

The PALIMPSEST

MARCH 1949

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WILLIAM J. PETERSEN

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THE PURPOSE OF THIS MAGAZINE

THE PALIMPSEST, issued monthly by the State Historical Society of Iowa, is devoted to the dissemination of Iowa History. Supplementing the other publications of this Society, it aims to present the materials of Iowa History in a form that is attractive and a style that is popular in the best sense—to the end that the story of our Commonwealth may be more widely read and cherished.

BENJ. F. SHAMBAUGH

THE MEANING OF PALIMPSEST

In early times a palimpsest was a parchment or other material from which one or more writings had been erased to give room for later records. But the erasures were not always complete; and so it became the fascinating task of scholars not only to translate the later records but also to reconstruct the original writings by deciphering the dim fragments of letters partly erased and partly covered by subsequent texts.

The history of Iowa may be likened to a palimpsest which holds the records of successive generations. To decipher these records of the past, reconstruct them, and tell the stories which they contain is the task of those who write history.

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THE PALIMPSEST

EDITED BY WILLIAM J. PETERSEN

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Three Deans and a College

The history of the College of Pharmacy at the State University of Iowa centers largely around its three Deans — Emil L. Boerner, Wilber J. Teeters, and R. A. Kuever. Although its beginnings were humble, the vision, ability, and energy of these three men, when coupled with the high quality of its faculty and reasonably adequate financial support, have given Iowa one of the finest pharmacy colleges in the nation.

The first movement toward pharmaceutical education in Iowa was the organization of the Iowa State Pharmaceutical Association in 1880. That same year the 18th General Assembly passed a law providing that all persons engaged in the sale of drugs at that time should be entitled to registration as pharmacists, but that any person who subsequently wished to engage in pharmacy should be required to pass an examination before the Commission of Pharmacy.

The enactment of this law created a demand for pharmaceutical education, and although a School

of Pharmacy had been set up in Des Moines in 1882, J. H. Harrison of Davenport and G. H. Schafer of Ft. Madison, representing the Iowa State Pharmaceutical Association, visited Iowa City in 1885 to inquire if the University authorities would be interested in developing a Department of Pharmacy. The University was interested and a group of three men — Emil L. Boerner, Gustavus D. Hinrichs, and Dr. Cassius M. Hobby — was named as the faculty of this Department.

The Department of Pharmacy had its beginning in the basement rooms of the old medical building, and faculty members were paid only the fees received from their students. The school prospered, however, and soon outgrew the space allocated to it. In the fall of 1891 pharmacy was transferred to the new building at the corner of Iowa Avenue and Dubuque Street. This setting was referred to by Dean Boerner as the "commodious and excellently equipped laboratories, especially the pharmaceutical which is *doubtless the largest in the country.*" At the same time the University assumed financial responsibility for the operating expenses of the Department. A representative of the Board of Regents of the University, in commenting upon these changes, said the Department had been "exhumed from its unwholesome quarters in the cellar of the medical building" and had been taken into "full university fellowship." The

name "Department of Pharmacy" was retained until 1900, when the University was divided into a number of colleges, one of which was the "College of Pharmacy."

Emil Louis Boerner, the first Dean of the College, had come to Iowa as a boy of twelve. He was born near Liegen, Westphalia, Prussia, April 21, 1855. His family emigrated to the United States in 1857, sojourning first at Newton, Pennsylvania, later moving to Chippewa Falls, Wisconsin, and in 1867 going to Iowa City. Here he received his early education and grew to manhood.

Young Boerner graduated from the Philadelphia College of Pharmacy in 1876 and in April of that year he returned to open a drugstore in Iowa City, a store which he continued to operate for many years. His pharmaceutical interests, however, were not confined to his own pharmacy or to his own community. He became a member of the American Pharmaceutical Association in 1877. In 1880 he was one of the druggists who was active in securing the passage of the pharmacy practice act, and in the organization of a State Pharmaceutical Association. In 1885 he became professor of practical pharmacy and dean of that department at the State University of Iowa.

Dean Boerner continued to serve in an administrative capacity until 1903. At that time he was made professor emeritus, and as such gave occa-

sional lectures out of his wide experiences. Meanwhile, various scholastic and professional honors came to him. He was awarded the degree of Doctor of Pharmacy by the State University of Iowa in 1896. He served as secretary of the Iowa State Pharmaceutical Association from 1881 to 1886. He was the first president of the Iowa Veteran Druggists Association organized in 1929, and in 1932 he was made Honorary President for life.

During the last half of the nineteenth century many independent colleges or institutes of pharmacy were established. Frequently these came to be known as "cram" or "plugging" schools — their sole purpose being to prepare candidates to pass examinations for the practice of pharmacy, for a stipulated fee. From the beginning the Department of Pharmacy at the State University of Iowa had a higher aim. It afforded a bona fide two-year course in the science of pharmacy, and its first faculty members were well qualified.

In 1904 Wilber J. Teeters became Dean of the College. Under Teeters' leadership still higher standards were achieved. In 1906 a three-year course in pharmacy was offered. In 1925 three years' study was designated as a minimum for graduation, and in 1932 the minimum was raised to a four-year course, which entitled one to the degree Bachelor of Science in Pharmacy.

Very early in his regime Dean Teeters saw the

advantages of a close connection between the College of Pharmacy and the manufacture and dispensing of medicine for the University hospitals. Since 1907 the College of Pharmacy has performed this work. "The best proof that the system is sound," Dean Teeters asserts, "is the fact that this arrangement has survived six presidents, four medical college deans, and at least a dozen hospital superintendents, with only words of commendation for service" which the College aims to make "as nearly 100 per cent perfect as possible."

The College of Pharmacy continued to occupy its quarters on Dubuque and Iowa Avenue until 1926 when it was removed to the new chemistry building. This marked a "new era" in the history of the College. Laboratories, classrooms, and the library once again were adequate for the work which the College sought to accomplish. There were three laboratories devoted exclusively to pharmaceutical work. The largest of these accommodated 156 students, the second 80 students, and the third was equipped as a manufacturing laboratory. The adoption of a four-year minimum course, and increased manufacturing demands rendered this laboratory inadequate in less than a decade. A new laboratory was built in 1937 and the original one was converted into a stock room and refrigeration room for expansion of the Drug Service Department.

It was in 1937, too, that Professor R. A. Kuever succeeded Wilber J. Teeters as Dean of the College. Mr. Kuever was born at Lowden, Iowa, October 27, 1886. His early education was in the public schools at Lowden and in the Evangelical Zion Academy there. He completed the work for the degree Graduate in Pharmacy (Ph. G.) at the State University of Iowa in 1907, and was awarded the degree Pharmaceutical Chemist (Ph. C.) in 1911.

Kuever became laboratory assistant and hospital pharmacist when he was only twenty-one, thereafter advancing steadily until he was appointed Professor of Pharmacy in 1925. When Wilber J. Teeters retired in 1937, the University authorities named Kuever as Dean of the College.

Dean Kuever has an aptitude for teaching. His courses show a splendid organization of material, presenting both the theoretical and practical aspects of pharmacy in a forceful and interesting manner. His administrative ability is shown in the manner in which he has strengthened courses throughout the College and given a new impetus to graduate study (for the M. S. and Ph. D. degrees) which was inaugurated in 1937. Besides his teaching and administrative duties, Professor Kuever has found time to serve as a consulting chemist and to promote pharmaceutical research.

Although busy with his professional activities,

Dean Kuever has given freely of his time and energy to University committees. He was appointed a member of the Board in Control of Athletics in 1916, serving until 1937. He has been a member of the Committee on Military Affairs at the University since 1918.

Dean Kuever has long been an active member of the American Pharmaceutical Association. He was secretary of the section on Pharmaceutical Legislation from 1914 to 1916, and chairman of that group in 1916-1917. He was vice-chairman of the House of Delegates in 1938-1939 and chairman in 1940. He was president of the American Association of Colleges of Pharmacy in 1941-1942.

Under the administration of its three Deans the College of Pharmacy has grown and prospered through the years. If the purposes of an institution of higher learning are to promote good teaching, provide professional leadership, and stimulate effective research, the College of Pharmacy at the State University of Iowa has in a large measure met these requirements. Graduates of the College of Pharmacy not only rank high in the nation but they also make a substantial contribution to the communities they serve. The three Deans of the College of Pharmacy have played an important role in making possible such achievements.

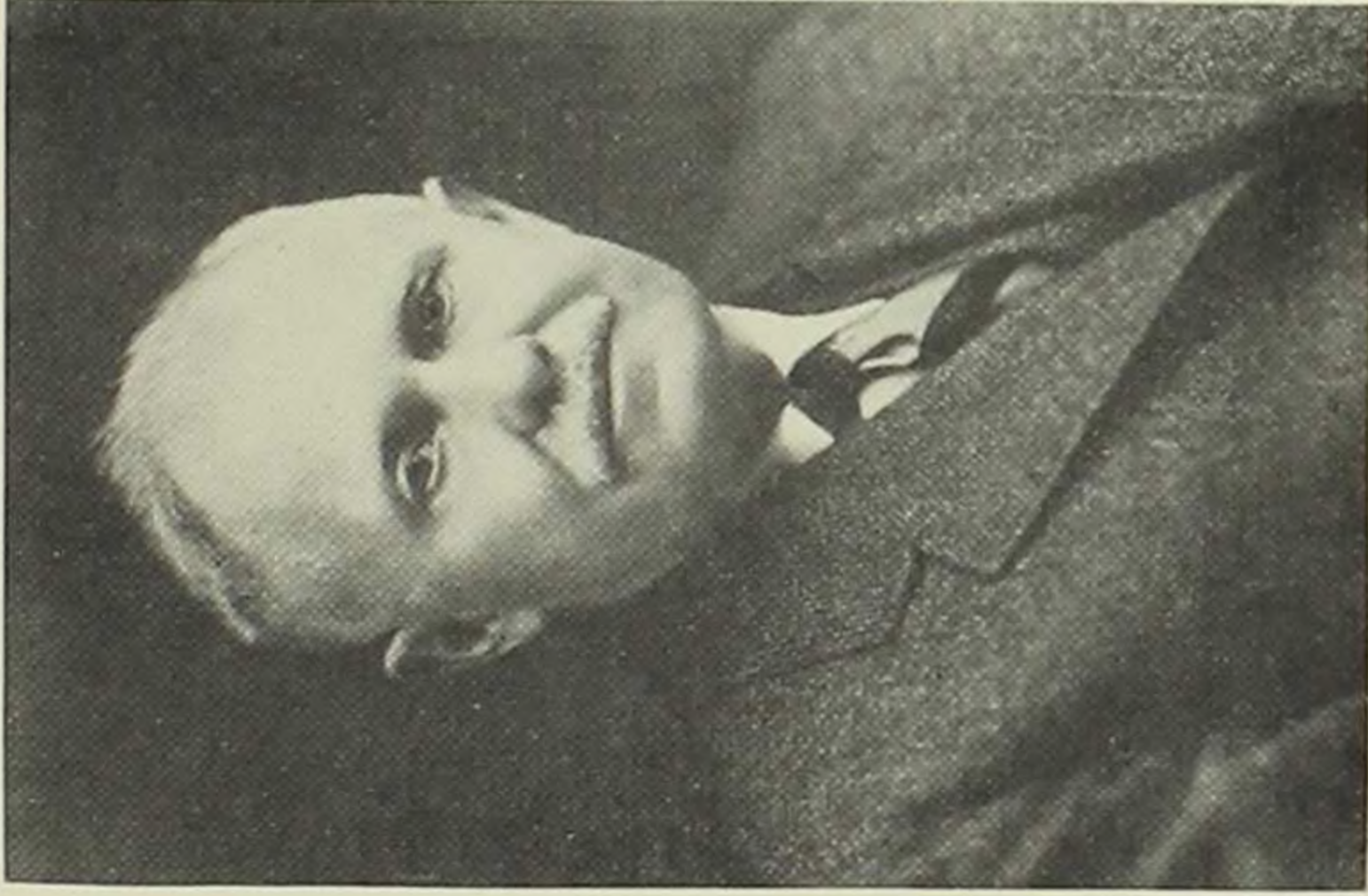
JACOB A. SWISHER

Wilber John Teeters

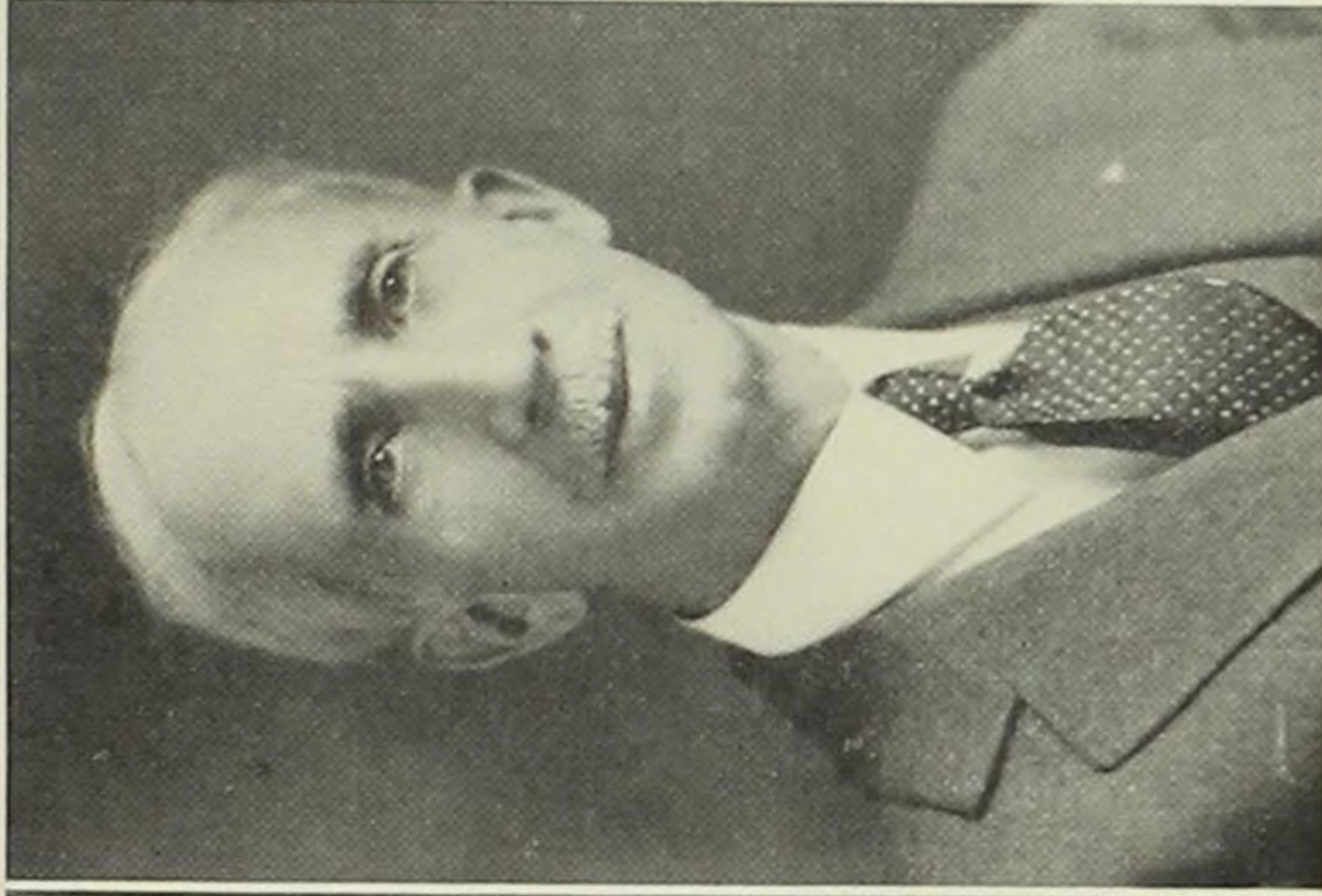
The normal life span of man has been described in terms of three score years and ten. It is acclaimed a matter of chance or perhaps fortunate circumstances, if one attains four score years. But today science helps us to preserve our health, conserve our energies, and live longer. Moreover, we "live in deeds, not years," in thoughts, "not in figures on a dial." Yet even today an octogenarian who retains an active interest in many fields, and who, in his own field remains unsurpassed, is worthy of commendation. Such a man is Wilber J. Teeters — scholar, teacher, administrator, expert witness, public servant, and renowned toxicologist. He is a courageous individual, with a saving sense of humor — yet withal a modest man.

Wilber John Teeters was born in a log cabin on a farm near Alliance, Ohio, October 10, 1866. His early education was attained in the country school and in an academy in nearby Limaville. He was graduated from Mount Union College in 1893 — his college years having been interrupted while he taught in the public schools. As a youth, he had entertained the hope of being a grocer. Later he thought of becoming a dentist. Subsequently he was attracted into the field of applied

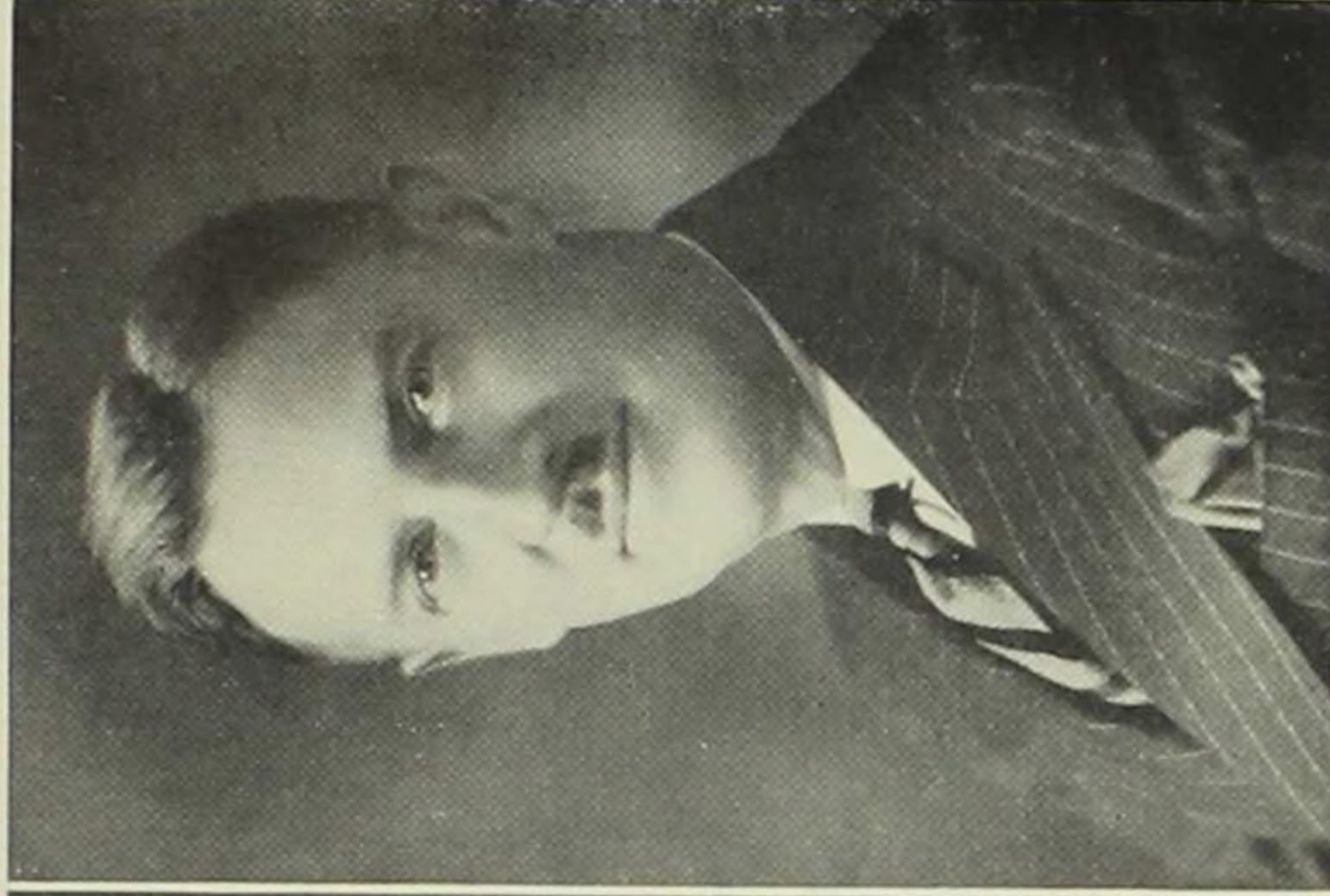
THREE DEANS OF THE UNIVERSITY OF IOWA COLLEGE OF PHARMACY



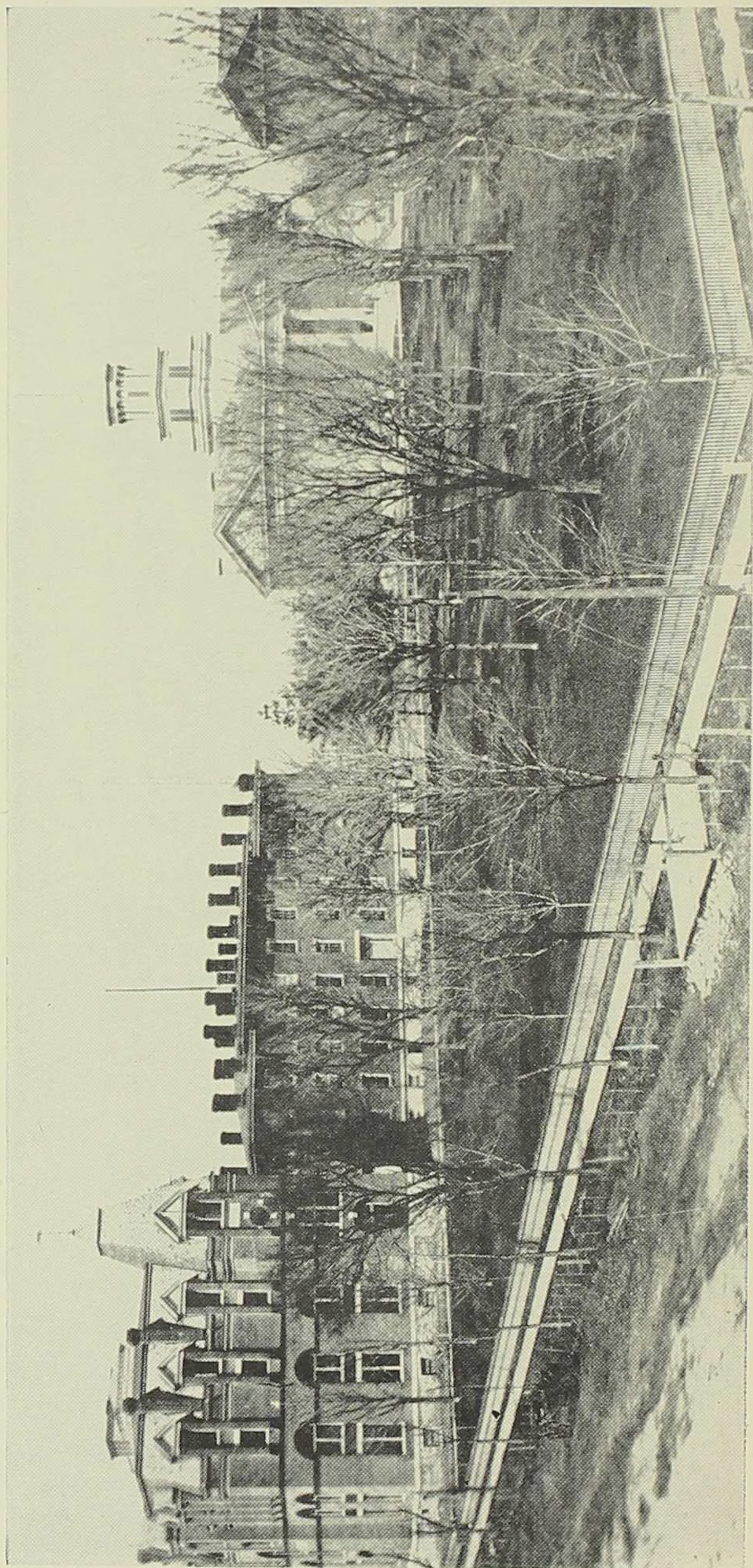
EMIL L. BOERNER
1885-1903



WILBER J. TEETERS
1904-1937



R. A. KUEVER
1937-



LEFT TO RIGHT—OLD MEDICAL BUILDING, OLD SOUTH HALL, OLD CAPITOL.
THE DEPARTMENT OF PHARMACY WAS FIRST HOUSED IN BASEMENT OF MEDICAL BUILDING.

chemistry and pharmacy. He received his professional training at the University of Michigan, where he was graduated with the degree of Pharmaceutical Chemist in 1895.

Prior to graduation, young Teeters had been offered a position at the State University of Iowa. He hesitated, because he desired to enter the field of commercial pharmacy, in a store of his own. The call came a second time, more urgent than the first. At length he accepted an appointment for one year as a demonstrator in chemistry in the Medical Department of the University of Iowa, thinking that he would return to Ohio shortly and become a druggist. But these plans were not destined to mature: Teeters enjoyed Iowa, and the University needed him. His preparations had been thorough, his attitude aggressive, his hopes high.

Teeters remained in his original position until 1903, when he became a professor in the College of Pharmacy. In 1904 he was made Dean of the College. A decade of service was soon completed, and then another. University students came and went. Faculty changes were frequent. New University presidents were appointed from time to time, but the Dean stayed on.

During the administration of Dean Teeters, the College of Pharmacy underwent its greatest development. The curriculum expanded from a two-year course — one of the best in the country — to

a three-year course, and then to four years, giving the bachelor's degree. Hospital pharmacy and drug manufacturing for the University hospitals and University laboratories were started and developed steadily during Dean Teeters' regime.

An able administrator and man of vision, Teeters was also an outstanding teacher with many individual ideas and methods. "Only those who have sat in his classes know what those possibly unorthodox but pedagogically sound methods were like." Students remember him and his methods well. He made the subjects live. There was never a dull moment. Many Iowa alumni, across the continent and across the years, prize highly their classroom experiences under Professor Teeters. The things they learned, aside from the subject matter of the course, were invaluable in helping them to understand life's problems.

The Dean's office door was always open. He was accessible at all times, not merely during a few office hours each week. Students were encouraged to confer with him freely relative to their university problems, and his wise judgment helped many over hard places. No one can say how many young people were aided by Dean Teeters.

Dean Teeters served on many University boards and committees. Two examples are indicative of the breadth of his interests. He was a member of the Board in Control of Athletics from

1905 to 1916, and was chairman during the last three years of that time. For nearly ten years, beginning in 1917, he was chairman of the Board of Social Organizations and Affairs. His good judgment and wise counsel in University matters were often sought and always freely given. For many years he was known as the "Dean of Deans."

In addition to his administrative, teaching, and advisory duties, Dean Teeters has frequently been called upon for analytical work in connection with cases involving the science of toxicology — a field in which he has won national renown. He avoids the use of the term "expert witness," however, recalling that such an individual has sometimes been defined as "one who knows more and more about less and less until finally he comes to know almost everything about nothing." But in a legal sense an expert is "one who has made a subject a matter of study, practice, and observation, and has particular special knowledge on the subject." In this sense Dean Teeters is an expert in the science of toxicology. Many times his knowledge of poisons and his skill in detecting them have helped to reveal facts which were essential in bringing criminals to justice. He has lectured frequently on such interesting subjects as "Poisoned Foods," "Science Fights Crime," "Chemistry in the Detection of Crime," or "Poison Homicides on the Wane."

Dean Teeters has been affiliated with many phases of educational work in pharmacy and allied fields. He served the American Pharmaceutical Association and the Iowa Pharmaceutical Association in many ways. He is a member of the American Association for the Advancement of Science, and he has been very active in the American Association of Colleges of Pharmacy.

Fraternal organizations have always received his active interest and enthusiastic support. While still a student at the University of Michigan, Teeters became the first president of Province Delta of the Sigma Alpha Epsilon fraternity. In 1905 he was one of the founders of the Iowa Beta chapter at the State University of Iowa. He is also a member of Phi Delta Chi, and Beta Phi Sigma, both pharmaceutical societies; Rho Chi, honorary pharmaceutical fraternity; Alpha Chi Sigma, chemical fraternity; Gamma Alpha, a graduate science society; and Alpha Phi Omega, the fraternity of the Boy Scouts of America. He helped found the Triangle Club (the University men's faculty club) and is one of its two surviving charter members. He is a Kiwanian, a Mason, a Shriner, and a Knight Templar.

The experiences of Dean Teeters in his family relationships have not been without their interruptions and bereavements. In 1896 he married Miss Anna Hollister, of Alliance, Ohio. To this mar-

riage a son — Ellis Hollister Teeters — was born in 1903, but he survived only four years. Meanwhile, Mr. and Mrs. Teeters had built a commodious home on the quiet wooded banks west of the Iowa River in Iowa City. Here Wilber Otis Teeters, an adopted son, became an integral part of the household in 1907. Here, also, Anna Hollister Teeters died in 1909.

In 1913 Dean Teeters married Miss Sara Harrison, a resident of Davenport and the daughter of a pioneer pharmacist of that city. In 1921 Sara Harrison Teeters died, after a lingering illness. In 1925 Hazel Reynolds of Waukee became the bride of Dean Teeters. Five years later, however, she forfeited her life in the birth of a son—Billy.

Dean Teeters retired from his active administrative duties in the College of Pharmacy on July 1, 1937, but remained a member of the faculty on a half-time basis, teaching pharmacognosy and toxicological analysis. The latter is an elective course, but it is of such interest that at times laboratory accommodations have been taxed to their full capacity. Pharmacy and chemistry students, both graduate and undergraduate, find it invaluable.

After his retirement from active duty, the Dean Emeritus devoted more and more time to civic affairs. He had long been actively engaged in the Boy Scout movement — an experience that served him well in promoting the happiness of his son,

Billy. In 1935, he was awarded the Silver Beaver, an emblem given to only one person annually in each area by the National Boy Scout Council for outstanding work with boys. For many years he served as an advisor for the Order of De Molay.

Always interested in civic affairs, in 1941 Mr. Teeters was elected an alderman of Iowa City. In 1943 he was elected Mayor and two years later was reelected to that office. Under his leadership the city was given an efficient administration.

On October 10, 1946, Mayor Teeters was honored on his eightieth birthday by 130 University alumni and Iowa City friends at a banquet in the River Room of the Iowa Memorial Union. A scholarship fund of more than two thousand dollars, contributed by a vast number of friends, was presented to the University in commemoration of his services as professor, dean, and public servant.

Speaking at this banquet, one of his colleagues said: "It's not so much what Teeters does, it's his influence on others that has made him so successful." A former student and alumnus of the College of Pharmacy said of him: "Not only was he a good teacher, but he took an interest in the student's life. He is a man whose deeds will always be remembered." This is just another way of saying: "We live in deeds, not years," in thoughts, "not in figures on the dial."

JACOB A. SWISHER

Science Fights Crime

Poisons have been used for centuries by all tribes and peoples. Not too long ago a papyrus found between the knees of a mummy in the valley of the Nile revealed, when it was translated, that Egyptians in 1552 B. C. knew about poisons and also how to use them. The original information must have come from the trial and error method as indeed the names of many of our poisons would indicate — dog-bane, rat-bane, cow-bane, leopard's-bane. Physostigma, for example (from which we now obtain eserine used as a myotic), was known to African tribes as the ordeal-bean since it was used to determine guilt. If the accused, after taking the drug, survived, he was judged innocent; if he died — guilty. And there is some evidence that the tribal chiefs also knew that while one powdered bean would kill, two or three would act as an emetic so that the accused had a sporting chance to live.

Poisoning may be classified as accidental, suicidal, or homicidal. Whatever the reason behind their use, poisons are interesting and also dangerous enough to merit careful study. It was not until 1836 that chemistry had advanced to a point where certain poisons could be detected by an ex-

amination of the stomach contents. Since the discovery of the Reinsch Test the use of arsenic or mercury by would-be poisoners is no longer common since the poison can be readily discovered.

Toxicology is the science of poisons. It is an exact science, depending on chemical analysis to determine whether or not a poison is present. The toxicologist thus must know chemistry and he should know the physiological action of drugs.

Many people have asked me how I became interested in the science of poisons. It grew out of a hobby. I had been doing toxicology work for the State for several years as the assistant to Dr. Elbert W. Rockwood, the state chemist. Dr. Rockwood continued to teach toxicology after I was transferred to the College of Pharmacy in 1903, but much of the state work was entrusted to me and I have been doing both official and private testing ever since.

All poisons are dangerous but they are not always used for criminal purposes. Many of our poisons are used in very small amounts in medicines. Strychnine, for instance, a poisonous alkaloid that is lethal in doses of $\frac{1}{2}$ grain or less, is widely used as a nerve stimulant in medicinal doses of $\frac{1}{60}$ grain. Because the properties of poisons are not too well known, many of the cases which come to me are from accidental poisoning. In these cases the work of the toxicologist is

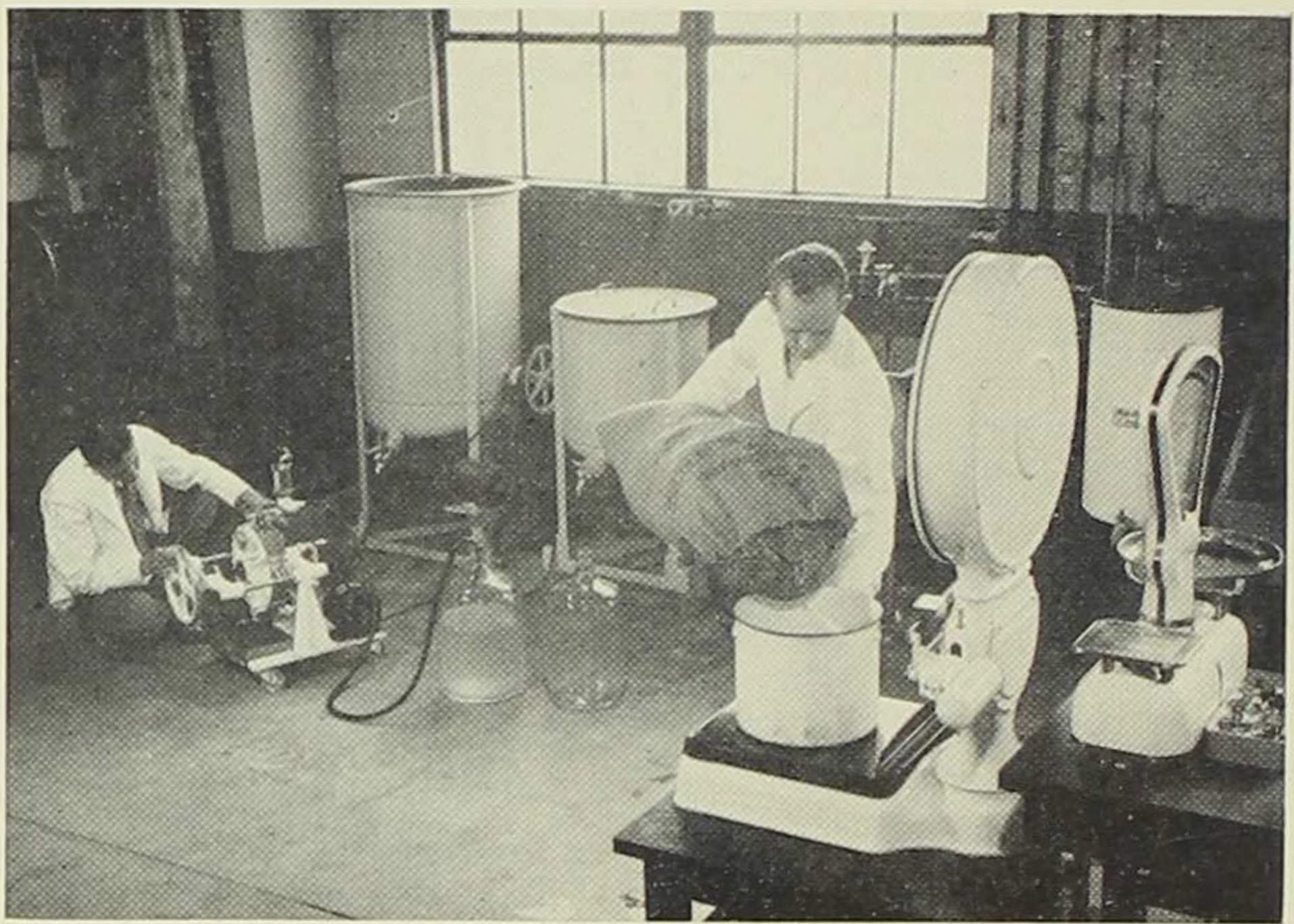


SECOND HOME (THIRD FLOOR) OF THE COLLEGE
OF PHARMACY.

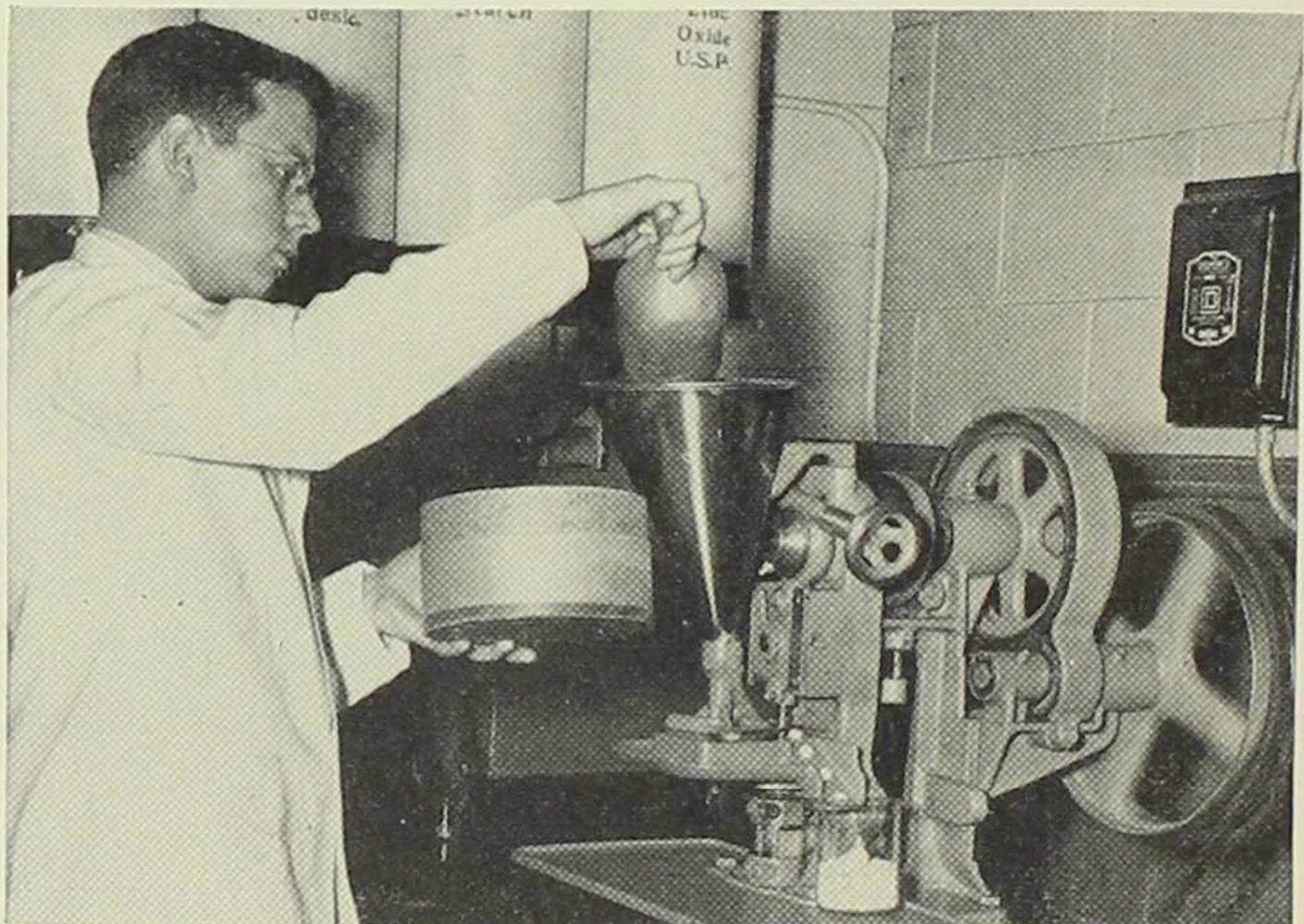


A GROUP OF PHARMACY STUDENTS BEFORE THE THIRD
HOME OF THE COLLEGE OF PHARMACY.

VIEWS IN PHARMACEUTICAL MANUFACTURING LABORATORY

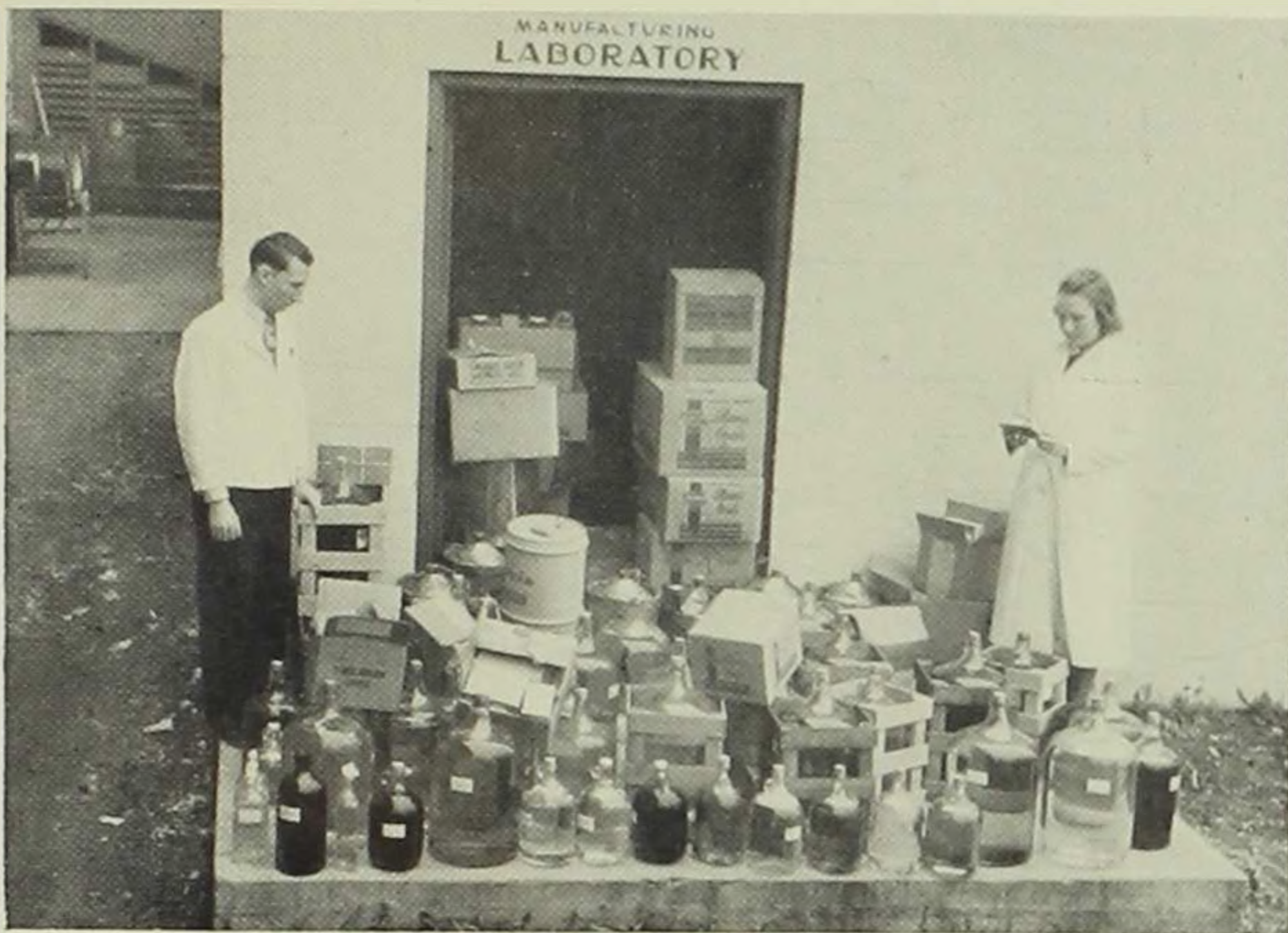


PREPARING CRUDE DRUG FOR FABRICATION INTO MEDICAL PRODUCT.



MAKING 100 TABLETS A MINUTE FOR UNIVERSITY HOSPITAL.

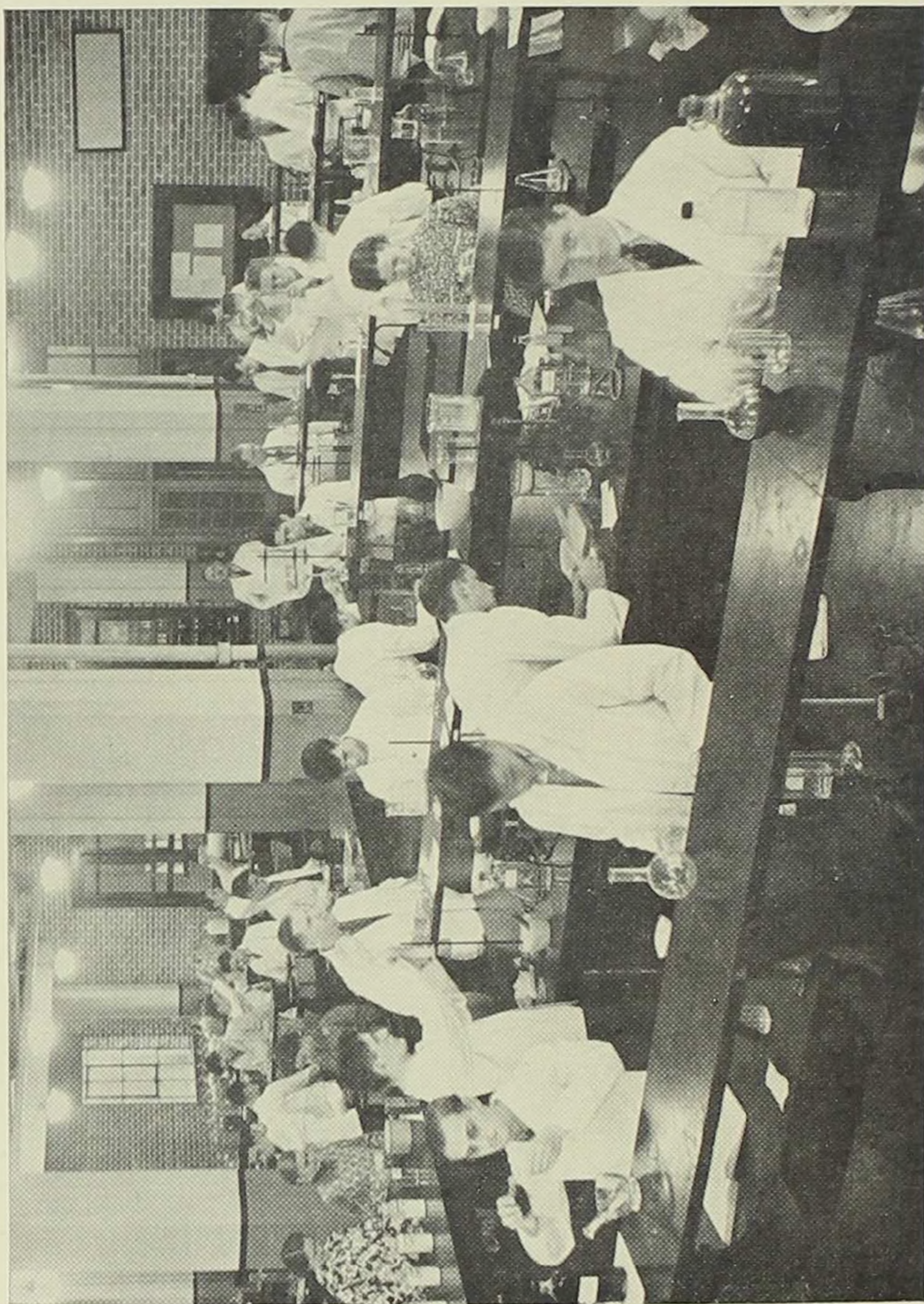
FROM LABORATORY TO UNIVERSITY
HOSPITAL DISPENSARY



TYPICAL DAY'S FABRICATION OF MEDICINAL PRODUCTS
SENT TO UNIVERSITY HOSPITAL.



SENIOR PHARMACY STUDENTS ON DUTY IN UNIVERSITY
HOSPITAL PHARMACY.



SECOND YEAR STUDENTS IN PHARMACEUTICAL LABORATORY.

chiefly preventive. First he detects the poison and eventually he may be responsible for guarding against its indiscriminate use.

Let me give you some examples of accidental poisonings. A lady once brought me a beautiful pink angel food cake which, out of the kindness of her heart, she had baked for a children's birthday party. The children all became very sick, so the lady brought the cake to me. She was very excited. She said she baked the cake herself and she knew it was all right. "Did you eat a piece," I asked her, "and were you sick?" "I'll tell the world I was sick," she replied, but she still thought the cake was all right. It was a beautiful cake, too. "What did you put in it?" I asked, and then we got to the clue. The cream of tartar she had used turned out to be antimony potassium tartrate, a powerful emetic for animals, used by her husband who was a veterinarian. No wonder the children got sick.

Accidental carelessness like this often results in trouble. People save old medicines which decompose and change their properties from harmless to dangerous ingredients. I once had a doctor send me a can of ether for analysis. "I bought another man's practice," he wrote in his letter, "and I found this among the supplies I got. It had been opened and I used it to anesthetize a child. The child died. What's wrong with it?" Ether as soon

as opened to the light begins to decompose into a compound that is a heart depressant. I sent this information to the doctor and never heard from him again.

Occasionally something comes to my attention which leads to a new protective law. For example, when sodium fluoride was first put on the market as an insecticide it was not marked as a poison. It was sold just as one would sell sugar. Then two deaths occurred in Iowa and I identified the poison and reported it. Now there is a law that sodium fluoride must be marked poison and labeled with proper warnings.

On the preventive side, the toxicologist may often stop an accidental death. He may also prevent a criminal death. A policeman came in one day and produced a small vial which is similar to those in which cigars are sometimes sold. He said he wanted the contents, a small amount of powder, analyzed. I asked why. The policeman replied: "I just want to know." "There is more back of it than that," I countered, "and you'll have to tell me its history." He replied that for two or three mornings after he had eaten his breakfast he was sick to his stomach. "This morning," he continued, "my wife went to the kitchen to get something, and I switched coffee cups on her, and she became sick. Then I found this in the kitchen cupboard, and I think we'd better have it examined."

His suspicion was well founded. The vial contained white arsenic which is odorless and tasteless. His wife was killing him painlessly all right, like a painless operation on a dog — cutting off an inch of its tail at a time. At first the irate policeman was going to get a divorce, but then he thought better of it and had his wife examined by a psychiatrist. She is now in an insane asylum.

It is evident from this policeman's story that the history of a case is important to the toxicologist, especially when he is helping to detect a criminal poisoning. In such instances the toxicologist often supplies the technical information which helps to solve a case and since these instances are dramatic and exciting, they are by far the best known part of his work.

Poisons fall into three classifications: (1) irritants like arsenic; (2) nerve stimulants like strychnine; (3) blood poisonings like carbon monoxide. The toxicologist knows the physiological action of all these classes, and it is therefore important that he have a complete history in order to know what kind of poison he is looking for.

A question that is frequently asked a toxicologist is how long after death a poison can be detected. The answer is that if it is organic it will decompose with the body and the limit is probably one year; however, if the poison is metallic it can be found after many years. For this reason our Iowa

law does not permit any corrosive or poisonous metals to be used in embalming fluids. Let me give you an example of how the abuse of this law complicated a case which came to my attention.

A number of years ago a metallic poison was found in a woman's stomach. Since she had been embalmed, I insisted on testing the embalming fluid before reporting and in it found the same metal. The story of the case was that the woman had been sick about a week before her death and the doctor had pronounced it stomach ulcers and put her on what is known as the "sippi" treatment; and she apparently had recovered. One night about midnight the husband reported that his wife had died. The neighbors came in and prepared the body for the funeral. The doctor signed the death certificate, giving the cause of death as intestinal flu, and the woman was buried.

Several months elapsed and the neighborhood talk finally resulted in a legal investigation. This talk grew out of the fact that when the neighbors arrived, on the night of the death, the woman was in bed fully dressed. Her hands were folded on her breast, her hair was combed, and the bed clothes were neatly arranged. They remembered also that they had seen her pumping water the evening before. In addition to this, a young girl who had ridden to the graveyard with the husband had remained as his housekeeper.

The poison used in this case acts in a peculiar way. In toxicology we say it jumps. The poison combines with the albumen of the mucous membrane and breaks the small capillaries; they bleed and form a clot. This condition continues throughout the digestive tract. The clots are pin-head in size and usually two or three inches or more apart. In this case the entire digestive tract was prepared as a court specimen. A competent pathologist testified that the clots found had been produced at least a week before death.

No amount of the chemical introduced in the embalming fluid could have produced the clots, for they had to be formed when there was a beating heart. Evidently a second dose of the poison had been given the night of her death.

It should be noted that the husband did not testify. He had taken out an insurance policy on his wife's life payable to himself. He had signed a poison register, but not with his own name, and at the inquest he refused to write since his penmanship might incriminate him. Added to this, and not to be overlooked, is the young girl who remained as his housekeeper. The jury decided that he was guilty and made him a boarder at Fort Madison for life.

The embalming fluid which complicated solving this case had been manufactured in Cleveland where the manufacturer strenuously denied the use

of any metal. A trip to Cleveland and a call at a miserable little laboratory found the so-called doctor on his vacation. The office girl said that she remembered the correspondence and quite frankly stated that the embalming fluid contained the metal. I called her attention to the fact that the Iowa law prohibited the use of corrosive or poisonous metals in embalming fluids. "Oh yes, we know that," the office girl replied, "but there is no penalty attached." She was right.

It is unfortunate for the toxicologist when a coroner is the undertaker. If he performs the autopsy he may also destroy the evidence. I had two stomachs sent in recently that were embalmed before the autopsy. Embalming fluids contain formaldehyde which is a reducing agent making it impossible to test for some poisons, such as cyanide. These fluids are usually colored with eosin, a persistent dye, and this makes the toxicologist's work doubly hard.

Our laws are written to protect the accused and they go on the theory evidently that it is better to allow some of the guilty to escape justice than to punish one innocent person. The Iowa courts do not hang people on circumstantial evidence but they sometimes give them a life sentence. In poison cases the evidence is naturally circumstantial. Whatever his motives (whether hate, revenge, jealousy, hastening of inheritance, or replacing old

love with new) the poisoner does not take his friends into his confidence; it is a stealthily and deliberately planned crime. To convict him, the state must establish a motive, prove possession of the poison, and if possible show where it was purchased and whether the accused was in a position to administer it.

The above is particularly true of a poison case, especially when the coroner is careless and destroys the evidence. Fortunately the poisoner usually makes some slip that leads to his identity. While this part of the work belongs to the State Bureau of Investigation, the toxicologist is often important. Here are some cases to show how the poisoner may trap himself.

A retired farmer, wishing to replace his old love with a new, decided to put poison in vitamin capsules that his wife was taking. He removed the vitamin powder from four capsules. In two capsules he placed poison. In two capsules he placed ordinary flour. The capsules were then put back in the original container. He could not have known when his wife would take a capsule containing the poison.

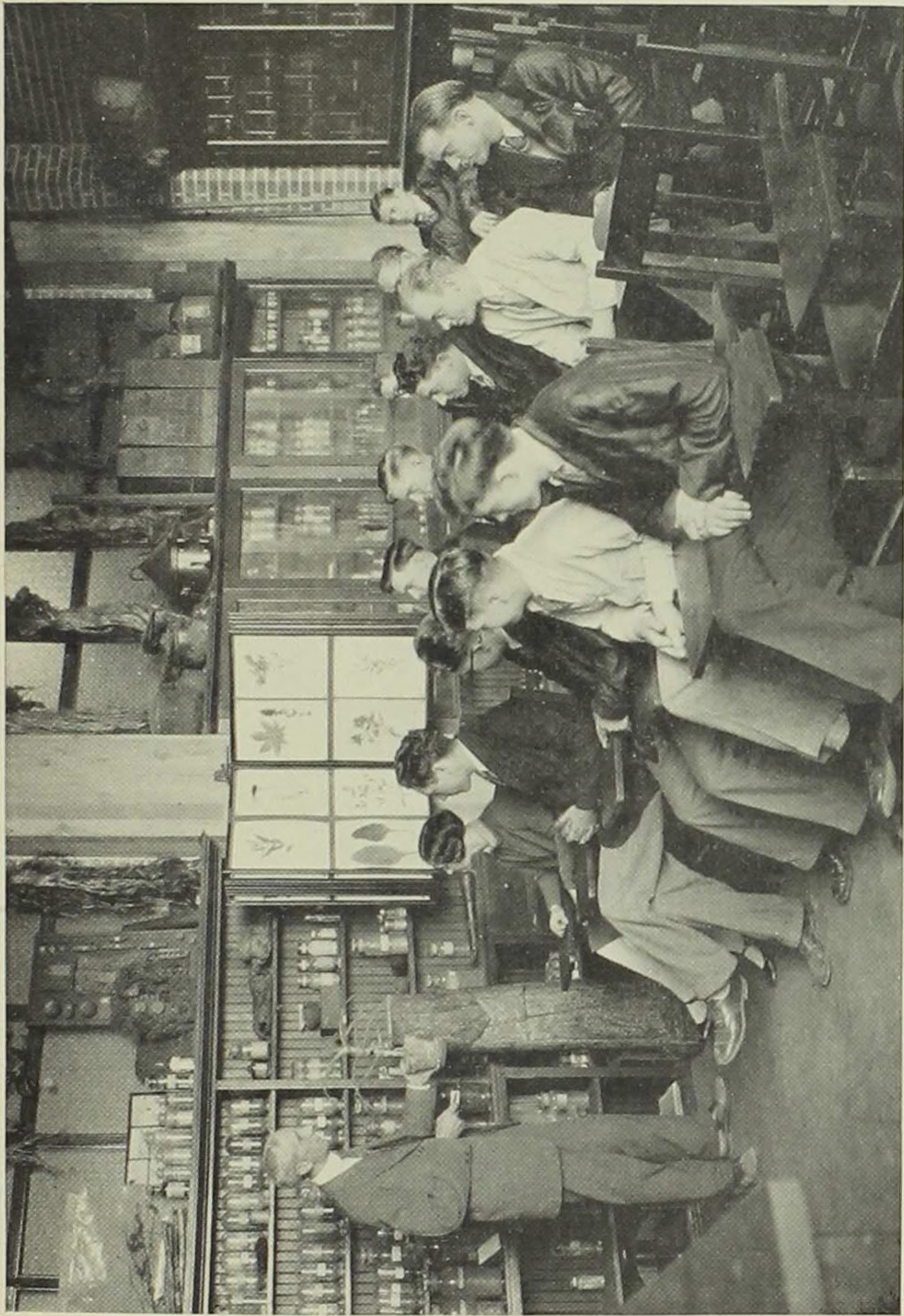
One night, shortly thereafter, the farmer came home and found his wife very sick. She asked for a doctor and told him that the only thing she had taken was a vitamin capsule. She died within an hour and a chemical examination disclosed poison.

Why the extra capsule of poison and why the two capsules of flour has not yet been explained, but this mistake coupled with his love affair led to his conviction. If he had filled only one capsule and bided his time, he might have succeeded.

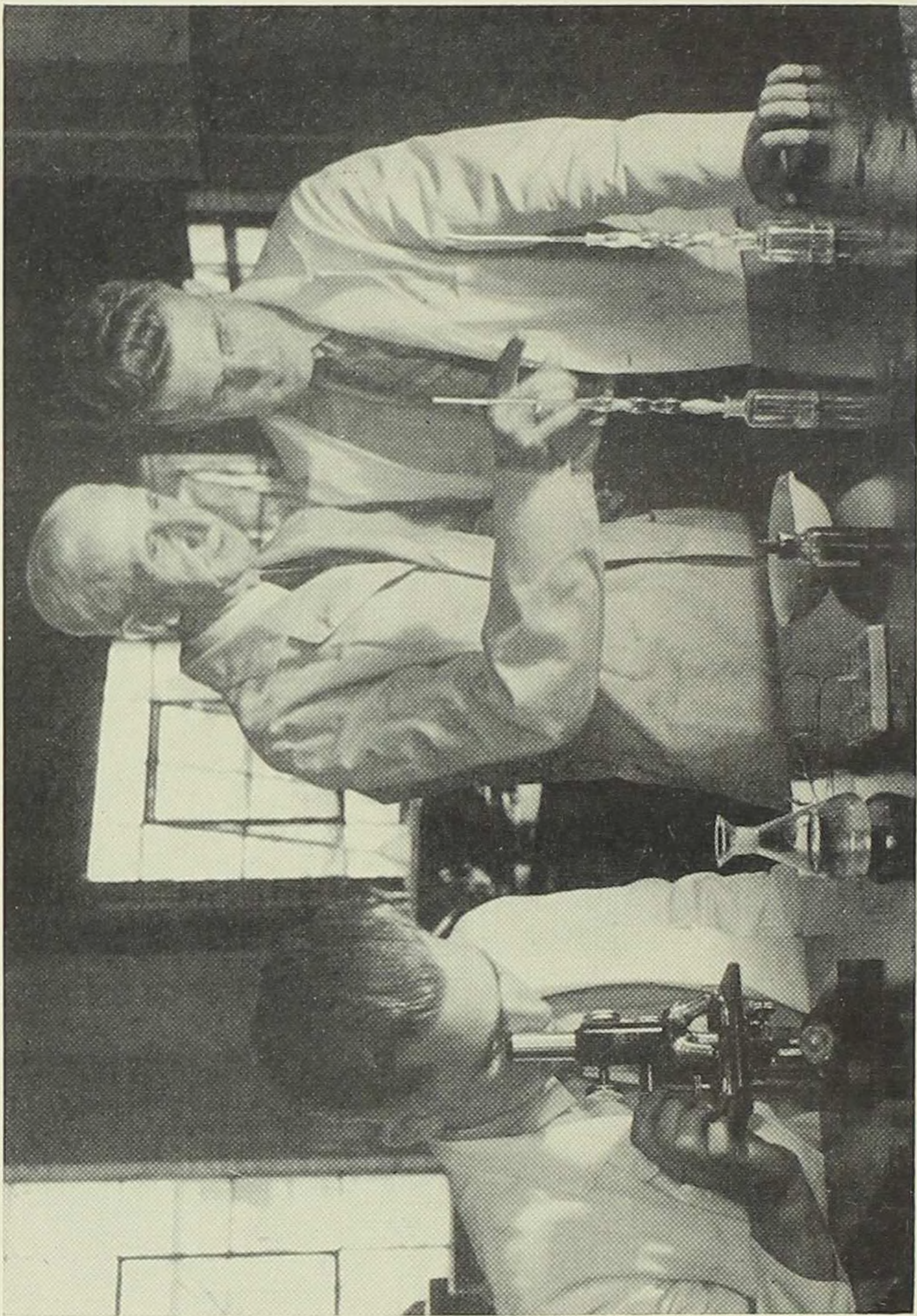
Another case to prove the point — a farmer and his wife were accused of poisoning their only daughter. They had decided to leave the farm and move to a small town. They left in the morning with a load of furniture, but the 12-year-old daughter stayed at home. They returned about 3 P. M. and found the girl dead on the kitchen floor. She was stretched out, clothes neatly arranged, hair combed — hands folded on her breast. They did not touch her but called their preacher.

The minister suggested that they call a doctor who signed the death certificate, "apoplexy." As they were about to lower the casket at the grave an officer halted the proceedings, demanding an autopsy. Poison was found in the stomach. There was a \$5,000 policy on the girl's life and the insurance company had demanded the examination. It was also found that there was a \$5,000 mortgage on the farm. The poison found in the stomach was one of the most terrible known and no person dying from this poison could die a relaxed death with arms folded and clothes all neatly arranged.

Not all poison cases are detected, probably no more than half. When a body is disinterred and a



DEAN TEETERS LECTURING TO A SECTION OF SENIOR STUDENTS IN PHARMACOGNOSY
(1930).



DEAN EMERITUS TEETERS DEMONSTRATING SENSITIVE TEST FOR ARSENIC
IN TOXICOLOGY.

poison is found, someone has made a mistake. It is easy to see how this happens, for some poisons simulate diseases. Irritant poisoning reacts like acute indigestion, appendicitis, peritonitis, etc., while narcotic poisoning simulates epilepsy, apoplexy, uremia, and certain heart and cerebral diseases. In my experience I have found only two lawyers who claimed to know chemistry. One informed me that he had had chemistry and would conduct my cross-examination. This was a small Iowa town and the lawyer evidently had sent out word of this cross-examination for the high school chemistry class was dismissed to be in court.

The rustic attorney began with, "H₂O is water, isn't it?" "HCl is hydrochloric acid? HNO₃ is nitric acid? NaCl is sodium chloride?" and several others. My answer to all these queries was *yes*. Finally he said, "Na₂CO₃ is Baking Soda, isn't it?" The answer was *no*. The lawyer seemed surprised and repeated the question several times with the same reply, *no*. At this stage the judge stated that the witness had permission to explain to the attorney just what Baking Soda is. This was a rare opportunity — to explain in detail that what he was talking about was washing soda and not baking soda. The high school kids enjoyed it; the judge rapped for order. This ended the cross-questioning. That attorney was known thereafter as Baking Soda Joe.

Training will help. The Peace Officers Short Course given for the past fourteen years at the State University of Iowa under the direction of the College of Law has included a course in toxicology. It is hoped that it will develop into a regular university course for the training of Police Officers as a profession. This may help, for example, to overcome the general prejudice against autopsies. Coroners and doctors hesitate to order an autopsy unless there is distinct evidence of foul play. And a death certificate signed angina pectoris, intestinal flu, or heart failure is general enough to cover many suspicious deaths. Furthermore it takes an alert doctor to catch a death from poisoning — especially from an irritant which causes such a common symptom as an upset stomach.

One case where an alert doctor helped solve a crime came to my attention a few years ago. Just after a severe snow a farmer reported the death of his wife. The coroner, who was an older man, did not think that he could make the trip so he sent a young doctor who was temporarily taking care of a practice there. The doctor stated that he found the woman prepared for burial. He asked the husband several questions and was about to sign the death certificate when it occurred to him that people do not die without a cause. He asked for a more detailed report of her death and found that

just before death she had had a convulsion after her husband had given her a quinine capsule, supposedly for a cold.

The doctor refused to sign the death certificate and ordered an autopsy. Poison was found. The doctor told me later that after he made this decision he sweat blood until the positive report was received. He stated that he knew definitely that if the report was negative he was through as a doctor in that community.

To aid in the detection of criminal poisoners, laws have been passed requiring that all poisons must be so labeled and in addition be marked with a skull and cross bones. The law also requires the purchaser of poison to sign a poison register at the drugstore, giving the name of the poison, the amount, what it is to be used for, the date, and the signature of the purchaser. This register is open to inspection by any peace officer.

Some years ago a woman asked a druggist in Iowa City for "Rough on Rats," but she wanted the kind that did not turn their faces black. The druggist dispensed a harmless powder and notified the police. In doing so he prevented a suicide.

There are also unwritten laws which furnish protection. Fortunately, for many years now, newspapers in reporting poison cases have not named the poison. There is an ethical reason for this. The number of poisons that any ordinary

person knows is not great, and simply mentioning one may put an idea into someone's head. When a reporter slips, I am sure to get several articles to be tested for this same poison.

A man sent in a piece of pie with the request that it be tested for poison. He stated that his wife was not in the habit of baking him pie and he thought this should be tested. It was loaded with arsenic. What happened, I do not know.

This is matched by the old gentleman who sent some tobacco to me saying that every time he tried to chew it, it made him sick, and well it might for it contained strychnine. He was persistent to say the least.

A toxicologist's work is never dull. Furthermore, I find that the human interest keeps it from being too depressing. Although it brings me in contact with the sordid side of life, I am always conscious that the people involved represent a very small percentage of humanity. I get comfort, not from the comparatively few that I have helped send to the penitentiary, but from the larger number of troubled souls who are relieved of their fear of being poisoned.

WILBER J. TEETERS

Doctors, Drugs, and Pioneers

Long before the coming of the pioneers the Indian practiced the art of healing in Iowa. When Black Hawk's father was wounded by the Cherokee, the Sauk chief sped to his side. According to Black Hawk: "The *medicine man* said the wound was *mortal!* from which he soon *died!*"

The secrets of the Indian medicine bag were not unknown to Iowans, many of whom swore by such nostrums as *Clemens' Indian Tonic* which was an "infallible" cure for chills, fever, and ague. If a prejudice existed against Indian tonics, the pioneer druggist could always supply alternative cures of American, European, or Asiatic origin.

Some pharmacists claim the first Iowa drugstore was set up at Burlington in 1833 with a \$16,000 stock brought from Ohio. Nothing more is known of this venture, but beginning with 1836 Iowa newspapers began advertising drugstores. Some of these were operated by doctors; others by general storekeepers. In 1836 J. M. Salmon alighted from a steamboat at Fort Madison and opened his Good Samaritan Drug Store.

On July 10, 1837, Dr. J. M. Campbell informed readers of the *Burlington Advertiser* that he had a "large assortment" of drugs and medicines to sell

cheaply. In this same paper J. Hall stated he would fill prescriptions neatly at a low price. Among his numerous fresh drugs mentioned were Cephalic snuff for headache, court plaster, Slippery Elm bark in flour, sulphur, genuine Windham's pills, Bateman's drops, Preston's smelling salts, saltpeter, hoarhound, Electric anodyne for toothache and earache, and Jujube paste for coughs and hoarseness.

Most drugs arrived by steamboat from Saint Louis or Ohio River ports. Thus on May 11, 1836, Timothy Mason advertised in the *Du Buque Visitor* the receipt of soda and Seidlitz powders together with cases of "superior" lemon syrup, Congress powders, French cordials, and anise seed, by the steamboat *Cavalier*.

The variety drugstore was well established before 1846. At Burlington, Lamson and Girvan were selling their New York and Boston dry-goods, hardware, cutlery, and Queensware, together with drugs, medicines, paints, and dye-stuffs. At Bloomington (now Muscatine), W. Hollingsworth filled prescriptions and sold drugs, medicines, paints, perfumery, and dyestuff in conjunction with books and stationery.

In 1845 B. Sanford informed readers of the *Davenport Gazette* that he could furnish physicians and families favorable to the "Botanic System of Medicine" with almost every necessary

article including Bayberry, Cayenne, Hemlock bark, Composition, Nervine, No. 6, Boneset, G. Myrrh, Gold Thread, and Golden Seal. Charles Lesslie, Sanford's competitor, dealt in drugs, patent medicines, chemicals, and a score of other things.

Although the first drugstores were located along the Mississippi, the pioneer druggist swiftly followed the squatter inland. On October 23, 1840, William Gobin of Rochester in Cedar County was advertising drugs and medicines in an Iowa City paper. By 1848 Fenimore & Peterson of Iowa City advertised their stock as containing 500 ounces of quinine, 60 pounds of English and American calomel, 75 pounds of Peruvian bark, 500 pounds of Epsom salts, 300 pounds of flour sulphur, 75 pounds of carbonate of soda, 50 pounds tartaric acid, 40 pounds pulverized ipecac, 50 pounds pulverized rheumatism root, 50 pounds extract of logwood, and 500 pounds of alum.

Prior to the Civil War, restrictive legislation was passed against poisoning and the sale of poison. As early as January 25, 1839, the Legislative Assembly of the Territory of Iowa prescribed stern punishment for persons guilty of poisoning. The Code of 1851 made such acts punishable by imprisonment in the penitentiary not exceeding ten years and by a fine not exceeding one thousand dollars. The same Code also declared: "If

any apothecary, druggist, or other person, sell and deliver any arsenic, corrosive sublimate, prussic acid, or any poisonous liquid or substance, without having the word 'poison' and the true name thereof written or printed upon a label attached to the vial, box, or parcel containing the same, he shall be punished by fine not exceeding one hundred dollars nor less than twenty dollars." The work of a state toxicologist is an outgrowth of such early laws.

As the years passed Iowa druggists were quick to recognize the need for well-trained pharmacists. The organization of a State Pharmaceutical Association in 1880, and the founding of a Department of Pharmacy at the State University in 1885, are but steps in the growth of a profession. When the 70th annual meeting of the Iowa State Pharmaceutical Association was held at Des Moines in 1949, Governor William S. Beardsley (himself a druggist) was a principal speaker. In addition to the governor, John P. Berg, Luke Vittetoe, and Harlan L. Pote were druggists serving in the 53rd General Assembly. It is not unusual for both the Senate and House of the General Assembly to list a Pharmacy Committee.

WILLIAM J. PETERSEN

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