

stores there is something of interest for the retail druggist, who is considering the merits of various quantity discount offers which are made to him.

SEASONABLE DISPLAYS FOR APRIL AND MAY.

Easter goods	Housecleaning aids
Perfumes	Camphor, moth balls, cedar flakes
Perfume atomizers	Clothing bags
Toilet waters	Insecticides and germicides
Face powders	Sponges and chamois
Compacts	Soaps and cleansers
Cameras and photographic supplies	

A PHARMACEUTICAL STUDY OF SYRUP OF FERROUS IODIDE
(1840-1927).

BY CATY J. BRAFORD AND H. A. LANGENHAN.

NO. I. HISTORICAL.

Iodine was accidentally discovered, in 1812, by Courtois of Paris, a manufacturer of salt-petre, and was first used in medicine by Dr. Coindet, in 1819, during his experimentation on a remedy for goitre. The iodide of iron was used by Dr. Pierquin in 1824.¹ Durand,² in 1833, reported that "this therapeutic agent was lately introduced into medical practice, in Philadelphia, by Dr. Jackson, on whose recommendation it is now pretty extensively used in this city and in some parts of the country." It was prescribed under the title of "Dr. Jackson's Solution of Iodide of Iron," and its formula was similar to that used by Baup and Caillot.³ According to Dunglison,³ Professor A. T. Thomson, of the London University, presented a paper entitled, "Some Observations on the Preparation and Medicinal Employment of Ioduret and Hydriodate of Iron (1834)," in which he strongly recommended the use of this compound. The result of his report, it is claimed, was the general introduction of the use of this compound. According to the U. S. Dispensatory (19th ed., p. 1224), Thomson proposed a formula for a strong syrup, which it is said was the basis for the British Pharmacopœial formula.

The solution of ferrous iodide was quite unstable and attempts were made to obtain a more permanent product. Frederking⁴ in 1839 suggested the addition of a saccharine substance as a preservative and in 1840, Procter⁵ acting upon this suggestion experimented with sugar of milk, manna, honey and "uncrystallizable sugar." Dupasquier⁶ in 1841 used "Syrup of Gum" and in the same year Beral⁷

¹ E. J. Mowry, *Am. J. Pharm.*, 58, 289 (1886). See also "Dunglison, *New Rem.*," 5th ed., 300 (1846).

² E. Durand, *Am. J. Pharm.*, 4, 287 (1833).

³ R. Dunglison, "New Rem.," 5th ed., 297 (1846).

⁴ Frederking, *Am. J. Pharm.*, 58, 289 (1886), from Buchner's *Rep. du Pharmacie*.

⁵ Procter, *Am. J. Pharm.*, 12, 13 (1840).

⁶ Dupasquier, *Jour. de Pharm.*, (1841); through *Am. J. Pharm.*, 58, 289 (1886).

⁷ Beral, *Am. J. Pharm.*, 13, 74 (1841); from *Jour. de Chem. Med.*

tried simple syrup. Squire¹ recommended the addition of a wire coil to the solution, but "a lady patient wanted to know whether the iron screw must be swallowed whole." Many other reports appear in the literature relating to the instability of the solution. The salt, ferrous iodide, was equally unstable. As a result of the experimentation, the addition of a saccharine substance as a preservative was adopted.

The solution was introduced into the U. S. P. of 1840 under the title of **Liquor Ferri Iodidi**. It contained twelve ounces of sugar in twenty fluidounces of the finished product. The solution was continued in the revision of 1850, then dropped until in 1880 when it again appeared, this time in the National Formulary. The N. F. of 1900 deleted the preparation. The solution as appearing in the National Formulary contained no sugar; hypophosphorous acid was prescribed as a preservative or reducing agent.

Liquor Ferri Iodidi was dropped from the U. S. P. of 1860, and **Syrup of Ferrous Iodide** was introduced. This contained about fifteen ounces of sugar in twenty fluidounces of the finished product, as compared with the twelve ounces of sugar in the twenty fluidounces of the **Liquor**.

As early as 1845 there appeared in the U. S. Dispensary, a formula for the "Syrup of Iodide of Iron," which had been taken from the Edinburgh Pharmacopœia. It was very similar to the U. S. P. formula (1840), for Solution of Iodide of Iron and differed mainly in the amount of saccharine material present. The U. S. formula prescribed five fluidounces of honey to twenty fluidounces of finished solution. The Edinburgh Pharmacopœia specified four and one-half ounces of sugar to be used in six fluidounces of the finished syrup, such a quantity of sugar being sufficient for the preparation to be classed as a "true" syrup.

The next revision of the U. S. Dispensary (1851) included the formula for the **Liquor** as it appeared in the U. S. P. of 1850. The saccharine material had been changed and the new formula prescribed twelve ounces of sugar to twenty fluidounces of **Liquor**, the quantity still not being sufficient to consider the preparation a syrup. Two other new formulas for the syrup were also included in the Dispensary. One was the Dublin Pharmacopœial formula, containing six fluidounces of simple syrup to eight fluidounces of the finished syrup, and the London Pharmacopœial formula having ten ounces of sugar to fifteen fluidounces of syrup.

The following "modes of administration" in addition to the Syrup and the **Liquor** are reported by Dunglison:

Pilulæ Ferri Iodidi, formula by Dr. Christison of Edinburgh (1845).

Vinum Ferri Iodidi, containing one-half ounce of ferrous iodide dissolved in one pint of wine.

Tinctura Ferri Iodidi, formula of Pierquin (1831), containing two ounces each of alcohol and water.

Mistura Ferri Iodidi Composita, formula by Pierquin (1831), containing sixteen grains of ferrous iodide in a mixture of one ounce each of Tincture of Colombo or Tincture of Gentian Compound, and eight ounces of water.

Troschisca Ferri Iodidi, formula by Pierquin, containing one-half ounce of ferrous iodide in one hundred and twenty troches.

Injectio Ferri Iodidi, formula by Ricord (1843), containing three grains of ferrous iodide in six ounces of water.

¹ E. J. Mowry, *Am. J. Pharm.*, 58, 289 (1886).

Unguentum Ferri Iodidi, containing one and one-half drams of ferrous iodide to one ounce of lard.

Creuse,¹ in 1840, prescribed a formula for **Tasteless Iron Iodide**, prepared as follows:

"One hundred twenty-six and three-tenths grains of Iodine are combined with Iron in the usual way to obtain the solution of ferrous iodide. This is filtered and sixty-three grains of Iodine are dissolved in it. A solution of two hundred and one grains of citric acid is exactly saturated with potassium hydroxide and then added to the first solution. When the green apple odor has been developed, the solution is evaporated, with gentle stirring, to dryness, when cauliflower-like masses of acicular crystals will be obtained. These are stable except in direct sunlight."²

Ferrous iodide was official as such in the U. S. P. of 1840 and in that of 1850. Galenicals of ferrous iodide were official as follows:

Ferri Iodidum Saccharatum, U. S. P. 1880, 1890; N. F. 1900.

Liquor Ferri Iodidi, U. S. P. 1840, 1850; N. F. 1880, 1890, 1900.

Pilulæ Ferri Iodidi, U. S. P. 1860 to 1920; N. F. 1920.

Syrupus Ferri Iodidi, U. S. P. 1860 to 1920.

That Syrup of Ferrous Iodide is used more or less universally is evidenced by its appearance in various national Pharmacopœias. A list of these with the titles applied to the Syrup follows:

International Protocol—

Ferri Iodidi Syrupus.

Pharmacopœa Austriaca—

1855, **Syrupus Ferri jodati.**

1869, **Syrupus Ferri jodati.**

1889, **Syrupus Ferri jodati.**

Pharmacopœa Belgica—

1885, **Syrupus Iodureti Ferri.**

1906, **Ferri Iodati Sirupus,**

Ferri iodidi sirupus,
Sirupus iodeti ferrosi.

Pharmacopœa Britannica—

1867, **Syrupus Ferri Iodidi,**
Syrup of Iodide of Iron.

1885, **Syrupus Ferri Iodidi.**

1898, **Syrupus Ferri Iodidi,**
Syrup of Ferrous iodide.

1914, **Syrupus Ferri Iodidi,**
Syrup of Ferrous Iodide.

Pharmacopœa Danica—

1868, **Syrupus Jodeti ferrosi,**
Syrupus ferri jodati,
Jodjern-sirup.

1895, **Syrupus Jodeti ferrosi,**
Syrupus Ferri jodati.

1907, **Syrupus Jodeti ferrosi,**
Ferri jodidi sirupus,
Sirupus ferri jodati,
Jodjernsaft.

Pharmacopœa Fennica—

1885, **Syrupus Jodeti ferrosi.**

Pharmacopœa Gallica—

1866, **Sirop d'Iodure de Fer.**

1884, **Sirop d'Iodure de Fer.**

Pharmacopœa Græcæa—

1857, **Syrupus Ferri Jodutati,**

1868, **Syrupus Ferri Jodutati** (*Supplement of*
1857).

Pharmacopœa Germanica—Deutsches Arznei-
buch—

1872, **Syrupus Ferri Iodati.**

1882, **Syrupus Ferri Iodati,**
Jodeisensyrup.

1890, **Syrup Ferri Jodati,**
Jodeisensirup.

1900, **Sirupus Ferri jodati,**
Eisenjodursirup.

1910, **Sirupus Ferri Jodati,**
Jodeisensirup.

Pharmacopœa Helvetica—

1907, **Sirop Ferri Jodati,**
Jodeisensirup,
Sirop d'Iodure de fer.

Pharmacopœa Japonica—

1907, **Sirupus Ferri Iodati,**
Syrup of Ferrous Iodide.

1922, **Sirupus Ferri Jodati,**
Syrup of Ferrous Iodide.

¹ Creuse, *Am. J. Pharm.*, 16, 214 (1840).

² This is in a way comparable to the tincture of ferricitro-chloride, N. F. IV, in which sodium citrate and solution of ferric chloride are used.

Pharmacopœa Nederlandica—

- 1871, *Syrupus Iodeti Ferrosi*.
 1889, *Sirupus Iodeti Ferrosi*.
 1915, *Sirupus Iodeti Ferrosi*.

Pharmacopœa Norvegica—

- 1870, *Syrupus Iodeti Ferrosi*.
 1895, *Syrupus Joeti Ferrosi*.
 1913, *Syrupus Jodeti Ferrosi*,
Jodernsirup.

Pharmacopœa Suecica—

- 1879, *Syrupus Iodeti Ferrosi*.

Farmacopea Espanola—

- 1884, *Jarabe de Ioduro Ferroso*.
 1915, *Jarabe de Yoduro Ferroso*,
Syrupus ioduro ferrosi,
Jarabe de protoyoduro ferrosi,
Syrupus protioduro ferri.

Farmacopea officiale del regno d'Italia—

- 1892, *Sciroppo di protoioduro di fer*.
 1920, *Sciroppo di joduro Ferroso*,
Sirupus jodureti ferrosi,
Sciroppo di protoioduro di ferro.

Svenska Farmakopen—

- 1871, *Syrupus Iodeti Ferrosi*,
Jernjodursyrup.
 1879, *Syrupus Iodeti Ferrosi*,
Jernjodursyrup.

UNIVERSITY OF WASHINGTON,
 COLLEGE OF PHARMACY,
 SEATTLE.

1901, *Syrupus Jodeti Ferrosi*,
Jarnjodursirup.

1908, *Syrupus Jodeti Ferrosi*,
Jarnjodursirap.

Codex Medicamentarius—

1908, *Sirop d'Iodure de Fer*,
Sirop d'Iodure Ferreux,
Syrupus ferri iodati gallicus.

Pharmacopœa Portugueza—

1876, *X. de iodeti ferrosi*.

United States Pharmacopœia—

1860, *Syrupus Ferri Iodidi*,
Syrup of Iodide of Iron.

1870, *Syrupus Ferri Iodidi*,
Syrup of Iodide of Iron.

1880, *Syrupus Ferri Iodidi*,
Syrup of Iodide of Iron.

1890, *Syrupus Ferri Iodidi*,
Syrup of Ferrous Iodide.

1900, *Syrupus Ferri Iodidi*,
Syrup of Ferrous Iodide.

1910, *Syrupus Ferri Iodidi*,
Syrup of Ferrous Iodide,
Syr. Ferr. Iod.

1920, *Syrupus Ferri Iodidi*,
Syrup of Ferrous Iodide,
Syr. Ferr. Iod.

(To be continued)

A RECORD OF THE WORK OF THE CONFERENCE OF STATE BOARDS OF PHARMACY AND REPRESENTATIVES OF THE COLLEGES OF PHARMACY OF DISTRICT NO. 2, N. A. B. P.*

From a synoptic report of the Secretary—Dean Hugh C. Muldoon.

Responding to a call issued by Augustus C. Taylor of the National Association of Boards of Pharmacy, and Dr. A. G. DuMez of the American Association of Colleges of Pharmacy, representatives of the Boards of Pharmacy and the Colleges of Pharmacy of N. A. B. P. District No. 2 met at the Benjamin Franklin Hotel, Philadelphia, March 10-11, 1927.

H. C. Christensen, Secretary of the N. A. B. P., and representatives of the New Jersey State Board of Pharmacy were also present.

The following persons were registered:

District of Columbia—Taylor, Quigley, Kerfoot, Bradley, Fuhrmann.

Maryland—Swain, DuMez, Bunting, Richardson, Powell, Frames.

Pennsylvania—Kramer, Minehart, Campbell, Sturmer, Koch, Cliffe, Walton, Muldoon, Rothwell.

Delaware—Rhodes, Bosey.

New Jersey—Little, McNeill, Bischoff, McCloskey, Riggs, Fischelis, Crooks, Hills.

New York—Diner, Gregory, Anderson, Rusby, Lascoff, Diekman.

* Philadelphia, March 10-11, 1927.

First Session—Thursday Morning, March 10th.

The purpose of the meeting was stated by Chairman A. C. Taylor to be a free and frank round-table discussion of the problems of common interest to the Boards and Colleges. Dean H. C. Muldoon was elected Secretary.

Dr. DuMez presented the following program, prepared as a tentative program by Taylor and DuMez. It was adopted without discussion as the official program of the conference.

PROGRAM—THURSDAY MORNING SESSION.

- 11:00 A.M. Call to order by the respective chairmen.
Remarks on the objects and purposes of the meeting.
- 12:00 M. Luncheon.

THURSDAY AFTERNOON SESSION.

- 2:00 P.M. 1. The College Course and Board Examinations with respect to
- (a) Why so many college graduates fail.
 - (b) The purposes of Board Examinations.
 - (1) Determination of the candidate's general pharmaceutical education.
 - (2) Determination of the candidate's ability to meet the every-day practical requirements of drug-store practice.
 2. Publicity of the results of Board Examinations as a corrective factor in reducing the number of failures.
 3. Assistant Registration and Practical Drug-Store Experience with respect to
 - (a) Value of apprentice training,
 - (b) Value of practical experience obtained after graduation from college.

FRIDAY MORNING SESSION.

- 9:00 A.M. 1. The Pharmacy School Curriculum with respect to
- (a) Subjects which should be included.
 - (b) Relative values of the subjects.
 - (c) Number of hours which should be devoted to each subject.
- 12:00 M. Luncheon.

FRIDAY AFTERNOON SESSION.

- 2:00 P.M. Separate sessions of the Boards and Colleges to formulate, on the basis of the discussions had, any recommendations to be referred to their respective organizations.

Question.—Why so many college graduates fail.

Dr. Diner suggests there are two fundamental reasons:

- I. Faulty high school preparation, especially in Mathematics and English.
- II. Faults in the college of pharmacy.

The second reason was discussed under the following heads:

1. *Failure to Make a Selection of Candidates for Entrance.*—The purpose of the student is not investigated thoroughly. The student may have trivial reasons for taking up the work. Numerous students take up Pharmacy without a knowledge of what the profession gives them and of what they must give the profession. The remedy lies with the college.

2. *The Curriculum.*—Should be better balanced. Attempts to over-emphasize a department should be checked. The department of Pharmacy should be strongly emphasized. Some teachers overwhelm the student with a mass of material. A suggestion was made that the 2250-hour curriculum might be apportioned as follows: Pharmacy, 900 hours. Chemistry, 750 hours. Materia Medica, 600 hours.

3. *Methods of Teaching.*—Teaching methods can be improved. Students must be taught to reason and to give concise and comprehensive answers, not in the words of the teacher.

4. *College Examinations.*—Frequent written examinations followed by a thorough discussion of each examination encourage every-day preparation of work, and discourage cramming.

5. *Board Examinations.*—General questions and obscure questions should be avoided. The question should aim to find out what the student knows, and to determine his fitness to render professional service to the community.

6. *Rating of Examination Papers.*—Requires much time and thought. The examiner may have a preconceived answer in his mind, but that answer may not be the only correct one.

7. *Value of Oral Examinations.*—An oral examination is fleeting and leaves no impression in the mind of the student or the examiner. The candidate has no chance to correct errors. The examiner may be inattentive.

Dr. Walton.—*I. The Schools.*—A larger number of students have failed during the past few years than formerly. The reason is not clear. The Boards cannot remedy the faulty high school preparation of candidates. Not inclined to blame the colleges, for the number of successful candidates shows that proper training is being given. Some few students of doubtful fitness may be graduated with the idea that the Board will not license them, if their showing is unsatisfactory.

II. The Boards.—Board examinations may err in scope, being either too restricted or not restricted enough. Examiners try to give every candidate full credit for what he knows. Papers of border-line candidates are always reviewed to insure fair ratings. A number of candidates are able to reach the 60% passing mark but are unable to attain the required general average of 75%.

There should be more uniformity in Board questions. The possibility of finding some method of having examinations approved by the Faculties and the National Association of Boards of Pharmacy was mentioned, but no plan was suggested.

Replying to a question of Dr. Rusby, Dr. Walton stated that there has been a change in the character of examinations in the last few years. The tendency of the Boards is to raise standards. Examinations may be influenced by the changing personnel of the Boards.

Mr. Swain questioned the influence of poor high school training as an important factor in the number of failures before the Boards. The colleges deal with the same men that the Boards do. Inferior high school training should be reflected in the student's college work as well as in the licensing examination. He asked how the percentages of failures in colleges and before Boards compare.

Dr. Diner and others discussed percentages of failures in college and suggest that a 20% loss in a class from entrance to graduation is not excessive.

Dr. Gregory stated that a higher student mortality in college should result in a smaller percentage of failures before the Boards. More students are now dismissed by faculty action than formerly. The greatest percentage of loss should be in the Freshman year, and unfit students should be eliminated as early in the course as possible.

Second Session—Thursday Afternoon, March 10th.

Question.—Why so many college graduates fail. (Continued.)

Dr. Rusby.—The percentage of failures in college examinations is greater than formerly, but the average standing of all students is higher. There is also a greater difference between the good students and the poor students. Graduation of students from high schools with an average of less than 75% was criticized. High school examinations are not difficult enough. Too little attention is paid to general scholarship. A change in the type of college student is noted.

Dr. Koch.—Some of the difficulties of the college student can be laid to the fact that students in the lower schools are taught that education is play, and should be easy and pleasant. Responsibilities are avoided, and students take the road of least resistance. There is lack of ability to concentrate.

Dr. Little.—Failure of graduates to pass the Board examinations may be attributed either to the college or to the Board, or to a lack of coördination and coöperation between the two. He suggests the formation of a new organization composed of Board and College men to determine the source of trouble when in any State there continues to be an abnormally large number of failures before the Board.

Dean Anderson.—Students come to college with bad study habits. They feel that they may forget what they have learned as soon as the final examination is passed. Fundamentals should receive greater stress. It is difficult to impress students with the importance of their work. Practical examinations should be given in college. They should have greater weight than the strictly theoretical part. He suggested the desirability of an exchange of questions between Colleges and Boards so that concrete problems for study may be furnished.

Mr. Swain believes that no great good can come from the creation of a new organization such as suggested by Dr. Little. Boards and colleges can confer at their pleasure and smooth out any difficulties. Frequent conferences would do much good. The suggested organization would have no legal standing.

Dr. Little agrees that Pharmacy is over-organized; also that Boards are competent to determine the ability of the candidate; 90-95% of the graduates should pass the Board examinations. When the percentage of failures continues to be high, there should be a disinterested organization to study both the colleges and the type of Board questions in order to determine where the trouble lies.

Mr. Hills presented a tabulation of results of a study of recent Board examinations in New Jersey. The largest number of failures is in Practical Pharmacy and the smallest number in Theoretical Pharmacy. The candidates in the July examinations are the most successful in passing the examinations.

Dr. Fischelis.—Part of the present difficulty may be due to the transition from the two- to the three-year course. Some candidates take advantage deliberately of their several opportunities to take the examinations, and study only for certain subjects of each examination. Delay in taking the examination after graduation may be a factor. Colleges should train their students so broadly that the type of question asked by the Board will be a matter of no consequence. Colleges are not obligated to see that their students pass the licensing examinations. They are only obligated to give their students an education in pharmacy.

Dr. Little.—It is a comparatively simple task to prepare students for Board examinations, but there is an obligation to the student on the part of the college. Good might result from a study of examination questions by the heads of departments in the colleges and the members of State Boards who prepare and rate examinations in each subject.

Dr. Minehart.—Failures to pass examinations may be due to a "complication of diseases." The curriculum is "out of gear." The three-day-a-week program presents difficulties. Lack of time to do library work is deplorable. It might be a good idea to publish lists of failures of each school at each examination. An investigation should be made if the rating of a school is low. Care in grading papers is necessary. The "key" method is unsatisfactory.

Dr. Gregory drew attention to the "Pharmaceutical Syllabus." Its original purpose was to be of service to both the Boards and colleges. It has not outlived its usefulness.

Mr. Kramer presented a study of the results of a recent examination. The ratings of 12 successful and 12 unsuccessful candidates in each branch were tabulated, and the ratings on each question given. The idea of the study was, if possible, to determine whether the results were due to the knowledge of the candidate, the teaching of the college, or to the maker of the examinations. Sufficient time to make a detailed study was lacking.

Mr. Christensen.—Such a study as that presented by Mr. Kramer can be continued to advantage. If the results of every question in each examination were to be tabulated, the general average of all candidates on each question could be determined. If a large number fail, the Board and the college should study the question and the answer to the question to find out where the trouble lies.

The wording of a question is often susceptible to improvement. Board members may need assistance because of changes in the personnel of the Board. Old-time questions should be eliminated. Colleges may get in a rut and fail to progress with the times. More attention should be paid to biology and like subjects, with perhaps less stress on botany and pharmacognosy.

Question.—The Purpose of Board Examinations: To determine the candidate's general pharmaceutical education. To determine the candidate's ability to meet the every-day practical requirements of drug-store practice.

Dean Muldoon.—Recent changes in curricula give increased time to the teaching of "commercial pharmacy." While it is well understood that the use of the Pharmaceutical Syllabus by the Boards and colleges is not obligatory, the fact that the Syllabus suggests 125 hours of commercial pharmacy in the 2250-hour course, apparently gives approval for the use by the Boards of questions on this subject. But the Syllabus further states that questions in commercial pharmacy, if given at all, should be very limited, and that the function of the examination is not to test the candidate's qualifications as a business man. While admitting the right of the Boards to examine on business subjects, the propriety of doing so is questionable since the func-

tion of the Board as a guardian of public health is merely to prevent the unsafe from practicing. While it is the duty of the colleges to give business training, the Boards should not include questions concerning it in their examinations.

Dr. Fischelis.—The function of the Boards is to see that those who are empowered to dispense are fit to do so. Colleges must take cognizance of the fact that pharmacy is both a business and a profession. The public does not expect that the Boards shall pass upon the business qualifications of the pharmacist. The Commonwealth Study has shown that two things are expected of the pharmacist: 1. Proper service in compounding. 2. The dissemination of public health information. The Study includes so much material under the second head that courses must be lengthened, if all of it is to be taught. It is possible that we are approaching a separation of stores into the merchandizing and professional types without effort and without legal action.

The Board's duty is to decide the fitness of the candidate from the standpoint of the pharmacy law in the State in which the Board is functioning.

Dean Gregory disagrees with the teachers who, in an attempt to maintain pharmacy strictly as a profession, take the stand that there shall be no commercial training in colleges of pharmacy. The relation between the pharmacist and community is indirect, and the pharmacist may never come in direct contact with the people he serves. Colleges should pay more attention to the requirements of the retailer, who is the consumer of the product of the college. New York State favors the gaining of experience both before and after the college course. There must be no letting down in the professional training, but commercial training should be added.

Dr. Rusby.—There must be more training in pharmacy proper and also more work in commercial pharmacy in the colleges.

Question.—Publicity of results of Board examinations as a corrective factor in reducing the number of failures.

Dr. DuMez.—There is need for a remedy for the high percentage of failures. If the percentage of failures in each examination of the graduates of each college were to be published it might effect an improvement. The practice obtains in medicine and dentistry, and the results are gratifying. The immediate effect would be to instigate an introspective study in those schools whose graduates fail in large numbers. An effort would be made to correct any weakness discovered. If the percentage of failures continues to be high, either the Board is not examining in the subjects in the curriculum of the college, or the college is not teaching well. In either case the Board and the college will be brought together. Publication in the *JOURNAL OF THE A. PH. A.* or in the *Proceedings of the A. A. C. P.* is suggested. The number of graduates of each college taking the examination, and the percentage of successful candidates should be shown. Data could be compiled by the Secretary of the N. A. B. P., or by a special tabulating committee.

Dr. Sturmer.—To be of greatest service to the college, the data should show not the successes and failures of all students but rather of the last class to graduate.

Dr. DuMez.—The A. M. A. records the year in which the candidate was graduated.

Dr. Little suggests that the order of application might be reversed. If the Boards and colleges are brought together first, the publication of the data might be unnecessary.

Dean Gregory.—The tendency to teach for Board examinations rather than to give a well-rounded education might be increased. Difficulties of collecting the data were shown.

Dr. DuMez.—We want to know in what respect our courses are weak, so that we can correct the weakness. Publication would not reflect on any college unless it continued to have a high percentage of failures.

Dr. Rusby.—Would there be less inclination to correct weaknesses if the data were given to the schools direct instead of publishing?

Dr. DuMez.—No.

Dr. Rusby suggested that for a time the data be given to the colleges direct.

Dr. Walton.—If the tabulation were confined to the June examinations only, the task for the Boards would not be so great.

Dr. Diner.—A premium may be put on cramming. It is well to obtain the information individually, but publicity should be guarded. It is desirable to have data as to schools, year of graduation and results by subjects, individual and total.

Dr. Fischelis.—Such data should not be used by any college for purposes of publicity.

Dr. DuMez was directed to prepare in writing a resolution relative to the matter under discussion, and to present it at the next meeting.

Secretary Christensen.—A somewhat similar plan has been under consideration by the Secretary. Because of the change to the three-year course, it was not thought wise to begin it at the present time. It is desirable to collect statistics now, but publication should be delayed until the three-year course is thoroughly established. Schools will be more careful in graduating weak students if publicity is given to the success of the graduates before the Boards.

Question.—*Assistant Registration and Practical Drug-Store Experience with respect to (a) Value of apprentice training. (b) Value of practical experience gained after graduation from college.*

Dean Anderson drew a distinction between apprentice training in the old-time store and in some professional stores to-day, and the drug-store experience gained in the average store to-day. The high school student who works in the average store after school hours gets little valuable experience. Colleges can give better apprentice training than can be obtained in that way. The best men in pharmacy cannot be produced without store experience in addition to college work. A feeling of responsibility is developed. Every graduate should be compelled to serve one year in a drug store after graduation before he could be licensed as a pharmacist. The increase in the number of stores would thereby be checked. The Board would have little difficulty in keeping a record of such experience. In answer to a question as to whether the degree should be withheld until such experience had been gained, Dean Anderson stated that in his opinion such action would be acceptable in principle, but that the State laws would have to be considered.

Dr. Taylor outlined a comprehensive plan of apprentice training distinct from the way in which the ordinary worker in a drug store is trained. The plan was offered as a step in eliminating the impractical graduate. A revival of apprenticeship is being agitated in all lines of industry. The man is better adjusted to his life work; his judgment, industry and health will be improved. The selection of apprentices should be based on both economic and social grounds. The contract should specify the ground to be covered and the objectives to be attained. The work of training should be carefully planned and carried out. The work accomplished must be graded. Incentives for good work should be offered. Complete records must be kept. High ideals must be held up.

Dr. Lascoff discussed the value of experience obtained before and after the college course. If experience is gained after graduation, the graduate will take more care in the selection of an employer and he will be apt to get better training. From the standpoint of the proprietor, the graduate is a much better man to handle than the high school student.

Dr. Taylor.—Under the suggested system of apprentice training special care would be taken in the selection of apprentices. A man is satisfied if he knows that he is learning something every day. By supervised study and reading, the apprentice can be shown his relationship to the great pharmacists of the past. A better morale will result.

Dr. Swain has been of the opinion that the grade of Assistant Pharmacist should be abolished. There are great difficulties in controlling the practical experience. He suggests that it may be wise to examine men in theoretical subjects immediately after their graduation from college. If the examination is passed, an Assistant Pharmacist certificate might be issued. After working in a store for one year, the practical examination is undertaken. If the candidate is successful, the license as Pharmacist is issued and the Assistant Pharmacist license is withdrawn. The candidate should find less difficulty in passing his examinations. The experience could be controlled by the Board. Legislative enactment, however, would be required to put the plan in operation.

Dr. Diekman outlined a similar plan that had been in operation in New York State. Theoretical subjects were examined upon at graduation, and the practical examination was given when a total of four years' experience had been gained. Difficulties were encountered in the improper use of the certificates issued to "Junior Pharmacists" on passing the theoretical examinations. The present plan is to examine the candidates in the same way as before, but no license is given when the examinations in theory are passed. The difficulties and advantages of a real apprenticeship system were enumerated.

Dr. Fuhrmann.—Students should have practical experience before taking up college work.

A better understanding is had of the requirements of the profession. Fewer men will drop out. Practical experience gained after graduation will be taken more seriously. Graduates can gain more in one year than in three years before the college course. Fewer failures in college and before the Boards would result if one year of experience were required before the college course and one year after graduation.

Dr. Fischelis.—Perhaps the colleges may become interested enough to supervise the drug-store training of their students. A faculty member might be delegated to visit the stores in which the students work. The plan worked well in the case of students trained under the Veterans' Bureau.

Dr. Koch.—In the report of the Commonwealth Study the statement is made that practical experience is essential, but too much time is wasted. Six months of properly supervised experience is sufficient. He suggested that in June each student be placed in a store of the right kind and that in the fall a record of his summer's work be submitted.

Mr. Rothwell.—Some of the difficulties of the graduates can be laid to lack of practical experience before entering college. Colleges should not admit students who have not had drug-store training.

Third Session—Friday Morning, March 11th.

Dr. A. G. DuMez, presiding.

Question.—*The Pharmacy School Curriculum with respect to (a) Subjects which should be included. (b) Relative values of the subjects. (c) Number of hours which should be devoted to each subject.*

Dr. Sturmer. *High School Preparation.*—The curriculum is always in the making. Complaint against the high school may be justified, but the college must accept conditions as they are and supply any deficiency. If the student comes poorly prepared in Mathematics and English, the college must remedy the defect. Modern methods of teaching English are subject to criticism. Arithmetic is dealt with only in the lower grades, and some high school graduates cannot divide fractions or place a decimal point correctly. Handling of decimals is a vital matter in connection with the Metric system.

Changing Conditions in pharmacy must be reflected in the curriculum. Students must be taught to adjust themselves to the economic conditions of their generation. Even if in some stores the strictly pharmaceutical work may be as low as 10% of the total work of the store, the responsibility of the college to make their graduates competent for that 10% is as great now as in the days of Procter. Pharmacy must be taught thoroughly and extensively even if much work formerly done in the store is now done by someone else. If commercial training is to be given in the college it must be added, and not substituted for other pharmaceutical work.

Board Examinations.—There are all kinds of colleges, boards and examinations. Peculiar cases are usually only temporary. If a large number of graduates fail, there must be a reason. If the Board covers ground not covered by the college, a change in curriculum is indicated, and the college can take care of it. If the fault is not in the college, the Board can remedy the difficulty. There is little time to reach back into ancient history and teach in detail the methods of long ago. Students are taught modern methods and processes. Questions concerning green iodide of mercury and tyrotoxin were suggested as being of the unsatisfactory type. If examination questions are not suitable, the student who really knows considerable about the subject will receive a low mark. Questions should be aimed at finding out if the candidate will be a safe man in the drug store.

Bacteriology.—It is debatable whether this subject should be included in the minimum course in pharmacy. The student should have a general knowledge of the subject. It links up with serology and public health information. But it must be remembered that the student is to be a pharmacist, not a bacteriologist.

Chemistry.—It is difficult to decide what should be in the course in chemistry given to the student of pharmacy. Should it be descriptive chemistry? Should the philosophic aspect be cut down? Should it be given as it was given thirty years ago or should cognizance be taken of advances, and modern chemistry be taught? We must give modern chemistry. It is not necessary that Boards ask questions on chemical philosophy, although the schools would not object if it were done. The schools would object, however, if questions in chemical theory were given which the examiner did not understand himself and which he would have to grade with a key.

Materia Medica Has Changed.—It used to deal mainly with the identification of crude drugs. Crude drugs are not found in many stores now except in packages, and the original reason for stress on crude drugs has disappeared. Shall we continue teaching it? To what extent? To what extent shall the microscopic study of crude drugs be taught? If these subjects are to be stressed, we want to know it. The problem is bigger than merely passing the Board examinations. The average graduate should pass the Board examinations without difficulty. If our curriculum is wrong, we want to know it.

Publication of Board Examinations.—There is no special reason why examinations should be kept secret. It is not done in other examinations. Subjects are broad and the possible questions are many. All that the student gets from a study of the questions of previous examinations is an idea as to the scope of the examination. If the colleges were enabled to improve their curricula and the student were helped, some publicity of examinations would not be objectionable. If we give many things in our courses that the Boards do not cover at all, the student might argue that he has to learn things that it is not necessary for him to know. That is a matter for the colleges to face.

Classes of Students.—Some persons say that the difficulties of the drug business can be traced to the influx of foreigners. Sweeping statements are to be avoided. The foreigner is not one of our difficult problems. We have many wonderful foreigners, and America is richer because of them. All of our students are human beings. We are preparing them for their life work. We should feel encouraged with the results of our work. The small number of students passing the Board examinations in certain States is merely an incident. We have in our modern classes students who are just as fine as the best of years ago. They will become just as great. We deal only with potentialities, and must not compare the young with mature people and their achievements. Our problems are irksome but not vital.

Dr. DuMez.—The sub-headings of this question are so closely interwoven that it will be impossible to separate them to advantage. What is said relative to the number of hours will have to be rather general.

Dr. Koch.—We cannot place a relative value on the different subjects unless we have a fixed viewpoint from which to start. We do not have it; we may evaluate for many different reasons. We want to turn out pharmacists, but the kind of pharmacist we want to turn out makes a difference in the evaluation. Shall he be a highly scientific pharmacist or a counter salesman? Fundamentals are important for we must have a foundation. Pharmacy must come first. The problem of the general educator is to teach students to think and reason. The pharmaceutical educator must go further, for pharmacists must have a great fund of detailed specific information about the things he is to handle. The ordinary college student may forget details. In placing a relative value on the different branches, the hour value seems to be the only unit of value. Views and needs have changed. The first Syllabus divided the course into three equal parts, pharmacy, chemistry and materia medica. The idea was not successful. Time for Latin, arithmetic, jurisprudence and similar subjects was taken out of the time allotted to pharmacy. We should devote at least one-third of the time to pharmacy proper and the related subjects should have time of their own allotted to them. *Materia medica* has changed. More material is now given. We are to make pharmacists, and pharmacy should have more time. Working in a store gives knowledge and ideas that cannot be obtained in school. Contact with the public is important.

Dr. Little submitted an outline of the courses to be offered to the entering class of the New Jersey College of Pharmacy at the opening of the new year. Suggests that changes in curricula of any school will be influenced by the locality and by what the previous course has been.

Secretary Christensen feels that there should be some attempt to secure more uniformity in the curricula of the schools. The change to the three-year course seems to have been accomplished in a rather haphazard way. Some schools spread out their former two-year course over the three years. Others, especially where a medical staff could be drawn upon, have included medical subjects in the pharmaceutical curriculum. All schools are trying to fit men to do the same thing. Pharmacy is the same in practically all localities. Greater uniformity of curricula is desirable. Meetings of the present type should aid in bringing this about and in devising the best method. Examinations are now more uniform and of a higher type than

formerly. In some curricula there have been too few changes; the school has not progressed with the times.

Dr. Walton.—Board members do not have the basic information that would enable them to advise as to the number of hours which should be devoted to each subject. Board examinations should be limited, in chemistry, to fundamentals and to their application to pharmacy. The subject is so broad that the examination must be made with the idea of determining what the candidate needs to know. In spite of the work that the colleges are doing to remedy poor preliminary training in mathematics, many candidates still fail to pass. Isn't there some way for the colleges to assure themselves that their graduates are qualified in mathematics? It is difficult to reconcile complaints against the curriculum with the fact that there are a large number of successful candidates. In determining the ability of candidates the Boards have only one examination on which to base their conclusions. In colleges the student's entire record is available. If the Boards had more information at their disposal, they might also take it into consideration.

Dr. Diekman.—Chemistry examinations should be confined to chemistry as it applies to pharmacy. Where a choice of questions is permitted, the candidate seldom chooses a question in mathematics, but when he does he usually gets it right.

Dr. Swain.—The Board work of the usual Board member is only incidental to his regular work. He may not keep up with the developments of science, especially in chemistry. He may find answers to questions giving information that the examiner did not previously have. The reading of non-technical books such as "Atoms and Rays," "The Romance of the Atom," etc., would make the examiner better fitted to meet the situation.

Dr. Anderson.—The use of an average grade does not meet the situation in all cases. In such points as the calculation of doses each candidate should be made to obtain 100%. There should be no attempt to tie the schools down too closely to the number of hours in each separate subject. It is right to specify the number of hours for each main division, but the sub-divisions should be left to the judgment of the schools. Different teachers will not cover the same ground in the same time. Neither should the time to be devoted to lecture, laboratory and recitation in each separate subject be specified. It doesn't matter whether a lecture is given in a laboratory or in a lecture room. Nor does it matter whether a certain exercise is given in a class in pharmacy or in a class in manufacturing chemistry.

Dr. Diner.—Enough hours should be devoted to a subject to teach it thoroughly. Laying down hard and definite lines for each subject leads to cramming or to shamming. Definite requirement as to major divisions is right; of sub-divisions is a handicap.

Dr. Fischelis.—The disposition of the Boards in making their requirements is to give a wide latitude, but to insist upon certain essentials as a minimum.

The individual teacher must be considered. Students should be furnished with the best teaching ability that can be obtained. Must the masters of the schools let so much teaching be done by youngsters because the masters are so busy? If a candidate is well grounded in fundamentals he will pass the average examination, even if it is of informational character. School curriculums must not be fixed. The Board members must have the same privilege of experimenting. Board members take failures to heart, and try to find the trouble. The Boards are very lenient in their rating of a candidate's ability. The Commonwealth Study report will give a real basis for the division of time. The report doesn't suggest the number of hours, but it does tell what the pharmacist needs to know. In time the Boards will depend more on the college for the responsibility of determining what a man knows about the more intricate procedures. The fitness of the man to practice pharmacy will be the work of the Board. Both the colleges and the Boards should study the Charter's report in the preparation of the curricula and examinations.

Dr. Little.—The teacher makes the college. Young men who were unprepared may have been given charge of courses. An organization such as previously suggested by me could determine if the failure of candidates were due to such causes.

Dr. Minehart.—Boards have a right to experiment with their questions. The results of their experiments will be of interest. The high percentage of failures in pharmacy as compared with medicine and dentistry is a stigma on pharmacy.

Dr. DuMez presented the resolution which he had previously been directed to prepare. After discussion and amendment it was adopted as follows:

Resolved that it is the consensus of opinion of this Conference that statistics should be compiled by the Secretary of the N. A. B. P. showing the percentage of failures in each subject before pharmaceutical examining Boards, by States and colleges; that these statistics be sent out by the Secretary to such Boards and colleges as request them, each college to be entitled to its own records only; and that such statistics shall not be used for publicity or advertising purposes by any one.

Dr. Taylor.—The records of this conference will be edited by DuMez and Taylor and after editing will be mimeographed and sent to members present at the conference. The many good things that have come from this conference will stimulate meetings in other districts.

Upon motion, a rising vote of thanks was given the Secretary.

At a fourth session, a résumé of the proceedings was read; thereafter, the members of the Boards and representatives of the Colleges went into separate sessions.

Meeting of Representatives of the Colleges.

A. G. DuMez, presiding.

Dr. DuMez.—The purpose of the separate meetings was to give each group an opportunity to formulate resolutions, if advisable—based on the matters discussed at the general conference, such resolutions to be presented to the national organizations. Resolutions might be made on each of the topics discussed or on the results of the conference in general.

Mr. Cliffe.—Would the administrative officers of the colleges be interested in supplying to the Boards more complete information regarding the college record of their graduates? The college has the advantage of the Board in knowing the complete record of the student.

Dr. DuMez.—The Boards should request such information if they care to have it.

Dr. Diner.—Certain Boards do require a statement of the subjects, hours and grades of each candidate.

Dr. Minehart.—Pennsylvania now requires only the general average.

Mr. Cliffe.—As a former Board member, I know the help such a record might be to the Board; the doubtful cases cause most trouble.

Dr. Sturmer.—Any college will give such information on request.

Dr. Anderson.—It is a question what consideration a Board would give to such a record. The Board stands between the college and the public. It would weaken the position of the Board to consider what the college has found out about a man, especially in the case of weak candidates. The suggestion should come from the Board, rather than from the school.

Dr. Bradley.—Such records would be used only in doubtful cases. If a student is a few points low and his college record is good, these should be considered.

Dr. Sturmer.—We know that one examination is not an adequate test. In the matter of furnishing the record, our position is that we should be willing. We do not mind the work. We will furnish the record on request.

Dr. DuMez.—No action need be taken on the question. There is general agreement that the records will be supplied if asked for.

Dr. Anderson submitted the following resolution which was passed by consent:

Resolved that it is the opinion of this body that the presentation of State Board of Pharmacy examination questions with a record of correct and incorrect answers and the rating of successful and unsuccessful candidates, at joint meetings of colleges and Boards will be of decided advantage in determining why so many college graduates fail in the State Board examination.

COURSE IN MEDICAL LITERATURE AND BIBLIOGRAPHY.

The Long Island College Hospital of Brooklyn has inaugurated a course in medical literature and bibliography. An attempt will be made to show the students the value of literature which constitutes an important part

of the background of this work and to teach them how to use a library. Librarian Charles Frankenberger of the Medical Society of the County of Kings is one of the lecturers. He is widely known for his information relative to medical literature and as expert librarian.