operate a number of laboratories as diagnostic and support units for its field programs. These will not be concerned with research except in an incidental way as diagnostic problems are encountered.

The AIQ Division will have service laboratories for controlling the purity and potency of veterinary biologic products which go into interstate commerce in the United States.

The entire laboratory is being built with unusual safety factors which will prevent escape of infective agents from one unit to another, and to the outside world, and those which will minimize the dangers of infection of the laboratory workers by the agents with which they work. After the laboratory begins working, visitors from outside will be allowed only in the Administration Building unless special permission is given for entrance to other areas, in which case they must abide by a code of safety regulations which govern employee behavior. The laboratories and quarters for experimental animals will be enclosed with a woven wire fence and guards will be posted at all unlocked entrances. Passes will be required for all persons who enter these areas.

All workers will be given special clothing for their work, their regular clothing being deposited in lockers. In some instances, depending on their work assignment, they will be required to take showers before entering or leaving certain areas.

All of the work buildings are air conditioned by thermostatically controlled heating of the air in winter and cooling in summer. No air is recirculated. Each work module is ventilated separately and all ventilation air is vented to the outside through bacteria-proof filters. All sewage is drained into break-tanks and finally heated to boiling. The boiled and cooled sewage will be discharged into a line which carries it to the disposal plant of the City of Ames. Ames city water is pumped into the large storage tank of the laboratory and thence reaches all parts of the laboratory by gravity. The laboratory has its own power plant for operating the heating, refrigeration, and ventilating systems. Electricity and gas will be purchased from the Iowa Electric Light and Power Co. which has located two large diesel generators on the site to serve in emergencies when the line power may fail.

The laboratory will require a great many experimental animals. A large area south of the main structures has been set aside for holding these animals until they are required. This area will be outside of the laboratory compound but it will be fenced, and rigorous precautions will be taken to protect it from spontaneous infections.

When the laboratory is fully operative it is estimated that from 400 to 500 persons will be on the payroll. Of these, from 75 to 125 will be scientific and technical employees; the remainder will be engineers, mechanics, tradesmen, groundsmen, laborers and office employees. The initial operating budget will be in the neighborhood of $5,000,000.

It is anticipated as this is written that scientific work in the N.A.D.L. will begin in the summer of 1961. The volume of work will pick up gradually, hence we do not expect to have a full staff immediately. It is likely to be several years from now before the laboratory will be operating at full capacity.

Part of the idea for locating the laboratory at Ames, was the advantage of close associations with a strong Land Grant College, having a first rate Veterinary School. Plans for close cooperation with Iowa State University and especially with its veterinary school have been worked out with anticipated advantages to both University and N.A.D.L.

The N.A.D.L. will be the largest and best equipped institution of its kind in the world. It is the job of those who have been entrusted with the task of launching the new enterprise to carry on the tradition of service to the livestock industry that imbued the old B.A.I. and the newer A.R.S. laboratories since those early beginnings 80 years ago in that Washington attic.