

# THE DEPARTMENT OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY

M. N. Ford, President, Columbus, Ohio. J. W. Gayle, Treasurer, Frankfort, Ky. Edw. H. Walsdorf, Chairman of Executive Committee, New Orleans, La. H. C. Christensen, Secretary, 130 N. Wells St., Chicago, Ill.

## ACTIVE MEMBER STATES.

Alabama	Iowa	Montana	South Carolina
Arizona	Kansas	Nebraska	South Dakota
Arkansas	Kentucky	Nevada	Tennessee
Colorado	Louisiana	New Hampshire	Texas
Connecticut	Maine	New Mexico	Utah
Delaware	Maryland	North Carolina	Vermont
D. of Columbia	Massachusetts	North Dakota	Virginia
Florida	Michigan	Ohio	Washington
Georgia	Minnesota	Oklahoma	West Virginia
Idaho	Mississippi	Oregon	Wisconsin
Illinois	Missouri	Pennsylvania	Wyoming
Indiana			

## N. A. B. P. DISTRICT NO. 6 HOLDS SUCCESSFUL MEETING.

The meeting of District No. 6, N. A. B. P., held in San Antonio, Texas, on January 22, 1926, was well attended by board members of four of the five member states—Arkansas, Kansas, Oklahoma and Texas. The Missouri Board had promised to send delegates but wired that last minute circumstances made it impossible.

The following were present:

- Booker Lattimer, President Arkansas Board of Pharmacy, Dewitt, Arkansas.
- John Schmitter, President Kansas Board of Pharmacy, Gypsum, Kansas.
- A. H. King, Secretary Kansas Board of Pharmacy, Manhattan, Kansas.
- Tedd M. Tether, President Oklahoma Board of Pharmacy, Pauls Valley, Oklahoma.
- Tom R. Hadley, Secretary Oklahoma Board of Pharmacy, Oklahoma City, Oklahoma.
- W. Perry Freeman, Treasurer Oklahoma Board of Pharmacy, Washington, Oklahoma.
- Wilford Harrison, President Texas Board of Pharmacy, Wichita Falls, Texas.
- M. E. Dooley, Treasurer Texas Board of Pharmacy, Wolfe City, Texas.
- W. H. Cousins, Secretary Texas Board of Pharmacy, Dallas, Texas.
- A. H. Seely, Texas Board of Pharmacy, Cleburne, Texas.
- E. M. Joseph, Texas Board of Pharmacy, Austin, Texas.
- W. A. Klecka, Texas Board of Pharmacy, Temple, Texas.
- W. H. Whisenant, former member Texas Board of Pharmacy, San Antonio, Texas.
- Dr. W. F. Gidley, Texas University, Department of Pharmacy, Galveston, Texas.
- H. C. Christensen, Secretary National Association of Boards of Pharmacy, Chicago, Ill.

Mr. Wilford Harrison, President of the Texas Board of Pharmacy, N. A. B. P., Vice-President and Chairman of the District, presided. A. H. Seely of the Texas Board acted as Secretary. Mr. Harrison in his opening remarks urged that free and frank expression be used by all those in attendance in discussing the matters coming before the meeting. There proved to be no need for a second suggestion along this line as every one present entered into the discussion with such enthusiasm and snap that the meeting developed into one of the best that the writer has had the good fortune to attend.

Some of the subjects or topics discussed and on which resolutions of approval or favorable consensus of opinion were had are as follows:

(1) Every state should require, as a prerequisite for examination and registration as Pharmacist, that candidates must have completed four years of high school, or have the equivalent in standard units of education, have graduated from generally recognized schools or colleges of pharmacy and in addition must have sufficient service or experience in a pharmacy or drug store, under Registered Pharmacists, to make their pharmaceutical training total four years. Or, that graduates of a four-year pharmacy course should be given credit for three years on the required four years of pharmaceutical training, but must in addition furnish proofs of having had not less than one year of service or experience in a retail pharmacy or drug store under the supervision of a Registered Pharmacist.

The foregoing includes in substance the provisions of the prerequisite clause recommended by the N. A. B. P. and which has been incorporated into the laws of a number of states. Copies of this prerequisite clause or section may be had by applying to the office of the Secretary of the N. A. B. P.

(2) Thorough discussion was had on the needs and advantages of uniformity of state laws with reference to requirements for entrance to examination for Pharmacists and uniformity of examination methods, as factors in facilitating reciprocity.

It was recommended that states when making changes in their pharmacy laws, or planning new laws, follow closely the "N. A. B. P. model" prerequisite and reciprocity clauses or sections covering these points.

The N. A. B. P. standard examination as outlined by Mr. Christensen also was endorsed and recommended for adoption by all states as a minimum standard examination.

(3) A motion was adopted recommending that more attention be given to the subjects of Bacteriology and Pharmaceutical Jurisprudence, in Board of Pharmacy examinations.

In the discussion which preceded the adoption of this motion, various suggestions were made relative to the handling of these subjects in examination, whether they were to be given in separate examination papers or include a number of questions or parts of questions in some of the other papers. It finally was left to the individual boards to decide as they might think best. One suggestion that received considerable approval was that pharmaceutical jurisprudence and pharmaceutical mathematics might well be included in the same paper to consist of five questions on each of these subjects. Another suggestion that received some favorable attention was that a number of questions on the subject of bacteriology be worked into the *Materia Medica* paper, until such time as the educational requirements of a state would seem to justify a separate question paper on this subject.

(4) It was moved, duly seconded and carried that state boards of pharmacy base their examination questions, beginning with the May and June examinations of this year, 1926, on the U. S. P. X, but that proper leniency be shown, for some months to come, to those candidates who have had their training under the U. S. P. IX.

(5) The discussion at this point turned to the apparent need of a closer relationship between members of State Boards of Pharmacy and members of the faculties of colleges of pharmacy. It was stated that in a few states an altogether too large percentage of graduates in pharmacy fail in Board of Pharmacy examina-

tions. It was argued that in justice to candidates in examination and as a proper protection to the public, where such a condition exists, the boards and college faculties should get together and find out where the fault lies.

The discussion indicated, those present felt, that when a student body devoted time and proper effort to attendance and study at a generally recognized school or college of pharmacy, it is reasonable to expect that those students who graduate should, with few exceptions, be able to pass a State Board examination. If more than ten per cent or, at the most, 15 or 20 per cent, of graduates fail in Board examinations in any state, then it is reasonable to assume that there is something wrong either with the college course or with the State Board examination. Then it is high time for members of the college faculty or faculties and members of the Board of Pharmacy of such a state to get together and take steps to remedy such a deplorable condition.

Attention also was called to the fact that both the National Association of Boards of Pharmacy and the American Association of Colleges of Pharmacy have Committees on Relations of Boards with Colleges or Colleges with Boards and that one of the duties of these joint committees might well be construed to include an adjustment of such a condition.

In this connection a motion was finally made and carried, recommending that members of State Boards of Pharmacy and members of faculties of colleges of pharmacy of individual states should arrange to meet together at regular intervals, or at least once a year, to take up any matters of mutual interest and seek to find and iron out any inconsistencies that may be found to exist either on the part of the boards or of the colleges.

(6) A motion prevailed giving approval to the effort of the N. A. B. P. to work out a plan for the issuance of a National Certificate and recommending that this plan be carried on to completion.

(7) Discussion how to best guard against applicants for reciprocity making inaccurate statements regarding their qualifications, schooling, experience, etc., when applying for reciprocal registration, brought out the fact that similar problems have to be met in regard to candidates applying for registration by examination. Carelessness on the part of applicants was ascribed as, most frequently, being the cause of this, but it was agreed that now and then there was fraudulent intent.

The consensus of opinion of those present was that great care should be exercised by all boards to require authentic and proper information and documentary evidence to be filed with the board by candidates for examination. It was agreed that candidates when submitting proofs of preliminary education, college of pharmacy training, service or experience in a pharmacy or drug store, etc., should always be required to make a sworn statement of these qualifications in their application for entrance to examination. And that they should, in addition, be required to file affidavits or other documentary evidence of verification from school, college, employer, etc. It was pointed out that if this plan was followed by all states, suspected or doubted information or statements made by applicants for reciprocal registration could be easily verified and danger of fraud thereby reduced to a minimum.

It was also stated that Board examination records have from time to time

been destroyed by fire, lost, misplaced, etc., and that similar circumstances occasionally may be expected to arise in the future. Here a recommendation made by Mr. Hunter of Florida last year at the meeting of District No. 7 was gone into in detail. His plan was to have duplicate examination records of all member states preserved in the office of the Secretary of the N. A. B. P. for safe keeping. Then if the originals are destroyed, lost, misplaced, etc., duplicates would be available. Mr. Hunter's recommendation carried with it the suggestion that when candidates file application to take examination they should be required to submit duplicate affidavits, proofs of experience and of college training, photographs, etc., and that these duplicates as well as copies of the Board's examination grade sheets should be forwarded, after each examination meeting, to the Office of the Secretary of the N. A. B. P. Every one present agreed that if such a plan was carried out, it would prove to be of great value. After thorough discussion, a recommendation was made and concurred in by all present that the "Hunter Plan" of preserving duplicate board records be taken up in detail at the next annual convention of the N. A. B. P. As a preliminary measure, delegates present at the meeting agreed to have the Secretary of each of their boards send to the Secretary of the N. A. B. P. after each examination a duplicate or carbon copy of its official grade sheet showing examination grades made by each candidate, both those who passed and those who failed, and indicate by check mark or otherwise, those making a grade entitling them to certificate of registration.

(8) On request of one of the board members present a discussion was entered into as to the merits and demerits of the general ruling requiring a pharmacist to practice at least one year after becoming registered in a state by examination (preferably in that state, but in any event, in some state other than the one to which he wishes to apply for reciprocal registration) before applying for reciprocity. It was explained that the purpose of this ruling was to check the tendency of candidates who sometimes go to some state other than their own for examination and then within a short time apply for registration by reciprocity back to their home state. It was made plain that where there was no evasion there could be no legitimate purpose served by applying this ruling. It was further pointed out that if such a ruling was applied generally, it might often work a great hardship on worthy applicants for reciprocity and that therefore circumstances, motives, etc., should be taken into consideration in deciding the application or non-application of this ruling. Whether a pharmacist recently registered by examination in a state, has practiced there six months, or eight months, or even a year or more, does not materially affect his competency or fitness to practice pharmacy. Therefore, if there is no evasion and the applicant is otherwise deemed worthy and fit, it was held and agreed by all present that such an applicant should not be barred from reciprocal registration in any state because of lack of practice of a full year since registration by examination. And on the other hand if evasion was apparent, as when a candidate failing in examination in his home state goes within a short time to another state and passes examination in that state, the fact that he practices a year in that state, or in some other state, should not entitle him to reciprocity back to his former home state. Evasion, it was stated, was becoming a common practice and should be blocked.

(9) Attention was called to a resolution passed by the N. A. B. P. in 1915

and, later, incorporated into the Association's By-Laws governing reciprocity. The By-Law referred to is clause "(i)" of Article two of the N. A. B. P. By-Laws printed on page 203 of the 1924 Annual Proceedings and reads as follows:

"Provided, however, that no condition in these by-laws shall prevent a State Board of Pharmacy from granting reciprocal registration to applicants, who on account of omission, lack, loss or destruction of records, or for other reasons, cannot fully comply with these general requirements, or furnish detailed evidence or certification of grades made in examination."

The purpose of the foregoing clause was said to be self-evident. It affords opportunity to any State Board of Pharmacy to waive certain minor points of the general requirements for reciprocity and certain technicalities, in so far as that may be possible under a state law; especially in the granting of reciprocal registration to those older pharmacists of any state registered prior to 1910 and where, as is the case in a number of states, Board Examination records have been lost or destroyed by fire, or when, for other reasons, such applicants are unable to comply strictly with present-day rulings. A liberal attitude or policy especially toward the older registrants when applying for reciprocity was heartily endorsed by all present. The fact that a pharmacist has practiced fifteen years or more since registration, it was held, should be taken into consideration in passing on the application of such an applicant for reciprocal registration. In other words, it was the opinion of those present that more attention should be given to trying to find a way around technical points standing in the way of reciprocal registration of otherwise worthy and fit applicants, instead of, as is sometimes done, making use of every possible technicality to prevent such registration.

Many other points of interest to State Boards of Pharmacy were discussed, among them being the following:

Duties and privileges of Board interpretation of state laws.

Board power of construction of mooted questions or points of state law affecting registration and the practice of Pharmacy.

Board power to formulate and adopt rulings under state pharmacy laws similar to methods of Federal authorities who regulate the practice of Pharmacy under certain Federal or National laws.

Legislation proposed or desired by the various states.

N. A. B. P. Advisory Examination Committee aid to new state board members and others in the science of preparing examination question papers.

Practical examination—actual compounding—highly important in Board examinations.

Grading answers of candidates in examination, etc.

The visiting board members spent the day previous to that on which the district meeting was held, with the Texas Board, looking over examination questions and methods. The practical work, actual compounding of prescriptions and preparations, was of special interest. The examination as a whole received favorable comment and approval of all present and was pronounced strictly up to a graduate in pharmacy standard, although Texas does not require graduation for entrance to examination for registration as Pharmacist.

A very enjoyable feature of the stay of the visiting members in San Antonio was the invitation and attendance of all at the annual banquet of the San Antonio

Retail Druggists' Association held at the St. Anthony Hotel. There was an attendance of four hundred people. After an excellent dinner, interesting talks were made by the speakers of the evening. This was followed by a Charleston contest and dancing.

#### DISTRICT NO. 7 MEETING CALLED OFF.

The meeting of District No. 7 announced in our January Issue to be held in Jackson, Miss., on January 25 and 27, was called off by Vice-President John E. Guess, Chairman of the District. Mr. Guess will announce a new date for the meeting in the near future.

#### GENERAL NEWS ITEMS.

Your Editor in his capacity as Secretary of the N. A. B. P. made stops at Lincoln and Denver, en route to San Antonio. A meeting of the Colorado Board in progress on arrival at Denver gave the writer an opportunity to review the work of the Board. As usual, Charles Clayton was on the job and his two colleagues, Messrs. Howard and Murray, were working over time to keep pace with him.

The Colorado Board is somewhat handicapped by having only three board members. There were fifty-one candidates for examination and with the thoroughness given to examination work by this Board, three members are not enough. The Colorado pharmacy law does not require college of pharmacy graduation but, as with several other states where pharmacists have been unable to obtain prerequisite legislation, the Colorado Board examination is well up to a graduate standard.

A delegation of quiz school "graduates" from a neighboring state attended in a body to take the examination. It's too bad, boys, but "you all," or very nearly all of you, will know better next time.

**Dr. A. G. DuMez**, well-known pharmacist and educator, has been appointed by President Woods to succeed Dr. E. F. Kelly, resigned, as Dean of the School of Pharmacy of the University of Maryland. The Boards of Pharmacy extend a hearty welcome to him on his return to the work field of pharmaceutical education. We need his type of man in college work.

**Dr. E. F. Kelly**, was elected full-time Secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION and took up his new duties in the Baltimore office of the A. P. H. A. on January 1, 1926. We are sorry to lose Dr. Kelly but inasmuch as all Board men are interested in the A. P. H. A. as well as in colleges, we feel that we still have him with us in our work for Pharmacy.

**Samuel L. Antonow**, Chicago's pharmacist-lawyer, is now receiving congratulations on his recent appointment by Governor Len Small of Illinois, to the position of Assistant Director of the State Department of Registration and Education.

Under this department is grouped the greater part of the administrative machinery relating to the issuing of licenses and the regulation of the practice of architecture, barbering, beauty parlors, chiropody, dentistry, embalming, horseshoeing, medicine and surgery (in all their branches as well as the treatment of human ailments without the use of drugs or operative surgery and midwifery), nursing, *pharmacy*, plumbing, real estate, structural engineering and veterinary medicine and surgery.

Mr. Antonow in his position as Assistant Director will have charge of investigations and prosecutions of persons or firms charged with violations of the state laws governing the various professions, trades and occupations coming under the Department.

Mr. Antonow's long and varied service in the pharmaceutical field, both in actual practice and in association activities, together with his experience gained through practice in law, peculiarly fits him for the position he now holds.

#### ISSUANCE OF NATIONAL FORMULARY V DELAYED.

The AMERICAN PHARMACEUTICAL ASSOCIATION announces that the NATIONAL FORMULARY V cannot become official before July 1, 1926. The new edition (N. F. V) will therefore not be available for the present school semester nor for spring

examinations by Boards of Pharmacy. This announcement is made so that Pharmacy Schools, State Boards of Pharmacy and students or prospective candidates for State Board examination can govern themselves accordingly.

There are ample stocks of the NATIONAL FORMULARY IV on hand and the Midland Publishing Company, distributor, is prepared to supply copies of this edition promptly. If desired, copies will be furnished by the Secretary of the N. A. B. P., 139 North Wells Street, Chicago, Illinois.

#### STATE BOARDS OF PHARMACY NEWS ITEMS.

*Alabama.*—The Board held a meeting on February 9 and 10, 1926. Sixty-six candidates appeared for examination. This number was somewhat larger than the average for this Board, probably due to the fact that all who can and are eligible, are presenting themselves for examination and registration before the college of pharmacy graduate requirement becomes effective January 1, 1927. The Board voted to hold an examination December 28 and 29 of this year to take care of applicants who are not graduates in pharmacy and who become twenty-one (21) years of age after the examination to be held in October.

*California.*—The California State Board of Pharmacy recently held an examination at which seventy-eight candidates were successful for Licentiate in Pharmacy and eighty for Assistant Registration.

The Board as well as state and local association interests are again taking steps towards preparing and submitting to the next Legislature of the state, amendments to the present pharmacy law or possibly a whole new law. It is hoped it will include prerequisite and other features in harmony with standards now in force and effective in a large majority of the states.

It will be remembered that pharmacy interests secured the passage before both houses of the State Legislature somewhat over a year ago, of a bill including a college of pharmacy prerequisite and other changes, but that it was vetoed by Governor F. W. Richardson.

*Colorado.*—The Colorado Board held its mid-winter examination in Denver, January 15 and 16. Forty-one candidates appeared for examination for Registered Pharmacist certificates and ten for Assistant licenses. This class of fifty-one candidates was the largest in the history of the Board for this time of the year and one of the largest in the entire history of the Colorado Board.

The annual report of the Board for 1925, now in the hands of the printer, will show that within the period of twelve months which it covers, thirty-one new Pharmacists were registered as a result of examinations, while forty were granted registration by reciprocity. During the same period, sixteen were dropped for non-payment of renewal fees and the unusually large number of nineteen answered to the call of death, leaving a net gain of thirty-six and making a total of 1330 Registered Pharmacists in good standing; of these, a little over four hundred do not live in Colorado but keep up their registration.

The next Board examination will be held about the middle of May; exact date will be given later.

*District of Columbia.*—At the quarterly meeting of the Board of Pharmacy of the District of Columbia, forty-two candidates presented themselves for examination for registration as Pharmacists of which number seven were successful.

Maurice Jacquelyn Baptist was granted reciprocal registration on his Virginia state license.

*Georgia.*—Jesse A. Mitchell of Macon has been appointed by Governor C. N. Walker to succeed E. L. Murray, former member and Secretary of the Board, whose term expired. Claude Roundtree of Thomasville was elected Secretary.

The next examination meeting will be held April 26, 1926.

*Indiana.*—The State Board of Pharmacy of Indiana held an examination January 11 to 13 inclusive at which twenty-eight candidates passed for full Registered Pharmacists and sixteen for Assistant Registration.

*Iowa.*—The Attorney General of the State of Iowa rendered an opinion to the Board on February 19, 1926 that Acetylsalicylic Acid (Aspirin) cannot be sold in the state of Iowa except by stores owned and conducted by or in charge of Licensed or Registered Pharmacists, or where Li-

censed or Registered Pharmacists are employed. The Board expects to enforce this ruling within a short time and to stop the promiscuous sale of this preparation by barber shops, news stands, cigar stores, soft drink parlors, etc.

(This ruling is more than of passing interest and Secretary H. E. Eaton, of the Iowa Board, has promised more details for April issue.—H. C. C., Editor.)

*Kansas.*—Secretary A. H. King, of the Kansas State Board of Pharmacy, Manhattan, reports that the Kansas Board recently completed a thorough inspection and canvas of that state, including the taking up of licenses granted to dealers, general stores, etc., issued by the Secretary of the state under a former zoning law and permitting the sale by such licensed dealers of the usual domestic remedies in rural communities at least four miles from a drug store or pharmacy. This investigation started in June 1925. It was found that drugs of various kinds were being sold in bulk, also medicinal poisons in all quantities, as well as in original packages, which is illegal under the present law. The Board feels well repaid for its effort in that direction, as a real hazard to the public has been removed.

At the Board meeting held in Wichita February 3 and 4, thirty-two candidates took the examination, of which number six were granted registration as Pharmacists and four as Assistant Pharmacists.

The Board decided, at the February meeting, to discontinue the examination subject of identification of drugs and preparation as a requirement for registration. An oral quiz relating to prescriptions, etc., will be given in connection with the practical work. Practical work will be given to applicants for registration as Assistant Pharmacist in the same manner as required for full Registered Pharmacist, beginning with the May examination.

*Kentucky.*—Twenty-six applicants took examination for Registered Pharmacist before the Kentucky Board of Pharmacy on January 26–27 and six for Assistant Registration. Four passed for Registered Pharmacist and three for Assistant Registration.

The following qualified for registration by reciprocity:

Edwin R. Baker from North Carolina.

John E. Hanna from Florida.

Clifford Vance from Ohio.

Claud M. Hamlet from West Virginia.

The next meeting of the Board will be held in Covington April 13 and 14. The July meeting will be held in Louisville and the October meeting in Middlesboro.

Albert E. Eli, of Glasgow, appointed recently by Governor W. J. Fields to fill the vacancy caused by the death of Orville Patterson, qualified at the January meeting as a member of the Board. Mr. Eli is a graduate of the Louisville College of Pharmacy and represents the best of the younger element of progressive pharmacists; he has been assigned the subject of "Practical Work"—actual compounding of prescriptions and preparations.

(Practice work—actual compounding—is one of the obligatory subjects or branches to be included in a standard board examination.—H. C. C., Editor.)

At the January meeting of the Board a Resolution on the death of Mr. Patterson was adopted as follows:

"George Orville Patterson was born at Lewisport, Kentucky, October 8, 1870; educated in the public schools of Hancock County; apprenticed in Pharmacy with the late Dr. O. C. Dilly, Louisville; graduated from the Louisville College of Pharmacy in 1892. Married Miss Susie Smith of Lewisport in 1892, and, in 1897, engaged in the retail drug business on his own account in Hawesville, Kentucky, in which business he continued with unusual success until his death on November 6, 1925.

"He was President of the Kentucky Pharmaceutical Association for the year 1907 and 1908 and at the time of his death he was serving his third term by appointment as a member of the Kentucky Board of Pharmacy. He was a member of the town council of Hawesville, a member of the Methodist Church and of the Masonic Order of Hawesville, also of the Kosair Temple (Shrine) at Louisville. He is survived by his widow and his son Frank who succeeds him in business.

"These are the bare and outstanding facts of his life and may be read of all men. But the genuineness of his personal friendships, his faithfulness to every

trust reposed in him, his generous tolerance of and respect for the opinions of others, his instant readiness to render a service, the warmth and loyalty of his personal attachments, the ineffable kindness of his spirit—these will live forever in the hearts and lives of all those who knew and loved him.

“NOW THEREFORE BE IT RESOLVED by the Kentucky Board of Pharmacy, in regular session assembled, that these facts of his life and this tribute to his memory be made a part of the minutes of the Board and that a copy be engrossed and sent to his family.”

*Minnesota.*—Miss Marie Piesinger, for six years a member of the Minnesota State Board of Pharmacy and President during 1923 has been reappointed by Governor Theodore Christianson for another five-year term.

(Miss Piesinger has the distinction of being one of the only two women in the United States who has served as President of a board of pharmacy. Miss Kittie Harbord of Salem, Oregon, was the first woman to serve in this capacity. She was President of the Oregon Board of Pharmacy in 1908 and again in 1911. In 1912 she served as Secretary of the Board.—H. C. C., Editor.)

*New Mexico.*—The next examination of the New Mexico State Board of Pharmacy will be held Monday and Tuesday, May 24 and 25, at Santa Fe, New Mexico.

*North Carolina.*—James A. Henderson of Charlotte, N. C., who was elected a member of the North Carolina Board of Pharmacy June 1924, for a term of 5 years and commissioned by the Governor of the state, April 28, 1924, died at Charlotte, N. C., February 12, 1926. His association with the Board was brief but harmonious and pleasant and they deeply regret his passing. He is survived by his wife and one daughter.

The State Board of Pharmacy will meet at an early date and elect a successor to fill Mr. Henderson's unexpired term.

*Ohio.*—The Ohio State Board of Pharmacy conducted examinations for Pharmacists and Assistants on January 12 and 13. There were sixty applicants for the Pharmacist examination of which number forty were granted state certificates of registration. There were nineteen applicants for Assistant examination of which number twelve were successful and were granted state certificates as Assistant Pharmacists.

The highest grade made in the full Registered Pharmacist examination was 92.1% by Ralph Berg of Cleveland.

The highest grade made in Assistant examination was 86.8% by Philip Weinberg of Cleveland.

Reciprocal registration was granted to:

Cloyce A. Bowers from Indiana.

Edgar M. McGath from West Virginia.

Benjamin E. Camp from Pennsylvania.

The next examination will be held in Columbus on April 6 and 7, 1926.

*Wisconsin.*—Governor Blaine has appointed Edwin Boberg of Eau Clair, a member of the State Board of Pharmacy, to succeed his father, the late Otto J. S. Boberg, who served as a member of the Board for twenty years.

The Board held examination January 19-22 inclusive. The total number of candidates taking examination was ninety out of which number twenty-two passed for Registered Pharmacists and thirty-four for Assistant Pharmacists.

The next examination meeting of the Board will be held in Madison, April 20 to 23 inclusive.

*Oklahoma.*—Clarence M. Anderson, of Hugo, has been appointed by Governor M. E. Trapp to succeed Tom R. Hadley, resigned, as Secretary of the State Board of Pharmacy. Mr. Anderson is well and favorably known in pharmaceutical and civic circles of the state. For nineteen years he conducted a successful drug business in Hugo, which he recently sold. He has been active in the state Pharmaceutical Association; was the first Vice-President of the Association and has seen service on the Executive Board and on the Legislation Committee.

Mr. Anderson was the first President of the Rotary Club of Hugo, is prominent in Masonic work and is a member of the Methodist Church.

Mr. Hadley resigned several months ago but continued in office pending the appointment of his successor by Governor Trapp.

The next Board examination will be held June 1 and June 2.

*Vermont.*—The annual meeting of the Board of Pharmacy was held at the State House, Montpelier, February 3, with President Fred W. Churchill presiding. Messrs. Alexander, Russell and Root were present. Secretary Fred D. Pierce is spending the winter at Oneco, Florida.

Seventeen candidates appeared for examination out of which number five were successful in passing the examination and were granted "Skilled Pharmacists' Certificates."

Governor F. K. Billings visited the Board and offered to assist in securing larger quarters for the practical examination.

President Churchill and Secretary Pierce were reelected for the current year (1926) and Mr. Harris W. Alexander was elected Treasurer.

The next examination will be held June 1, 1926.

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## THE FUTURE OF AMERICAN PHARMACEUTICAL RESEARCH.\*

BY H. V. ARNY.

In suggesting topics upon which I might address you the final decision of our good friend Dean Wulling was that as chairman of the National Conference on Pharmaceutical Research I might fittingly discuss with you the subject of Research.

But some of you may say "why should we retail pharmacists be interested in research?" This question I answered in a paper entitled "Research and the Cash Register" presented at the 1921 meeting of the New Jersey Pharmaceutical Association, my contention being that every research achievement in a given calling redounded to the credit of every member of that calling; citing as proofs of my thesis, the fact that the high esteem now enjoyed by American medicine and American chemistry was due primarily to the research work of a small group of investigators in each calling.

I hold in my hand two reprints, one of a paper published by me in 1920; the other a report from the Research Conference published last year. The first of these reprints might be called "Research of the Past," since it demonstrates that pharmaceutical research has been a virile and profitable pursuit for almost 200 years and if any of my hearers doubt this assertion let me enumerate the achievements of a few of the pharmaceutical worthies listed in the paper.

Scheele, the Swedish apothecary, discoverer of chlorine, of the fruit acids and of numerous other chemicals.

Sertürner, the German apothecary, discoverer of morphine.

Pelletiere and Caventou, French pharmacists, discoverers of quinine.

Tschirch, the Swiss pharmacist, distinguished living pharmacognosist and phytochemist.

Procter, Diehl, Squibb, Rice and Remington, American pharmacists, distinguished in research and in pharmacopoeial revision.

The second pamphlet, which might be called "Research of the Present," demonstrates the fact that pharmaceutical research was not only a fruitful field

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\* Address delivered at the annual meeting of the Minnesota Pharmaceutical Association held in Minneapolis, February 10, 1926.

of endeavor in the past but is also an attractive opportunity for service for the present day. It proves, moreover, that workers are at hand to carry on the splendid traditions of Pharmacy of the past. It also shows that the field of pharmaceutical research is sufficiently promising to attract non-pharmaceutical research workers. Of the results of this *Census of Pharmaceutical Research* I need only at this time to present the following summary of research workers of 1925:

Hospital pharmacists	3
Retail pharmacists	10
Pharmacists in medical and chemical schools	16
Non-pharmaceutical teachers, working on synthesis of medicinal chemicals	28
Governmental scientists doing pharmaceutical research	19
Manufacturing pharmacists	72
Pharmaceutical teachers and their students	91
TOTAL.....	239

Since these two pamphlets represent Research of the Past and of the Present respectively, I have chosen as my theme of to-day "Pharmaceutical Research of the Future," placing in evidence of my faith in the future of pharmaceutical research, a tabulated list of research topics gathered in during the Research Census of 1925 from workers in all lines of research that I have just mentioned.

I will not bore you by a reading of the 77 topics, since the list will soon be published in printed form. On the other hand, it will be illuminating to read the following headings under which these 77 topics fall.

Dispensing Pharmacy	2
Manufacture of U. S. P. and N. F. Pharmaceuticals	15
Tests for and Assays of U. S. P. and N. F. Pharmaceuticals	6
Manufacture of Medicinal Chemicals	8
Tests for and Assays of Medicinal Chemicals	8
Sources and Identification of Botanic Drugs	4
Tests for and Assays of Botanic Drugs	10
Chemistry of Drug Plants	5
Bacteriology and Biologicals	2
Enzymes and Endocrines	3
Statistical Pharmacy and Business Research	4
Miscellaneous (Historical, bibliographical, pharmacological, microscopical and physical)	10
TOTAL.....	77

Some of the 77 items contain subdivisions which could easily stretch the topics to over 100. Of these items, some are capable of years of study before the solution of the problem is attained. Others on the list (which is given *in toto*, without censorship) are topics which have already been worked out satisfactorily; the only task remaining being the practical application of facts already ascertained. Under "Miscellaneous" are collected topics of pharmaceutical interest and value which, however, should be worked out by the pharmacologist, the physicist or other non-pharmaceutical scientist.

This brings us to the overlapping of one science upon the other; something occurring in all types of research. Thus physiological assays are clearly a function of pharmaceutical research, since many of our most valuable drugs can be assayed

only by biological methods. On the other hand, pharmacology as applied to the therapeutic effect of drugs belongs to the highly trained medical scientist rather than to the pharmaceutical research worker. In fact, the most necessary alliance in pharmaceutical research of the future will be between the pharmaceutical botanist, the pharmaceutical chemist and the pharmacologist.

I hope I have proven the thesis that there are vast possibilities confronting the pharmaceutical research worker of to-day and that therefore the future of American pharmaceutical research is filled with promise.

This brings us to the critical phase of pharmaceutical research; the proper support of this field of endeavor. We have just suggested 77 topics calling for research and the list could be easily multiplied by three or four. On a preceding page I have classified the 239 workers reported in the Research Census of 1925 as interested in pharmaceutical research. Of these 72 are in manufacturing, 91 are teaching and 10 are in retail pharmacy. What encouragement is being given these workers?

While some manufacturing concerns are deeply interested in research, many fail to give their research departments adequate budgets despite the fact that the quickest dividends from research come from experimentation along manufacturing lines. As to research in colleges of pharmacy, the quantity of research performed is largely a question of graduate students. The average American professor is so hampered with work—teaching, administrative or organization activities—that his opportunity for personal research is very limited, no matter how keen his desire to do such work. In my own experience of the past fifteen years, the only papers I have been able to publish were those showing work done by capable helpers under my direct supervision and checking. Such helpers are usually advanced students, for in the teaching staff of the average college the younger instructors are as a rule overburdened with classroom or laboratory instruction or with the marking of test papers. On the other hand in post graduate courses leading either to the master or the doctor degree, a dissertation, embodying results of months of research, is essential and it is to these graduate students and to their teachers American Pharmacy of the future will have to turn for the best of our research work.

This being so, it behooves all of us pharmacists, retailers, wholesalers, manufacturers or teachers, to do our utmost to build up this class of research workers.

And now let us turn for a few moments to the retail pharmacist as a research worker. At first thought some of you may retort that there is no such person. After emphatically denying the latter assertion I will reluctantly express the opinion that there is a smaller proportion of retail pharmacists performing research to-day than there was fifty years ago. Anyone who doubts this assertion may compare for himself the papers published by retail pharmacists in the *A. PH. A. PROCEEDINGS* of the early seventies with the output from the same source in the *A. PH. A. JOURNAL* of last year. There are several causes for this decline in research work emanating from retail pharmacies.

In the first place retail business has become so complex a matter in the last twenty-five years that now-a-days the chief occupation of the retail pharmacist is "working for the landlord" or racing with "overhead." The spacious olden days of retail pharmacy, the days as I knew them in my own retail drug-store experiences are past and there is indeed but little time for research.

Then the retailer year by year becomes more and more a purveyor of other men's products. The old-time drug store back-room; the real laboratory where a large number of the pharmaceuticals were made, has shrunk to microscopic proportions or has been converted into a stock room. Not making his own preparations to any extent, our retail pharmacist of to-day is actually forgetting his manipulative pharmacy and therefore overlooks opportunities of research in the way of improving pharmaceuticals for which the official recipe is at times unsatisfactory.

Then, a third factor arises from the notion that modern research must mean huge laboratories, expensive apparatus and extraordinary training. It is this fallacy that I most desire to combat even though it means taking issue with some of my closest friends. These exponents of the expensive equipment and the extraordinary training idea overlook such facts as the discovery of morphine by Sertürner in his little apothecary shop in Eimbeck. They talk about "crude work unscientifically handled." True, Sertürner's work was crude but it was the beginning of that wonderful line of research known as alkaloidal chemistry. Perhaps my friend may say "That was over a century ago and the present century demands more refined research." Then suppose we take the greatest chemical discovery of the last twenty-five years; the discovery that has revolutionized our entire chemical thought. The basic work leading to this tremendous discovery was not done by one of the Great in Chemistry and in a five-million dollar laboratory. It was carried on, if tradition be right, in a simple room, a kitchen, it is even said, with tin pans and earthenware crocks as the most largely used appliances. Yet with these crude implements, the then comparatively unknown workers Professor and Madame Curie, by their isolation of radium, placed themselves among the Great in Chemistry. This statement in no manner detracts from the magnificent work following the discovery of radium carried out by Thomson, Rutherford and Millikan, culminating in our present-day knowledge of the structure of the atom, work that really did require remarkable and expensive apparatus and the appointments of an admirably equipped laboratory. My contention is that both types of research are essential; that important though expensive and highly accurate research may be, it ill befits that type of investigator to sneer at simpler research, honestly conceived, honestly carried out.

My view of research is that it is the search after the truth; that simple seeking after the truth is oftentimes more important than elaborate investigation, even as simpler forms of worship are perhaps more acceptable to the Deity than elaborate ceremonials. Applying this thought pharmaceutically, a vast field of simple and yet important research is awaiting those retail pharmacists willing to devote a part of their leisure time to the laboratory rather than to the automobile or the golf links. The list of research topics appended to this shows numerous pieces of research within the scope of the back-room of the drug store, pieces of research that will bring results of far greater importance to pharmacy than studies of hydrogen-ion concentration or of molecular weight determinations.

A few of these practical and vital problems are here suggested.

1. *Pharmacopæial Research.*—By this heading I mean the investigation of the pharmaceuticals of the Pharmacopœia and the National Formulary. There is no greater need in U. S. P. and N. F. revision than volunteers from the rank and

file of retail pharmacy who will check up proposed changes in recipes by making up the preparations on a commercial scale (one liter or more) and then report to the chairman of the U. S. P. and N. F. Revision Committees as to whether the proposed recipe yields a better or a poorer product than the recipe now official. This is the object of the auxiliary committees that proved of such value in the preparation of U. S. P. X. This idea should be extended so as to include the National Formulary by the creation in each state association of a committee on U. S. P. and N. F. preparations, such committee to consist of retail pharmacists each of whom will pledge himself to try out in his store the proposed changes in the recipes of official products. I am experienced enough in state association affairs to know the difficulty in getting the right kind of men to do real work on committees, but if most state associations can have live legislative committees, why should not they have equally live committees on U. S. P. and N. F. preparations?

2. *Incompatible Prescriptions.*—There is no more important work along the lines of pharmaceutical research than the reporting and collating of incompatible prescriptions. This work can be done only by the practicing prescriptionist; the retail pharmacist or the hospital pharmacist. It is work akin to the main line of research published by the practicing physician, the reporting of unusual cases. The field of incompatibilities is an almost limitless one and as long as physicians prescribe mixtures, so long will occasional incompatibilities bob up and were every pharmacist in this state to report each year the incompatible prescriptions compounded in his store and were these reported cases compiled and presented at the annual sessions of this association, that report would constitute one of the most interesting hours of your convention. Not only would such a report be interesting reading but it would also be of the greatest service to medicine. Despite repeated warnings, physicians will prescribe the newer synthetic remedies with other medications and that with frequently ensuing incompatibilities, sometimes (as in the case of quinine-acetylsalicylic prescriptions) with the production of toxic by-products. Were these and all other types of present-day incompatible prescriptions brought before this ASSOCIATION each year, were they published in brochure form by the ASSOCIATION for distribution among medical men, such a procedure would do more to stimulate prescription business than any other agency I can imagine.

Obviously, this idea is not original with me. Such "prescription clinics" as they were called by that great pharmacist, Henry P. Hynson, have been a popular feature of a number of A. PH. A. conventions and I only advocate their extension as a serious part of the work of state associations.

3. *Business Research.*—In the appended list of research topics Nos. 64, 65 and 66 are subjects that could keep our retail pharmacists busy during spare hours for many years to come. But one illustration will suffice, the classification of the ingredients of prescriptions as worked out by the Commonwealth Foundation. This checking of 1000 prescriptions per store can only be done in the retail pharmacy and the results of the compilation will be of value not merely to pharmaceutical educators but also to those conducting the revision of the Pharmacopœia and the National Formulary.

From a purely selfish standpoint the research of the greatest service to the retail pharmacist is the survey of the cost of conducting the drug business such as

carried out by the Harvard Business School a few years ago. That such surveys should be conducted at least once every five years and that every retailer should help in this work goes without saying.

4. *"Pure" Research.*—In the correspondence leading up to the organization of the National Conference on Pharmaceutical Research I used the phrase "pure research" when writing to an eminent non-pharmaceutical research worker. He responded with a sharp criticism of the phrase, showing his broadmindedness by stating that while he engaged in what was popularly called "pure" research, he considered honest technical research as "pure" as the most non-technical research ever performed. This view coincides with my opinions expressed a few pages ahead and I will only add that one never knows when a piece of work of the most highly theoretical character may become of the greatest importance to the technical world. The title "pure research" given as the heading of this chapter is used merely as a differentiation from the technical lines of investigation suggested until now as fruitful fields of endeavor for the retail pharmacist and at this time while I would like to point out a number of pieces of work within the scope of the pharmacist's time and appliances, one illustration will have to suffice—Research Topic No. 17, compound solution of phosphates.

It is true the topic as printed states "study of manufacture and preservation from the standpoint of hydrogen-ion concentration," which is of course a task for the well-equipped chemical laboratory, but it is also true that the amended recipe of N. F. V is the result of the experience of making some 50 samples of slightly varying proportions and that further experimentation on purely pharmaceutical lines are still much needed. I am even Philistine enough to express the opinion that while hydrogen-ion studies of this preparation may aid us in telling us the "whys" of this preparation, the more or less empiric pharmaceutical method of approach may tell us far more about the "hows" of the preparation, the phase that is most likely to bring a perfect preparation.

And now in closing, let me add these last words to those of my hearers who may think that I have not made a case for research in pharmacy. These may say research is not for the average retail pharmacist. That is indeed very true. There is a very real research temperament, a research spirit, and this spirit of research is akin to the spirit of altruism. And yet remarkable and paradoxical though it may sound, the fact remains that many of those retail pharmacists who have manifested the spirit of research by a willing devotion of time to experimentation learned practical facts that made them wealthy. All of us with thirty or more years of pharmaceutical experience can recall a number of wealthy men of to-day who stumbled across their money-making specialties while "puttering around" in the back-room of the drug store.

Research is not a fickle goddess like Fortune. She does not always bestow her highest favors upon her devotees, but few indeed are those who honestly and industriously seek her aid and go away from her empty-handed.

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## NATIONAL CONFERENCE ON PHARMACEUTICAL RESEARCH.

## TOPICS FOR RESEARCH.

(Suggested in Census of Pharmaceutical Research 1925.)

*Dispensing Pharmacy.*

1. Ampuls, action of distilled water on glass of.
2. Digitalis, an official preparation designed for hypodermic use.

*Manufacture of U. S. P. and N. F. Pharmaceuticals.*

3. Stability of pharmaceutical preparations as determined by two factors:
  - (a) Natural composition.
  - (b) External influences.
4. Causes of precipitation in galenicals.
5. Preservation of U. S. P. products.
6. Systematic study of the influence of hydrogen-ion concentration upon the stability of U. S. P. and N. F. preparations.
7. Function and value of adjuncts to menstrua used in preparing fluidextracts and extracts.
8. Extraction processes for both vegetable and animal drugs.
9. Absorption of medicinal substances from various ointment bases.
10. Colloidal phenomena in pharmaceutical practice.
11. Arsenic trioxide, study of solubility in water, including the influence of the physical form of the  $As_2O_3$  upon its solubility.
12. Infusion of Digitalis, further study of methods of preparation.
13. Uniform preparations containing stable, non-irritating forms of iron cacodylate.
14. Changes in composition of Potassa Sulphurata during aging.
15. Sanguinaria preparations, cause of precipitation in.
16. Spirit of nitrous ether, further study of methods of manufacture.
17. Compound solution of phosphates, study of manufacture and preservation, from the standpoint of hydrogen-ion concentration.

*Tests for and Assays of U. S. P. and N. F. Pharmaceuticals.*

18. General methods for accurate and quick assay of pharmaceuticals.
19. Application of standardized colorimetric assays to the accurate determination of minute amounts of alkaloids and other active plant principles in galenicals; such as
  - (a) Determination of the morphine content of paregoric.
  - (b) Assay of the active constituents of digitalis.
20. Fluidextracts and extracts, improved methods of assay.
21. Study of U. S. P. assays for fluidextracts with a view of hastening the extractions or reducing the amount of work in extracting.
22. Further study of a systematic scheme of separation of synthetic chemicals as found in pharmaceuticals.
23. Study of the sulphur absorption value of fats with particular reference to the assay of sulphur ointment.

*Manufacture of Medicinal Chemicals.*

24. Synthetic drugs in general and the connection between chemical structure and physiological action.
25. Development of synthetic non-habit forming substances to take the place of morphine and cocaine.
26. Alcohols containing the tri-chlor-methyl group.
27. Attempts to synthesize certain plant principles of established medicinal value now obtainable almost solely from foreign sources. Among these principles may be cited santonin and caffeine.
28. Studies in the structural relationship between the alkaloids of the cinchona family and attempts to convert the less used alkaloids such as cupreine into the largely used quinine.

29. Further study of the anthraquinone bodies with view of producing, from the basic principles, mixtures similar in pharmacologic action to the well-known purgative drugs such as rhubarb, senna and cascara sagrada.
30. Synthesis and pharmacology of ephedrin.
31. Synthesis of santonin or study of the chemico-therapy of same leading to preparation of a synthetic to take its place.
32. Synthesis of cantharidin or work along similar lines as above.

*Tests for and Assays of Medicinal Chemicals.*

33. Colorimetric assays for salicylates, nitrites, nitrates, and ammonia, expressed in terms of standardized colored fluids.
34. Further study of the composition of commercial ammonium carbonate with special reference to the manufacture of aromatic spirit of ammonia.
35. Assay of carbon tetrachloride and estimation in mixtures.
36. Condition of "available chlorine" in pharmaceutical chlorinated solutions and in chlorinated lime.
37. Iron albuminate and iron peptonate; distinguishing tests for.
38. Isopropyl alcohol in ethyl alcohol; improvement in test for.
39. Search for a reliable test for the detection of lactic acid in the presence of citric and phosphoric acids.
40. Sodium cacodylate, study of assay of.

*Sources and Identification of Botanic Drugs.*

41. Microanalysis.
42. Methods in quantitative microscopy.
43. Preservation and maintenance of standards of drugs.
44. Uniform standards and methods of testing drug materials.

*Tests for and Assays of Botanic Drugs.*

45. U. S. P. assays, especially assay of opium and of ipecac.
46. Some assay processes; oils of eucalyptus, lemon and santal; nux vomica and its preparations; hydrastis and its preparations.
47. Reforms in methods of chemical assay for alkaloids.
48. Further study, particularly along the lines of physical chemistry, of the problems encountered in the alkaloidal assay of drug plants.
49. Investigation of the possibility of establishing a systematic scheme of the separation of plant principles in galenical preparations.
50. The assay of aloe.
51. The assay of oxgall.
52. Colorimetric assay for anthraquinone drugs.
53. Paramedial method for the biologic assay of digitalis series.

*Chemistry of Drug Plants.*

54. Do alkaloids exist as such in plant tissues?
55. Plant constituents—bitter principles, resins, tannins, glucosides, etc.
56. Phytochemical and pharmacological study of Southern medical plants, such as *Parthenium hysterophorus*, *Cephalanthus occidentalis*, *Saururus cernuus* and *Sarracenia flava*.
57. The chemical constituents of *Passiflora incarnata*.
58. Irritant constituents of teak wood.

*Bacteriology and Biologicals.*

59. Paramedial method for determining the phenol coefficient of disinfectants.
60. Chemotherapy of tuberculosis and the evolution of a preparation of low toxicity and a high bacteriological value.

*Enzymes and Endocrines.*

61. Further study of the digestive ferments and of glandular products.
62. The development of uniform methods for conducting vitamin investigations.

63. Isolation of active principles and proper methods for the further standardization of the endocrines or ductless glands.

*Statistical Pharmacy and Business Research.*

64. Drug-store arrangement (lay-out) to enable druggists to best serve their patrons. This should include the arrangements of prescription departments as well as that for commercial purposes.
65. Permanent continuance of the work of the Commonwealth Fund.
66. Continuance of work on the cost of conducting retail pharmacy similar to that published by the Harvard School of Business.
67. Compilation and classification of the statistics collected by the National Association of Boards of Pharmacy relating to registration and examinations.

*Miscellaneous.*

- (Historical)
68. Compilation of a History of Pharmacy.  
(Bibliographical)
69. Compilation of the bibliography of a single subject, comparable to the work now carried on by Kremers and his pupils.  
(Pharmacological)
70. Paramedical method for demonstrating the diuretic action of caffeine.
71. Physiological action of codeine, particularly as to its habit-producing property.
72. The physiological action of active constituents of gelsemium.  
(Microscopical)
73. Microtechnic for demonstrating proteins in living plant tissues.
74. Protein metabolism in plants.
75. Food microscopy.  
(Physical)
76. Redetermination of fusing, volatilization and reaction points of official chemicals, thus replacing present vague statements "strong heat," "red heat," etc.
77. Further studies in the solubilities of official chemicals.

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GRANTS MADE TO NATIONAL  
RESEARCH COUNCIL.

The following appropriations recently made to the National Research Council for the year 1926 give an idea of the work of the Council and the extent to which funds are forthcoming for the support of its various scientific projects. The Executive Board of the Rockefeller Foundation has authorized the appropriation of \$125,000 for research fellowships in physics, chemistry, and mathematics, \$75,000 for research fellowships in the biological sciences, \$50,000 for research fellowships in the medical sciences, \$45,000 for International Biological Abstracts, and \$5000 for *Concilium Bibliographicum*. The General Education Board has authorized the appropriation of \$50,000 for research fellowships in the medical sciences for 1926.

WELLCOME HISTORICAL MEDICAL  
MUSEUM TEMPORARILY CLOSED.

Since the foundation of the Wellcome Historical Medical Museum in 1913 there have constantly been additions of important historical objects acquired by purchase, donation, and permanent loan. The growth of the collections has been so great that extensive alterations in the museum and a complete rearrangement of the exhibits have become necessary. The reorganization will be of such a thorough character that Director Henry S. Wellcome, has decided to close the institution for several months. Although this may cause a temporary inconvenience to medical and other scientific research workers and students, the change, when effected, will prove of great advantage by rendering the arrangement and classification more systematic and the objects more accessible for inspection and study.