

# THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

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DEPARTMENT.

## CORRELATION OF MANUFACTURING PHARMACY ASSIGNMENTS AND DIDACTIC CLASS-ROOM INSTRUCTION.

BY FERDINAND D. STOLL.\*

At the time when Prof. Adley B. Nichols sent out his questionnaire soliciting topics for discussion during the Manufacturing Pharmacy Seminar, I responded by submitting the title of this paper. My attitude was inquisitive and I had little expectation that it would befall my lot to assume a didactic rôle on the subject. As it is, I am still inquisitive on this theme and I confess at the start that my prime motive is to precipitate a discussion and thereby learn how other instructors correlate their laboratory assignments with didactic instruction—and to receive suggestions which will lead to better results among the student body of our colleges of pharmacy.

In a perusal of the catalogs of many of the colleges of the ASSOCIATION, one will note that the courses in the various branches are established as definite standardized and numbered courses—and that a certain number or group constitute a session of work for the student. In other catalogs, such as that of the Louisville College of Pharmacy, the courses are described to the reader in general terms indicating the nature and scope of the sessions' work but are neither numbered nor divided into semester hours or periods. Neither variety of catalog imparts any real clues to the correlation of the subject matter of Manufacturing Pharmacy and Didactic Pharmacy periods. And it is my sincere belief that the maximum benefit will accrue to student, instructor and college only if Manufacturing Laboratory assignments and Didactic Lectures are correlated.

At the time when the two-year course was in vogue in our College, the Manufacturing Pharmacy laboratory course was largely a course separate and distinct from the Didactic Course in Pharmacy, and consisted of a total of two 3<sup>1</sup>/<sub>2</sub>-hour periods per week for thirty-two weeks. Such preparations or types as suggested in the Syllabus were made by the classes and during these periods the instructor frequently found it possible to incorporate much didactic instruction regarding the preparations manufactured in the Laboratory. In thus doing, it was possible to devote less time to lectures on these same preparations and to utilize the time saved for either a consideration of more National Formulary preparations or for mention of newer developments in theoretical and practical pharmacy.

The adoption of the three-year course called for a revision in the programs of practically every department at each college making the change. Our Syllabus, while it outlines a minimum course in Pharmacy, allows each college to arrange the courses and to extend beyond the minimum in a manner that best suits the needs, desires, class schedules and resources of the college.

In modifying and extending the Pharmacy Course from two years to three years the students were given much new material in Manufacturing Assignments,

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\* Louisville College of Pharmacy.

while in the lecture schedule it was found desirable and possible not only to include new material, but also devote more time than formerly to Theoretical Pharmacy, Mathematics and consideration of U. S. P. and N. F. preparations. Freshman "Manufacturing Pharmacy" was modified to include actual work in Physical Pharmacy, *viz.*: Metrology, Specific Gravity, Specific Volume, Melting Point, Boiling Point and Solubility determinations during the first portion of the course or session, while, at the same time, these subjects were presented and explained in the lecture periods. Following Physical Pharmacy, students began making the more simple types of preparations such as Aromatic Waters, Infusions, Decoctions, Vinegars, Mucilages, Liniments and U. S. P. Emulsions while, the Didactic periods paralleled this work with a discussion of the preparations made, the types they represent, the theories embraced and the manipulations involved. Notes taken in lecture periods amplified laboratory work, and laboratory assignments afforded practical application of principles expounded in lecture room. Theory and practice were closely correlated.

Junior Didactic instruction is devoted to a consideration of the U. S. P. and N. F. preparations, while the Manufacturing assignments call for the making of preparations recommended by the Syllabus and which have been recently mentioned in Didactic class-room work. Senior work follows along the plan of the Junior but involves the study and manufacture of more difficult preparations.

In framing the Freshman class schedules, Didactic and Manufacturing periods were so arranged that Didactic periods preceded the Laboratory, so that operations or preparations discussed in the lecture room could be demonstrated or made in the Laboratory while the subject was still fresh in the students' minds. In Junior and Senior work, subject schedules were so arranged that didactic consideration of a preparation always preceded the assignment to make it. This, I think, is as it should be—not only in Pharmacy, but for Chemistry and Pharmacognosy as well. Then too, at the beginning of each Laboratory period a portion of the period is devoted to a brief didactic review of the preparations assigned, and to explain the working formula for special details to be observed or avoided.

In planning the schedules and assignments for the three-year course, every effort has been made to correlate Didactic and Laboratory subjects. The effort has been decidedly advantageous, the results gratifying. Many freshmen students found no little difficulty in mastering the mathematics of Metrology, Specific Gravity, Specific Volume and Thermometric conversions when presented in the class room alone—as was the method during the two-year course; but now, as has been my experience, the subject is more interesting and more readily understood when class-room work is correlated with actual assignments in the Laboratory. A student has a far better understanding of specific gravity and specific volume when he measures 50 cc. of glycerin into a graduate and finds that it weighs 62.5 Gm. and then determines the weight/volume or volume/weight ratio. Then too, if a student is given a turbid liquid mixture and is directed to pass it through gauze, then through cotton, finally through filter paper, he has a far better understanding of colation and filtration than if these topics were relegated to class-room lecture alone.

The more closely the Laboratory assignments follow class-room discussions, the more impressive to the student. The majority of students—especially those

whose experience has been in drug stores where little or no manufacturing is done—find it difficult to remember the ingredients and process for making many of the more important preparations; but when a group such as the *Liquors* is explained in class room one day and then some of these are prepared in the Laboratory soon after, the student learns and retains more information than if lecture and laboratory assignment were more disjointed.

In the study of U. S. P. and N. F. preparations it frequently happens that Didactic instruction runs ahead of Laboratory assignments. For preparations such as Tinctures, Fluidextracts, Fluidglycerates and Extracts, this is sometimes advantageous as it gives the student a better perspective of that particular class of products, so that when he actually prepares any one preparation assigned he has acquired a familiarity much to his advantage—does not follow directions so blindly.

To further correlate Manufacturing assignments with Didactic instruction, laboratory forms are used. The student is encouraged to bring to the Laboratory all lecture notes, and any supplementary text and to refer to them in connection with the preparations assigned; the object being to learn as much as possible about each preparation at the time it is actually being made, thus correlating theory with practical manipulations. The forms are saved as a laboratory notebook, and, as they accumulate, provide the student with excellent material for a *Review* of the subject. Samples of all preparations made are saved by the student as his collection and later in the session, these are used as a basis for an oral quiz.

To my mind it is highly desirable to correlate Manufacturing Assignments with Didactic Class-Room Lectures. It gives the student a more ready grasp on the subject through the close sequence of laboratory or manufacturing assignments following the didactic—correlation of theory and practice. In a session's time it saves class-room hours for the instructor and enables him to either review more extensively or to include new material. For the student it correlates the *Why* with the *How* before the student forgets the *Why*, and is there anything to be gained by teaching students *How* before the *Why*? It will also result in higher class scholarships and less failures—in the past three years at our College the Manufacturing was very popular with the students.

My attitude in reading this paper has been one of inquiry. I should like to know:

1. To what extent and in what manner do other Colleges correlate Manufacturing Assignments with Didactic Class-Room instruction?
2. In Manufacturing Pharmacy periods, how much time, if any, should be given to a didactic treatment of the preparations assigned?

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#### ANOTHER PATIENT RELEASED FROM NATIONAL LEPROSARIUM.

Dr. C. C. Pierce, Acting Surgeon-General, of the Public Health Service, has authorized the release of another leper from the National Leprosarium of the Public Health Service at Carville, La. This is the fourteenth leper who has been released during the present fiscal year, from this institution.

The National Leprosarium at Carville, La.,

was established in 1921. Since that date 39 persons have been released as no longer a menace to the public health. Of this number, only one has been obliged to return to this institution for further treatment.

There are now under treatment in the National Leprosarium at Carville more than 300 lepers.

## THE EIGHTIETH BIRTHDAY OF JOHN URI LLOYD.

During the week of April 19th, Cincinnati celebrated the eightieth birthday of John Uri Lloyd. Thousands of his fellow citizens, admirers and friends, not only in Cincinnati, but throughout the country, joined in the gladness of the occasion and in wishing him continued health, happiness and usefulness.

On Tuesday, April 16th, Professor Lloyd's birthday was particularly remembered at the monthly luncheon of the Veteran Druggists' Association of Cincinnati, which now is called the Veteran Apothecaries' Association of Cincinnati. Frank H. Freericks extended the congratulations and best wishes, not only of the Cincinnati Veterans, but of all the veterans throughout the country, and presented a wonderful birthday cake which had been baked for the occasion by Mrs. Freericks with the special reservation, as a right, that it be agreed she will have the same privilege for the next ten years on the annual birthday celebration of Dr. Lloyd. At the conclusion of his congratulatory remarks, Mr. Freericks, with the permission of President Greyer, instituted the Lloyd Clasp, which constitutes a joining of hands of all the veterans with Professor Lloyd in the center. The Lloyd Clasp hereafter is to be reserved for the birthday commemoration of Professor Lloyd and is intended to be a permanent institution throughout future years and generations of Cincinnati veterans, serving always as a reminder of him; thus making it possible that through the continuation of the veterans and installation of newer veterans, replacing those who pass away, there will always be a direct contact from the hands of John Uri Lloyd to the hands of all the rest, ever serving as a reminder of his unselfish devotion to humanity and to pharmacy, which have been enriched by his personality and existence.

On April 18th, the eve of Professor Lloyd's birthday, his very intimate friends and admirers, including the outstanding leaders of Cincinnati and some national leaders in pharmacy, tendered him a Testimonial Dinner at the Cincinnati Club. It was agreed by all present to have been the most wonderful affair of its kind for a great many years. Arrangements for the dinner were in the hands of a small committee of the celebrants' friends, of which Mr. A. J. Conroy, possibly his very closest friend, was the chairman. It had been the thought to limit the informal invitations for the dinner to just fifty of the very closest friends, but the number had to be extended to practically one hundred, and thousands were disappointed that they could not also be present. Those who spoke and paid tribute to the greatness of the guest of honor and to the wonder of his unselfish work were A. J. Conroy, Dr. J. M. Withrow, Judge John Weld Peck, Editor E. G. Eberle, of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, Dr. Edward Kremers of the University of Wisconsin, Col. John L. Shuff. President Blackwell, of the Chamber of Commerce, presented a certificate of Honorary Membership in the body, an award very highly regarded by the citizens of Cincinnati, and, in conclusion, Leroy Brooks, Jr., son of the honored's most intimate lifelong friend, presented an heirloom of the family to Professor Lloyd.

In his usual kindly, modest way, the guest of honor expressed his appreciation for the congratulations and good wishes which had been showered upon him; he likened man in his usefulness and influence to those who surround and follow him, with a tree and its influence and usefulness as a father of other trees to come, in which the virtues and special qualities of the father tree are continued long after it has passed away.

In commemoration of the day a gold book, being a beautiful leather-covered, gold-em-



JOHN URI LLOYD.

bossed book of the menu and list of speakers, containing the autograph of every invited guest, was presented to Professor Lloyd and each of the guests had as a memento of the occasion a copy of the book containing as an inscription a few written appropriate words over the signature of John Uri Lloyd.—*Contributed.*

Easily, this copy of the JOURNAL could be filled from cover to cover with what was said of Professor Lloyd and to him during a few hours of his birthday anniversary. No word was permitted to get into the newspapers of the contemplated celebration; otherwise no dining hall in Cincinnati would have been large enough, and the excitement probably would have been too much for the octogenarian. The friends, therefore, having the affair in charge were compelled to forego carrying out to the fullest extent the desire of their hearts.

We take the liberty of quoting two brief editorials of the Cincinnati Press.

#### "A BAREFOOT BOY."

"A barefoot boy dreamily roaming over the hills of northern Kentucky—with his eyes ever striving to look beyond the horizon. Sheep bleating plaintively when, swinging a crooked stick, he drove them to the stockyards.

"A patient, painstaking student spurred on by ambition and mother love. An errand boy in a drug store at \$2 a week without board. A clerk, embryo chemist. A lovable tyrant as an instructor. Author, master of plant chemistry, discoverer, creator. The world's foremost authority on colloidal chemistry. Recipient of medals, prizes and testimonials. A man whose works and fame will live as long as pharmacy and chemistry are known—in short, an immortal.

"Here we have a vignette of the career of John Uri Lloyd, one of Cincinnati's greatest and most useful men, whose 80th birthday was celebrated by nearly 100 prominent citizens at the Cincinnati Club, Thursday night.

"Congratulations, John Uri Lloyd, citizen of Cincinnati and the world. We hope many more years of happy, useful living are in store for you."

#### "A DAY WE, TOO, CELEBRATE."

"When such a man as John Uri Lloyd celebrates the eightieth anniversary of his birth it is more than a personal event. It becomes a public matter. For it is men like Dr. Lloyd who teach us how to live. They combine quality with quantity of years. Mere longevity becomes an incident to the service they have done for their fellow men.

"Having lived for others, John Uri Lloyd has lived best for himself. Chemistry has been his vocation, and great has been his success therein, but Dr. Lloyd's avocations have given the real grace to his long line of years. Above all, Dr. Lloyd has been a man of great humanitarian spirit. He has been deeply interested in his fellow men and he has greatly labored for his fellow men. But a nature so full must overflow. Mere deeds do not suffice to give adequate expression. So the hand of practical accomplishment took up the pen and found therein an outlet for imagination and kindly spirit. The result was the fanciful *Etidorpha* and the very human *Stringtown on the Pike*, a novel that has become recognized as one of the several books that truly interpret American life of another day.

"This world has been a vast laboratory in which Dr. Lloyd has conducted a great experiment, his own life. We congratulate him upon its consummate success. He has realized the ambition of the medieval alchemist. He has transmuted the dross of life into pure gold."

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#### ORIGIN OF CAMPHOR IN CAMPHOR TREES.

Chemical examination of different parts of the camphor tree at various stages of growth shows that the formation of camphor, and of the essential oil of which it is the chief constituent, takes place in the earliest stages, in nearly all tissues in active growth, especially just beneath the cambium. The sap contains no appreciable amount of camphor. The rate of formation of camphor and oil approximates to that of the growth of the tree. The more

vigorous the growth the more rapid is the formation of camphor. When once formation of oil is started in the cell it proceeds rapidly until the cavity is filled. The cell lining has been shown to contain an enzyme, a peroxidase. There appears to be the active agent in the formation of the oil. It disappears when the cell is full of oil. This peroxidase lining has been found in the cells of other essential oil-bearing plants.—T. Yahagi (*Jap. J. Chem.*).

## SEVENTH ANNUAL MEETING OF THE PLANT SCIENCE SEMINAR.

Custer State Park, Rapid City, South Dakota, August 19th (10:00 A.M.)  
to August 23rd (at Noon), 1929.\*

Dr. C. C. O'Harra, president of the South Dakota State School of Mines, of Rapid City, has announced the selection of the Game Lodge in Custer State Park as the camp site for the gathering of the members of the Plant Science Seminar, who will hold their annual meeting there the week of August 19th, just preceding that of the AMERICAN PHARMACEUTICAL ASSOCIATION, which will be held at Rapid City the last week of the month.

The State Lodge itself will not be available except by arrangement long in advance. However, the management having charge of the Lodge has also other facilities which will be available. These consist of tent-cabins with board floors and walls with canvas roofs, and are clean and comfortably furnished. Meals are to be secured at the Lodge, or the Inn close at hand.

The camp is on a main highway, where weather conditions will not interfere with travel;

it is of especial interest because of its having been, for a time, the Summer White House, and it gives access by means of the fine Needles Highway to the Sylvan Lake and Harney Peak district,



Officers of South Dakota Pharmaceutical Association, 1902. The late Secretary, E. C. Bent and President of the A. P. H. A., D. F. Jones, are shown at the right in the picture.

Tent-cabins for one, per night, \$1.50; for two, \$2.00; for three, \$2.50. Rooms and board in State Lodge are \$1.75 to \$2.50 for single room per day; with bath (limited number) \$4.50. All rooms have hot and cold running water. Meals at Lodge: Breakfast, 50 cents; dinner and supper, each 75 cents. Those occupying tents may obtain regular "short-order" meals at the Inn.



Deadwood Dick himself, famous, both in fact and in fiction. He will be on hand for the convention.

Perhaps no other place in the Black Hills can show, with as little trouble, such a wide variety of wild plant life as may be seen on several trips that may be easily taken. In addition to all this, it is only thirty-two miles from Rapid City, and connections are made by regular lines of automobile buses.

Mr. and Mrs. C. C. Gideon, superintendents of the Lodge, are cultured people, and have the name of giving careful and close attention to visitors' requirements.

C. E. F. Mollett, of Missoula, Mont., is chairman of the Seminar, and O. P. M. Canis is the secretary. The latter may be addressed at Ozone Park, Long Island, N. Y. Arrangements for tent-cabins and rooms should be made with Mr. C. C. Gideon, superintendent of the Lodge.

The arrangements made by Dr. C. C. O'Harra and President D. F. Jones are as follows:

\* The information given is from a bulletin issued by the Publicity Committee of which George A. Bender of Watertown, S. Dak., is the chairman. Each issue of the JOURNAL will bring to its readers interesting messages from the wonderland of America.