The Depression and the War Years (1932 to 1947)

In 1932 during the Depression, the salaries for State workers were significantly cut. Some of the monies cut from the State Worker's salaries was used to give more people overall employment The State Laboratory's Bacteriologist's salary was cut from $2,100 to $1,800. This can be seen in Miss Rider's 1933-1934 "Eleventh Biennial Report", where she indicated the total State appropriation for 1933 was $9053.76 with $7440.00 for salaries, $1107.98 for operation, $167.43 for travel and $338.35 for capital investments. Miss Rider further noted that this was $6,719.25 less than the previous year (noted in subsequent reports as due to salary cuts due to the Depression).

Despite budget cuts and salary decreases, disease occurrence and work at the State Laboratory did not cease. A great deal of time in the early 1930s was spent working on meningitis outbreaks. The first occurred on the San Carlos Apache Indian Reservation in 1932. The Director spent two weeks investigating members of the tribe for possible carriers. The work was done in the Indian Hospital at San Carlos. The blood plates for the cultures were made in Phoenix and shipped by car to the hospital. These plates were wrapped in warm bricks and blankets to be ready for the cultures that die rapidly when the temperature is changed. After the Director returned to Phoenix, the bacteriologist was sent for another two weeks. The Indian Services were very cooperative and helped all they could.

In March of 1933, the State Laboratory set up a field laboratory at White River to assist the State Epidemiologist, Dr. H.F. Stanton in controlling another outbreak of meningitis occurring among the White Mountain Apache Tribe. This work was carried out by the State Laboratory until the Indian Service established its own laboratory. The State Laboratory next worked on a second outbreak in 1933 with the Indian Service in cases occurring near San Xavier Mission. This investigation continued in 1934 when the State Laboratory examined all the inmates of the Tucson Transient camp for possible carriers after the occurrence of two more cases of meningitis.

In May of 1934, an outbreak of para typhoid B occurred at a sorority house at the University of Arizona. Fourteen of the eighteen girls attending a dinner became seriously ill. Investigations made by the State Laboratory at the request of the University Physician, disclosed the fact that an employee who assisted in preparing the meal was a carrier. As a result of the outbreak of food poisoning among the residents of the sorority house in Tucson, the Tucson laboratory and the University of Arizona worked cooperatively to examine food handlers at the University. All persons who were employed by the University or by the various fraternity and sorority houses, and who came in contact in any way with food supplies, were subject to a series of three tests at weekly intervals in order to remove typhoid carriers as well as persons suffering from other communicable diseases.

Before the days of mass immunization, Diphtheria was a major problem in the schools. There was nearly always an outbreak as soon as school opened. Mass culturing looking for carriers was one of the chief examinations made during the year. One mother was going to sue, because her little boy had a perfect attendance record never missing a day at school, and she was not going to have the State Health Department spoil this record (he was a suspected carrier). She then added, "Wherever he goes to school, there is always an outbreak of Diphtheria. But he never gets IT."

Miss Rider resigned as Director of the laboratory in 1935 to become Assistant Director of the Works Projects Administration (W.P.A.) and later Director of National Youth Administration (N.Y.A.). After Miss Rider resigned, Dr. Robert A. Greene, Ph. D., became laboratory Director. Dr. Greene had received his Ph.D. in Chemistry from the University of Arizona in 1933 and was working as a Professor of Agricultural Chemistry at the University of Arizona when he was appointed Director.

State Health Laboratory in "Old Main" at U of A - 1935

In early 1935, a large cooperative agreement was worked out between the Phoenix Branch Laboratory, the State Veterinarian, and the Bureau of Animal Industry, and the U.S. Department of Agriculture for a Bang Eradication Project (Brucellosis). This disease caused contagious abortions in cattle. The Bureau of Animal Industry paid for a technician to examine blood specimens, a dishwasher and all necessary supplies. Because the State Veterinarian's Office was located in Phoenix and all supplies were first sent there, it was decided to locate the lab testing in the Phoenix Branch Laboratory. The Laboratory supplied the space, stenographic assistance and technical supervision. The laboratory examined 15,258 specimens in 1935 and 28,896 in 1936. In 1943, however, the State Veterinarian opened their own Animal Disease Laboratory. Subsequently, one of the veterinarians collecting the specimens became ill and *Brucella melitensis* was

isolated from his blood. Other infections and confirmation of culture 125 *B. melitensis* in the veterinarian caused the Public Health Service to be called in because there were so many laboratory infections and deaths.

The 1935 Annual Report noted that because the State Pure Food Law was not being enforced, that misbranding and adulteration of food was becoming common again. It was also noted that there was also a problem of spray residues on fruits and vegetables. An outbreak of food poisoning at the University of Arizona was traced to the occurrence of excessive amounts of lead arsenate sprayed onto apples.

The 1935 Annual Report also laid out the policy for testing. It stated, "It is not the policy of the State Laboratory to compete with commercial laboratories. Samples submitted by individuals are not accepted. Laboratory examinations for physicians are, in general, restricted to those engaged in public health work, or to examinations which have public health significance. Laboratory facilities should be available to persons who are unable to pay for these services at a commercial laboratory, and these commercial laboratories, on the other hand, should not be expected to donate their services. In such cases, the samples are submitted with the statement of a physician that the patient is unable to pay for the services of a commercial laboratory, these samples will be examined."

During the depression, the W.P.A. and N.Y.A. came to the rescue with clerical help and some dish washers for the State Laboratory's staff shortages. When this folded, as a last resort, a request was made to the Governor's Office for money from his emergency fund. He did not hesitate when the circumstances were presented. One of these workers was appointed to a clerk's position and later passed the merit system examination remaining with the department until her retirement.

In about 1936, the veterinarians in the state had a rabies vaccine bill presented to the Legislature they wanted passed, but to most of the law makers, it was unimportant, so it was shelved. The veterinarians asked for help from the laboratory. That year there had been an outbreak of rabies in Maricopa County. The sponsors of the bill helped with the tabulation of that year's results as it was presented. Later the bill was passed and signed by the Governor. Since then, the bill has been revised and many family pets were protected by vaccination saving families much grief and children from treatment.

In early 1936, the State's first blood tests for syphilis were begun. The old Wassermann or revised Kohmer tests were thought to be the prerogative of the private laboratories. The State Laboratory decided to use the new Kahn test that replaced the Kohmer test. The Kohmer test was used for a few years even though certain batches were rather unstable and some confusing results were obtained. Then in 1938 after a serologist was added to the Laboratory's staff, an evaluation of serological tests was made which was published in the *Public Health News* (No. 163, October 1939). There were 222 donors with various stages of syphilis. The tests used were Kline Diagnostic Kahn Standard, Hinton and the Kohmer Wassermann tests. There were 115 normal presumably non-syphilic donors.

Another part of the Venereal Disease Program was the culturing for *Gonococcus*. The direct smear method being used had been known for years, but the culturing was a problem for microbiologists. The organisms died quickly on artificial media. In 1937, cultures were collected at the clinics and within a few hours delivered to the laboratory. Special media had been developed by the Difco Company so that samples received could

be plated immediately. Complaints began to occur because of the low percentage of positives (false negatives) occurring from the testing. It was found that the wooden applicators used to collect these specimens contained oil, and when cultures were left in contact a short time with the applicator, the organisms would die. After the use of aluminum applicators, the percentage of positives was higher.

In the later part of December 1937, it came to the attention of the Director that "flavoring extracts", which contained diethylene glycol (or similar substances) as a solvent, were being sold in Arizona. A vigorous campaign was made, with the result that several hundred bottles of "flavoring extracts" were destroyed.

As stated before, in 1938 a serologist was added to the staff of the State Health Laboratory for the first time, giving an emphasis to serological testing. Included in these tests were such examinations as rapid agglutinations for the *Salmonella* group to check immunity following immunizations. Tests were also made to determine the Ph factor for blood in cooperation with the American Red Cross.

By 1938 with the population increase in Northern Arizona and with the difficulty in transportation to Phoenix from the Northern counties, the State established a second branch laboratory in Flagstaff in October of 1938 in the Coconino County Health Service Building. Fred Baker was transferred from the Phoenix Branch to supervise the work there.

Also in 1938, the main laboratory in Tucson, which had occupied quarters in the "Old Main" building on the campus of the University of Arizona was condemned and vacated.

"Old Main" condemned in 1938

The laboratory was relocated to new quarters under the university's football stadium. The new quarters were deemed to be superior in every way having more floor space, better organization, better lighting and was fire-proof. Much of the old laboratory furniture and equipment were not moved due to the fact that they were so antiquated. In

return for these new quarters, power and heat; the laboratory in Tucson furnished laboratory services for the University Health Service.

Despite all of the efforts by Miss Rider and others over the years to try and improve the sanitary conditions in Arizona, unsanitary conditions and diseases were still prevalent. In a November 1938 edition of the *Arizona Public Health News*, F.C. Roberts, Jr., the State Sanitary Engineer, wrote an article called "*Gulley Wash*." He wrote, "If all of the towns of Arizona were made into one typical small town, we might call it Gulley Wash, Arizona. Typical of many of our small communities, this town would not have a sewerage collection system. The inhabitants of the town would have individual wells. At times of high rainfall, with attendant run-off, the contents of the privies and cesspools would wash into the neighborhood wells. Even in the dry season, which is usually the case, the water table would lower, and the cesspools would drain into the near-by wells. We notice that flies are present in vast numbers most of the year. We notice the infant death rate is high. For a town of its size, too many typhoid deaths are reported each year, which may be only one death annually. At times during the summer, we see that the community is overrun with summer complaint, or diarrhea."

In 1939, in a large part due to the venereal disease testing programs being run at the State laboratories showing high levels of venereal disease in the population, Governor Robert T. Jones made a proclamation designating February 1, 1939 as Social Hygiene Day. The intent of this Day was for professional and civic organizations, schools and churches to band together for the purpose of eliminating venereal disease.

This collaboration plus other worthy efforts, however, were taking a toll on the State Laboratory staff. Dr. Greene noted in his 1940 Report of the Director that, "The increased number of examinations has been cared for only through the loyalty of the staff and their willingness to ignore an eight hour day or a forty hour week. Extra time required for the performance of routine examinations plus emergencies raise the actual time given by the members of the staff to an average of 50 hours per week. At times, the Director and Assistant Bacteriologist (Tucson) have been required to work as much as 100 hours per week." Dr. Greene further noted that 51.36% of the total examinations performed by the three State Laboratories were performed in Tucson. For the rest, 35.85% were performed in Phoenix and 12.79% in Flagstaff.

Not only were the work hours a problem for the staff, but they were also highly underpaid. Dr. Greene in his 1940 "Explanation of Accompany Budget" for the Arizona State Laboratory was pushing to have the salaries increase for all of the laboratory staff. He noted that, "In 1939, a survey of the salary scales of State laboratories of the United States was made. A report, which was made by Dr. T.F. Sellers, Director of the Georgia State Laboratory, showed that the salaries paid by the Arizona State laboratory were the lowest in the United States." He further noted that, "Salary increases are requested in order to restore salaries to the 1932 level. Restorations have been made in practically all other departments."

As a new project, the State Laboratory had taken on a water project in Yuma. Dr. Greene noted that, "In May, as a result of an earthquake which caused considerable damage to water supplies in California, the Health Officer at El Centro requested that the State Board of Health make an investigation at Yuma. Water is diverted from the Colorado River below Yuma though canals, which pass through Mexico and eventually become the water supply of several cities in southern California. The City of Yuma has discharged raw sewage into the Colorado River for years, but the earthquake damaged treatment plants to such an extent that the California health officials feared an epidemic of water borne diseases. At the request of the California authorities, the City of Yuma chlorinated all sewage discharged into the river." A field laboratory was established in Yuma which examined a large number of water samples in cooperation with the Yuma County Health Services. The data suggested that the chlorination of the sewage did reduce the numbers of organisms, but that natural purification proceeded rapidly as well.

Dr. Greene also noted in the 1940 Report that, "In December, the State Board of Health Laboratory at Flagstaff moved to new quarters in the basement of the Coconino County Court House. These quarters, which were recently remodeled and renovated, are well lighted and ventilated, and are suitably arranged for a laboratory. These enlarged quarters will provide more pleasant working conditions."


Coconino County Court House
Site of Flagstaff State Public Health Lab 1940

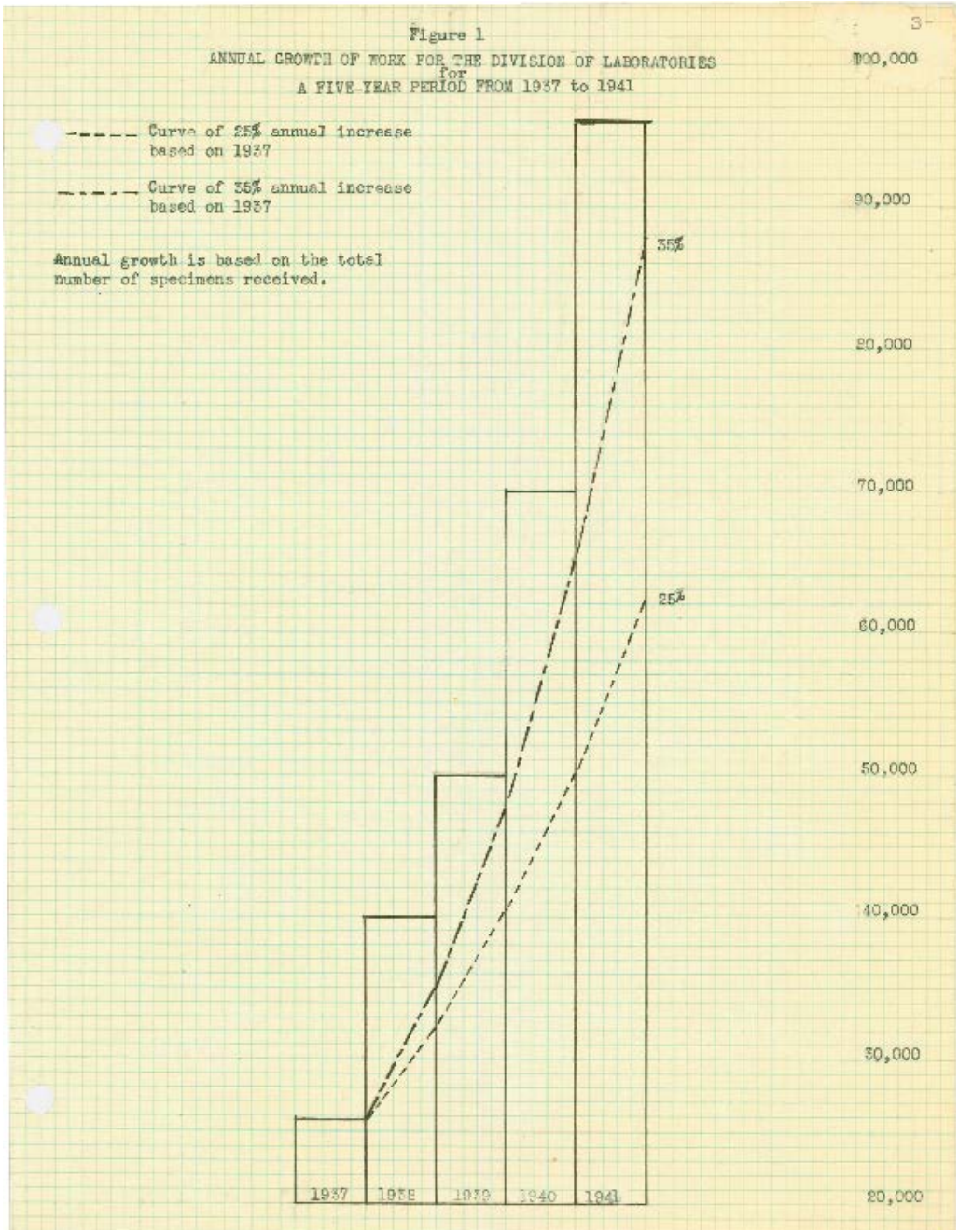
In 1941, Dr. Greene, being a member of the Army Reserves, took leave to serve in the military overseas in the Chemical Warfare Division. Initially, there was no Director, but eventually, Dr. Mildred T. Woolley, whom had been Assistant Director of the State Hygienic Laboratory in West Virginia, was appointed Acting Director. Workers from the N.Y.A and W.P.A. did much of the nontechnical work. Dr. Woolley in her "Report of the Director for the Fiscal Year, 1941" noted that "due to the War, changes in personnel have been brought about in all the laboratories. In the Tucson laboratory there is not a single member of the staff existing at the beginning of the fiscal year who is present now at the end of the fiscal year of 1941." She also noted that personnel in Flagstaff and Phoenix had also been lost to the armed services.

Also in 1941, the Legislature passed an Act reorganizing the State Department of Health. The Superintendent was designated a full-time position requiring qualifications. It also placed the State Laboratory under the jurisdiction of the State Department of Health, with the headquarters transferred to Phoenix so the directors could be close enough for conference and planning. Up until this time, the Tucson State Laboratory Office had been the main office.

Salaries remained at a low level until the governor elected, whom was not popular and for political reasons organized a merit system for the workers in 1941. To deal with this new merit system, the Department was able to hire a personnel officer. She was stunned when she discovered what the State was paying. This led to the salaries returning to normal levels for the laboratory.

At the beginning of World War II when the Selective Service was opened, the Assistant Public Officer issued an order for service members to have blood tests. Specimens were collected faster than it was possible for one worker to process. Many hours of over-time were worked in the lab with no success in catching up. It was then the Selective Service gave the laboratory a helper. The Legislature then passed the Prenatal

Law, followed by the Pre-marital Law which required testing. Also came the physical examinations of all the students at the Arizona State University. This again swamped the laboratory. Physical examinations of all beauty operators, barbers, food handlers and many others were also later mandated.



Dr. Woolley's Graph Showing the Increase in Laboratory Specimens Examined Between 1937 to 1941

Dr. Woolley in her "Report of the Director 1942" noted that the policy of the laboratory had changed in 1942. She noted that, "samples bearing no relation to community health are not accepted from individuals for examination. Samples with

some apparent relation to community problems submitted by individuals may be accepted for examination by special arrangement. Reports of such examination are sent to the appropriate official agency and not to the individual."

Dr. Woolley also noted in her Report that the three laboratories had tested a total of 115,742 specimens. Of this total, 51.5% were now performed in Phoenix, 40.5% in Tucson and 8.0% in Flagstaff (it was noted that Flagstaff would have had higher numbers if it had not closed for 28 days in July due to the fact that the laboratory could not obtain personnel). Dr. Woolley further noted that the venereal disease program had almost doubled itself in 1942, particularly in the Phoenix laboratory.

Dr. Woolley in her "Budget Estimate for the Biennium 1943-1944" indicated a need to improve the Tucson Laboratory. She noted that, "one of the rooms in this laboratory often has a temperature of over 140 degrees Fahrenheit during the summer days. The ceiling over this room is the thin concrete floor of the stadium, which acts as a conductor, not an insulator of heat. A ceiling of insulating material should be made over this room." Dr. Woolley also noted in this report that the Flagstaff laboratory was the best equipped laboratory of the Department.

In the November 1943 *Arizona Public Health News*, Dr. Woolley also noted that, "It should also be remembered that wartime demands on the State Laboratory have increased the work to such an extent that many services formerly offered by the laboratory have had to be discontinued. The State Laboratory like other civilian agencies has had a major manpower problem. The laboratory is operating under this increased wartime load with a decreased personnel." The article also requested that agencies, physicians, veterinarians and others needed to assist the laboratory by not over ordering supplies from the laboratory. The article stated, "This sort of inconsiderate ordering ties up supplies, many of which cannot be replaced during wartimes, or cannot be replaced for months."

Dr. Woolley had a health problem and left in 1944 going to California where she was appointed Director of the Long Beach, California City Laboratory. She died of cancer of the lungs a short time later. Dr. Greene returned in 1944 only to resign a few months later to teach Bacteriology in what was the Osephotic College. Later, this became The School of Medicine at U of A. He later appears to have gone to the Department of Medical Microbiology, College of Osteopathic Physicians and Surgeons in Los Angeles, CA and finally to the University of California at Irvine.

The three State Public Health Laboratories after Dr. Greene left did not have a laboratory director until 1948. Each laboratory had its own Manager who ran the laboratories until the next Director was appointed.