The CLINICAL Chemist

NEWSLETTER OF THE AMERICAN ASSOCIATION OF CLINICAL CHEMISTS, INC.

VOLUME 4, NUMBER 1. JANUARY 1952

NOMINATING COMMITTEE SUBMITS CANDIDATES

The Nominating Committee, consisting of Joseph Benotti, Louis B. Dotti, Max M. Friedman, Samuel Natelson, Miriam Reiner, Harry Sobotka, and Warren M. Sperry met in New York on November 11, 1951 and proposed the following slate of officers for the National Executive Committee to serve from July 1, 1952 to June 30, 1953.

President: Albert E. Sobel— New York, N.Y.
Vice-President: Hugh J. McDonald— Chicago, Ill.
National Secretary: Max M. Friedman— Queens, N.Y.
National Treasurer: Louis B. Dotti— New York, N.Y.

Members: Arthur Knudson— Albany, N.Y.
Marschelle H. Power Rochester, Minn.
John G. Reinhold— Philadelphia, Pa.
Harry Sobotka— New York, N.Y.
Arnold G. Ware— Los Angeles, Calif.

The procedure for elections is determined by Article IX of the Constitution: "The Nominating Committee shall deliver to the secretary of this Association a list of persons nominated by them for election as officers and members of the Executive Committee not later than sixty days before the Stated Annual Meeting of this Association.

"The Secretary shall mail a letter ballot listing the nominees of the Nominating Committee to the voting members not later than 45 days before the stated Annual Meeting, such letters ballot including a notice that the names of persons other than the nominees may be written in. All ballots received up to but not later than fifteen days before the Stated Annual Meeting shall be counted."

All members in good standing as of January 1, 1952 are eligible to vote. The name of any member of the Association may be substituted for any or all of the names on the enclosed ballot by using the blank lines available under each proposed name. In addition, seven new members of a Nominating Committee are to be elected from among the membership to serve from January 1, 1952 to December 31, 1952.

All ballots must be returned by March 18, 1952 to be counted.

Biographical sketches of the proposed officers and Executive Committee will be found on page 4.

DR. KNUDSON IN SIAM

Dr. Arthur Knudson, Associate Dean and Professor of Biochemistry at Albany Medical College, has been granted a year's leave of absence to teach in the two medical schools at Bangkok Thailand (Siam), it was announced by Dean R. S. Cunningham of Albany Medical College.

Dr. Knudson's Bangkok assignment was the result of his earlier appointment as a Visiting Professor to the Washington University School of Medicine Faculty. In conjunction with the United States Economic Co-operation Administration, Washington University has developed a reciprocal teaching program between the Faculties of its School of Medicine and those of the two medical schools at Thailand.

Dr. and Mrs. Knudson left for Bangkok on June 25.

N.Y. ACADEMY OF SCIENCE

The New York Academy of Science appointed 99 new fellows from among its 6536 members. Forty-three of these newly appointed fellows, singled out for recognition of outstanding scientific achievements, were chemists and chemical engineers.

Dr. Otto Schales, Ochsner Clinic, New Orleans, La. member of the AACC, was in this group. Dr. Schales is Secretary-Treasurer of the Division of Biological Chemistry of the American Chemical Society.

COMPLETE STUDY URGED ON BOARD CERTIFICATION

The following is a chronological record of events and correspondence between the American Board of Clinical Chemistry and the American Association of Clinical Chemists, Inc. The publication of this record has been ordered by a resolution of the National Executive Committee of the AACC for the complete information of the membership.

1948 DECEMBER 15, American Association of Clinical Chemists founded.

1949 APRIL 19, American Association of Clinical Chemists incorporated in the State of New York.

1950 APRIL 12, Dr. W.E. Harrisson addressed the Association Annual Dinner-Meeting at Philadelphia, Pa., as Secretary of the Board of Clinical Chemistry.

APRIL 18, American Board of Clinical Chemistry incorporated in the State of Delaware.

DECEMBER 18, CHEMICAL AND ENGINEERING NEWS published the news release of the formation of the ABCC together with the by-laws concerning the qualifications for certification.

1951 JANUARY, The Certificate of Incorporation of the ABCC was transmitted to the Executive Committee of the American Association of Clinical Chemists. These papers together with the by-laws were published in THE CLINICAL CHEMIST, Vol. 3 No. 1. The editorial statement made at that time invited comments from the membership.

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The CLINICAL Chemist

Newsletter of the American Association of Clinical Chemists, Inc.

P.O. Box 123
Lenox Hill Station New York 21, N.Y.

VOL. 4, NO. 1 JANUARY 1952

DR. JOS KAHN

The Editorial Board and Editorial Advisory Board extends its heartfelt sympathy to the bereaved family of Dr. Jos Kahn, one of its members. The AACC has lost not only an outstanding scientist, but also a kind and gentle man who gave unstintingly of his time and efforts to further the dignity and advance the status of all clinical chemists.

In writing the history of our profession and Association, the memory of Dr. Jos Kahn, Clinical Chemist, will rightfully assume its honored place.

OUR RECORD

We are a scientific organization. Our record, going into the fourth year, shows that we have advanced the scientific status of clinical chemistry.

We are a professional organization. Our activities, through our National Committee on Legislation and Local Section committees, contributed to the establishment of professional status to qualified non-medical scientists. These activities are only motivated in the public interest. Our personal interests lie only along these lines.

Contrary to what some misinformed individuals may think, we are not a pressure group. We would like to see harmonious relations established between the medical and non-medical scientists. We hope that our Association may be an instrument for this harmony.

We are a democratic organization, comprising, we believe, through the efforts of this newsletter, one of the best informed organization memberships.

Members are urged to study the complete correspondence between the American Board of Clinical Chemistry and our Association. All the facts are published in this issue.

ANNOUNCEMENT BY THE EXECUTIVE COMMITTEE

The Executive Committee of the American Association of Clinical Chemists, Inc., has reviewed the statement of the American Board of Clinical Chemistry published in this issue, explaining its principles and objectives. The statement together with the Board's action in making several changes in its By-Laws, disposes of some doubts and questions concerning its requirements for certification and other matters. It also demonstrates that the Board is aware of its responsibilities for the development of clinical chemistry as a profession.

The Executive Committee therefore recinds its previous advice not to apply for certification and urges all clinical chemists to carefully study the exchange of statements printed in this issue. It is suggested that members form their own opinion on certification and act accordingly.

STATED ANNUAL MEETING

Dr. Saul Roseman, Bobs Robert Memorial Hospital, Chicago, Ill., is arranging a program of scientific papers on clinical chemistry to be given as the scientific session of the Stated Annual Meeting. The scientific session will be held jointly with the Division of Biological Chemistry of the American Chemical Society on April 3.

Dr. Margaret M. Kaser, Veterans Administration Center, Wood, Wisc., heads a committee which is making the arrangements for the Annual Dinner, Stated Annual Meeting and other Association activities.

The Stated Annual Meeting will be held in conjunction with the American Chemical Society's 121st Meeting, at Milwaukee, Wisc.

BOX 123

Letters From Members

Dear Sir:

I quite agree with the theme of the editorial published in November and I think it is very well expressed. However, I think that it represents only one facet of the entire picture.

The cost of medical care at present puts it beyond the reach of the average member of the middle class. The employment of trained chemists in hospital laboratories will add more fuel to the flames. The final criterion should be benefit to the public (Dean A. Clark, M.D., New England Journal of Medicine, Nov. 1, 1951, p. 671). On the other hand, hospital administrators are by no means blameless. Most of them will admit that the laboratory makes a profit and that this money is used to reduce deficits elsewhere in the hospital. This gives the public a false impression of laboratory costs. If the laboratory could stand on its own feet, it could employ better trained people with only its current revenue.

I spent an entire month last summer visiting laboratories throughout the state of Florida and some of those problems were repeatedly brought home to me very vividly. I think your argument applies very directly to the larger hospitals but the solution for the smaller installations is not so clear. One suggestion received during the summer from a pathologist, would establish central laboratories in each community to which would automatically be sent all lab work except for the barest routine. This central lab could then afford to employ professionally trained chemists, bacteriologists, etc.

This is not to be taken as in any way a criticism of the argument for the employment of more and better trained clinical chemists. However, I feel that we will be better received if at the same time we show some appreciation of other phases of the problem and what we think can be done aobut it.

Miami, Fla. George T. Lewis, Ph.D.

QUIDNUNCS

WILLIAM H. GOLDWATER, formerly Assistant Professor of Biochemistry and Medicine, Tulane University Medical School, New Orleans, La., is now associated with the U.S. Naval Radiological Defense Laboratory, San Francisco, Calif.

THOMAS H. CONNOR was appointed Clinical Chemist at St. Joseph's Hospital, Providence, R.I.

THE SECRETARY REPORTS

With this issue of the newsletter the membership will receive a directory with the list of members as of January 1, 1952 and a ballot for the annual election of the Executive Committee and the Nominating Committee.

Perhaps the following notes may be of assistance to those who may not be clear as to the procedure in the election of national officers. According to Article V of the Constitution "A Nominating Committee of seven, at least five of whom shall be full members of the Association, shall be elected to hold office for one year." This Nominating Committee is elected by the membership in a manner specified in Article IX. "The Secretary shall, not later than sixty days before the Stated Annual Meeting, mail to each voting member in good standing a list of all the voting members in good standing and the names of the institutions with which they are affiliated, together with a letter ballot on which the voting members may designate their choice for election to the Nominating Committee .....and the seven persons receiving the greatest number of votes shall constitute the Nominating Committee."

The Nominating Committee therefore receives a direct mandate from the membership to propose a slate of officers and members of the Executive Committee. After the personnel of the Nominating Committee is announced the members have at least six months in which to direct to this group their recommendations. And after the Nominating Committee proposes its slate, the voting member further enjoys the privilege of writing in the name of any other member as his choice.

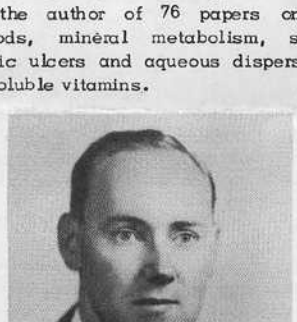
This electoral process may appear cumbersome, but the end-result is an Executive Committee that has been selected by the choice of the membership. In each past election of the Association more than 60 per cent of the members have returned their ballots. Although a much greater percentage vote would be desirable, yet it must be reluctantly admitted that for a scientific society that conducts its ballot by mail a 60 per cent vote may be considered a good response.

Max M. Friedman, National Secretary

Biographical Sketches of Proposed New Officers

PRESIDENT

ALBERT E. SOBEL, Head of the Department of Biochemistry of the Jewish Hospital of Brooklyn is also Adjunct Professor of Chemistry at the Polytechnic Institute of Brooklyn. he was born in Luko, Hungary on September 24, 1906. He holds the degrees of Bachelor of Science (1930) and Chemical Engineer (1935) from Cooper Union. He was awarded a Masters degree from Columbia University in 1936 and received his doctorate from the Polytechnic Institute of Brooklyn in 1940. He is the author of 76 papers on micro methods, mineral metabolism, sterols, gastric ulcers and aqueous dispersion of fat-soluble vitamins.



VICE-PRESIDENT

HUGH J. MCDONALD. Born, Glen Nevis, Ontario, Canada, July 27, 1913; Queen's University, 1930-1932; B.Sc. in Chemistry (with highest honors), McGill University, 1935; M.S., Carnegie Institute of Technology, 1936; D.Sc., 1939. Major work for doctorate in physical chemistry, with minors in organic chemistry, physiological chemistry and physics.

Research fellow, teaching assistant and part time instructor, Carnegie, 1936-1939; instructor in chemistry, Illinois Institute of Technology, 1939-1941; Assistant Professor, 1941-1943; Associate Professor, 1943-1946; Professor, 1946-1948; Professor and Chairman, Department of Biochemistry, Stritch School of Medicine of Loyola University, Chicago, since 1948. Consultant, Argonne National Laboratory, since 1946. Manhattan Project, Columbia University, 1943. Awarded competitive scholarship, Royal Institution for Advancement of Learning, 1933-1934. Sigma Xi research award, 1944; research award, American Academy Arts and Sciences, 1945.

Fellow, A.A.A.S., 1946; Member, American Chemical Society; American Association Clinical Chemists (Chairman, Committee on Education); Electrochemical Society; American Association University Professors; Sigma Xi; Phi Lambda Upsilon; Alpha Chi Sigma, Chaos Club (Chicago).

SECRETARY

MAX M. FRIEDMAN, Senior Chemist at Queens General Hospital, New York, Consultant Chemist at Lebanon Hospital. He was born in Austria on January 24, 1907 and completed his undergraduate work at the University of Alabama in 1930. After also studying at Columbia and New York University he was awarded his Doctorate by the Polytechnic Institute of Brooklyn in 1947. His main scientific interest is body water or, more specifically, extracellular fluids. His research for the past several years has been divided between body fluids and nucleic acid in normal and pathological tissues.

TREASURER

LOUIS BASIL DOTTI is Chemist at St. Luke's Hospital in New York City and Lecturer in Physiology and Biochemistry at the New York Medical College. He was born in New York City on August 13, 1903, and graduated from Columbia University in 1929. He also did his post-graduate work at Columbia, receiving his M.A. in 1931 and his Ph.D. in 1936. He has worked extensively on carbohydrate and calcium metabolism, digestive enzymes and liver function tests.

MEMBERS OF THE EXECUTIVE COMMITTEE

JOHN GUNTHER REINHOLD, Associate in Charge of Chemistry at the William Pepper Laboratory of Clinical Medicine of the University of Pennsylvania Hospital, also holds the rank of Assistant Professor of Physiological Chemistry at the Graduate School of Medicine of the University of Pennsylvania. Born in Milwaukee, Wis., on October 29, 1900, he graduated from the University of Wisconsin in 1924 and received his M.S. degree at Yale in 1926, In 1933 he was awarded a doctorate in physiological chemistry from the University of Pennsylvania. During the war he served as chemical consultant to the Commission on Liver Diseases of the Army Epidemiological Board.

HARRY SOBOTKA is Head of the Department of Chemistry at Mt. Sinai Hospital, New York City. He was born in Vienna, Austria, on August 4, 1899, and after studying at the University of Vienna received his Ph.D. from the University of Munich. He did post-doctorate research at the University of Munich and microbiological studies in Copenhagen. In addition to numerous research papers, reviews, articles and text-book chapters in the fields of clinical chemistry, enzymes, organic chemistry and colloid phenomena, he is the author of two books on steroids and on bile.

MARSCHELLE H. POWER is Professor of Physiological Chemistry in the Mayo Foundation, Graduate School, University of Minnesota, and Head of the Division of Biochemistry at the Mayo Clinic. He was born in Edgar, Nebraska, September 1, 1894, and graduated from the University of Nebraska in 1917. He received his Ph.D. degree in organic chemistry from the University in 1923. His publications have included papers relating to the nature of the blood sugar as studied by means of in vivo dialysis, carbohydrate metabolism, hyperinsulinism, renal function, acid-base equilibrium in the blood, metabolic abnormalities in Addison's disease and in Cushing's syndrome, the use of radioactive iodine in the study of the thyroid gland and the metabolic effects in man of administration of adrenocorticotrophic hormone and of various steroid hormones of the adrenal cortex.

ARTHUR KNUDSON. Associate Dean and Professor of Biochemistry at Albany Medical College, Albany, N.Y. Dr. Knudson was born in Milwaukee, Wisc., August 13,

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American Board of Clinical Chemistry's Program

The American Board of Clinical Chemistry, Inc., came into being after long and thoughtful study of the professional problems of the clinical chemist by the Committee on Clinical Chemistry of the American Chemical Society and the American Society of Biological Chemists, Incorporated *(Chemical and Engineering News, 28, 4446, December 18, 1950).* It was logical and proper that these two organizations and the American Institute of Chemists long established professional societies which have been active for years in raising the standards of chemistry and developing the professional status of the chemist and which include among their membership essentially all chemists in the country, should take the initiative in the organization of such a certifying board. There is a history of more than twenty-five years of efforts by these organizations, through conferences and negotiations with the other professional groups concerned in the operation of the clinical laboratory, to obtain for the clinical chemist the status necessary for his professional development and for the best use of chemistry in the care of the patient. Two articles one by Victor C. Myers ("Some Problems of Clinical Chemistry," *Chemical and Engineering News, 24,* 2615, October 10, 1946) and one by Warren M. Sperry ("The Professional Status of Clinical Chemistry," *Chemical and Engineering News, 28,* 159, January 16, 1950), summarize the status and problems in this field, recount the history of the efforts to improve the standards of clinical chemistry and the status of the clinical chemist. The judgment of the Committee that the organization of such a board would involve many problems that would require time to straighten out proved to be correct. However, the Board is now organized ("Board of Clinical Chemists Open for Business, *"Chemical and Engineering News, 28,* 4446, December 18, 1950) and although there are still problems, there are no basic reasons to feel they can not be solved with time, understanding and patience. The Board asks all those interested to join in making this development as sound and as rapid as possible.

The Board is analogous in purpose and function to the various medical specialty boards which have served for many years to establish standards and qualifications for persons wishing to practice in a specialized field in medicine *(Directory of Medical Specialists,* The A. N. Marquis Company, Chicago). The aim of the Board is to establish and improve a standard of competence for those who practice clinical chemistry in the interest of the public and the development of the science, and to certify as specialists those who voluntarily comply with the requirements of the Board. The action of the Board is based upon the candidate's ethical and professional record, training, experience and attainment, as well as results of a formal examination. While the Articles of Incorporation permit the Board to engage in activities, in addition to certification, in the interest of clinical chemistry, the Board feels that its principal function should be certification and that it should not promote any activity which might prejudice this function.

The Board is founded on the following basic principles which the Board and the sponsoring societies believe are necessary for maintenance of its competence, integrity and sound development:

1. The Board should be an independent organization, free from pressures of any kind from its founding societies or any other organization, group or individual.

2. The structure of the Board should be subject to change to meet new problems and situations, but by a process of due thought, deliberation and substantial agreement.

3. Membership of the Board should be balanced so as to include those persons experienced in the various aspects of the field.

4. While qualifications for certification should be as clearly stated as possible, interpretation and judgment by the Board are necessary for workability.

5. Standards for certification should be set as high as feasible under the present circumstances and raised as conditions permit.

The original members of the Board were necessarily selected by the sponsoring societies. Thereafter, they are to be elected by the Board from lists of nominees requested of these societies and others. After nomination and election the individual serves only as a member of the Board and not as a representative of the society which nominated him. There would be no surer way of undermining confidence in such a board than by having it develop into an organization of competing groups. The Board must be of a judicial, rather than of a legislative character. Tenure is limited to five years to provide for turnover of members of the Board, and provisions have been made by which new or additional members may be elected from nominees requested from other than the sponsoring societies and from at-large. The Board is cognizant of the importance of maintaining balance in the experience and location of its members, and elections from others than the founding societies can be expected as the Board develops.

The requirements for certification as listed in the Bylaws are guiding principles under which the Board functions. Experience has shown that it is practically impossible to state such matters in enough detail to cover all situations which arise or to convey the same meaning to all persons. One of the principal functions of a board is the administration of the principles under which it functions to practical situations not easily foreseen in detail. For this reason it is necessary that the Board be free from pressure and bias and be of the highest integrity.

If the standards of the Board are placed too high the group of Certified Clinical Chemists becomes an honor society and the Board fails in its function just as surely as it fails if it certifies those who are obviously incompetent. The Board has tried to set its present standards at a reasonably workable level. With time it will be possible and even imperative to raise this level. Experience has shown that in the beginning it is necessary in order to avoid unjust action, to certify certain candidates on the basis of their experience in the field in lieu of formal advanced training. It should be made clear that while the Board will undoubtedly make some errors in judgment, its purpose is to certify as to competence in the field of clinical chemistry, and that both competence and activities in the field will be required of candidates.

The Board recognizes the difficulties of stating an exact and unequivocal definition of a clinical chemist, but believes it must consider for certification those who are expert in the understanding and performance of chemical methods as an aid in evaluting the state of health, and in the diagnosis, prognosis and study of disease. The clinical chemist may work in a hospital laboratory, a teaching institution, a private laboratory, a public health laboratory, or a laboratory of pathological chemistry or toxicology. The kind of skills required, the responsibilities involved and the professional problems arising are similar in all these situations and are those in which the Board is interested. It is, therefore, necessary that the membership of the Board be such as to provide experience and judgment in dealing with applications for certification from whomever they may come in this wide group.

Every effort will be made by the Board to co-operate with the specialty boards of other professions which function in the clinical laboratory. This is most necessary for the best service of chemistry to medicine. However, this relationship must be not on the basis of competition between academic degrees and the like, but must be guided by mutual respect for competence and responsibilities in the respective fields, and, above all, by co-operative endeavor of each to contribute the best in the service of a common goal.

Theoretically, certification should im-

(Continued on page 6)

JOS KAHN
(1900-1951)

Long before Jos Kahn's life had run its full course, an unfathomable destiny removed him from his wife and sons, one of whom he has named after the famous French scientist Claude Bernard, from his mother and from his friends and colleagues.

We remember when he landed here in 1930 upon an invitation to join the research staff of the Department of Chemistry at the Mount Sinai Hospital on a Hernsheim Fellowship. He had been highly recommended by an assistant of Professor Richard Willstaetter. In the course of his doctor's thesis at the University of Munich, he had as a student made some ingenious contributions to the chemistry of cancer. He proved to be a most fertile scientist and started a series of valuable contributions and publications in several fields of biochemistry.

Like not too many others – perhaps because of his personal observations during the occupation of Belgium by the Germans during the first world war – he had foreseen in time what was brewing in Germany and decided to settle here. Soon an opportunity arose for an independent job of permanent nature as Chief Chemist of Beth Moses Hospital which later became part of Maimonides Hospital of which he became the Chief Chemist. The position, which he held for twenty years enabled him to marry and to found a family.

The stormy times on the 30s and 40s left their mark on all of us. The quiet of the scientific laboratory was disturbed by the moral and the material repercussions and tribulations of these times. A kind-hearted and sensitive person like Jos Kahn was unable to ignore these things. But what he may have missed in fulfilling scientific passions and ambitions, he made up – and many times over – by his services as hospital chemist. This is a thankless job, but with a sense of duty, such as is rarely found, and with patience, with kindness and tact, he has shown the way for hospital chemists. While he was not given to talking a great deal, his counsel helped to guide us in the foundation of the American Association of Clinical Chemists in which he held various important offices since its inception.

His memory will live through his work and his example, through his friends and his sons. One could suggest no better epitaph for Jos Kahn than the inscription on a Roman tombstone of a physician of old: it shows a flaming torch and reads "While serving others I am being consumed" – *Aliis inserviendo consumor* –

MEMBERSHIP SCROLLS

Some of the newer members may not be familiar with the fact that the Association has available a very attractive engraved membership scroll that is suitable for framing and is obtained upon payment of four dollars to Dr. Louis B. Dotti, National Treasurer, St. Luke's Hospital, New York 25. We regret that there is usually some delay in distributing these scrolls as they are first sent to an artist for name inscription, and this is done only after enough requests have accumulated.

PATRONIZE OUR ADVERTISERS!

MARGARET L. ROSENBERG

It was a great shock to the friends and associates of Margaret L. Rosenberg to learn of her untimely death in a motor accident on August 25, 1951 on a vacation trip to the Adirondacks. She was a native New Yorker, and had received both her B.S. and M.S. degrees from Columbia University with biochemistry as her major subject.

She had worked in the laboratories at College of Physicians and Surgeons, Columbia University, as well as on various research projects at Mt. Sinai, Montifiore and other hospitals. She was always interested in clinical chemistry and was among the first to join the American Association of Clinical Chemists. She was unusually gifted in all sorts of arts and crafts and photography, receiving a license from the New York Board of Education to teach these subjects in recreational classes.

The American Association of Clinical Chemists, Inc., including many of her friends and associates wish to extend heartfelt sympathy to the members of her family.

CALIFORNIA LICENSURE

The Southern California Section continues its activities to secure provision for specialized licensure in the new State Regulations that are now in preliminary stages of formulation. According to reports, the outlook seems favorable. Many medical men fully recognize the special need to encourage qualified chemists to enter the clinical laboratory field, and are sympathetic with the prinicple of specialized licensure, which would permit a qualified chemist to participate in clinical chemistry without the present deterrent of first securing additional training in non-chemical phases of clinical laboratory work. However, full assurance must be given that no licensed biochemist would improperly practice in the non-chemical phases of work. Therefore, as an essential step, efforts are being made to define satisfactorily what phases of work constitute clinical chemistry in the clinical laboratory.

BOARD OF CLINICAL CHEMESTRY'S

(Continued from page 5)

prove the quality of clinical chemistry and the status of the clinical chemist, if chemists and laboratories co-operate in this step. It should be realized, however, that translating this objective into practical results can not be attained without considerable effort and understanding by all.

January – 1952 *Signed:*

AMERICAN BOARD OF CLINICAL CHEMISTRY, INC.

NOW AVAILABLE

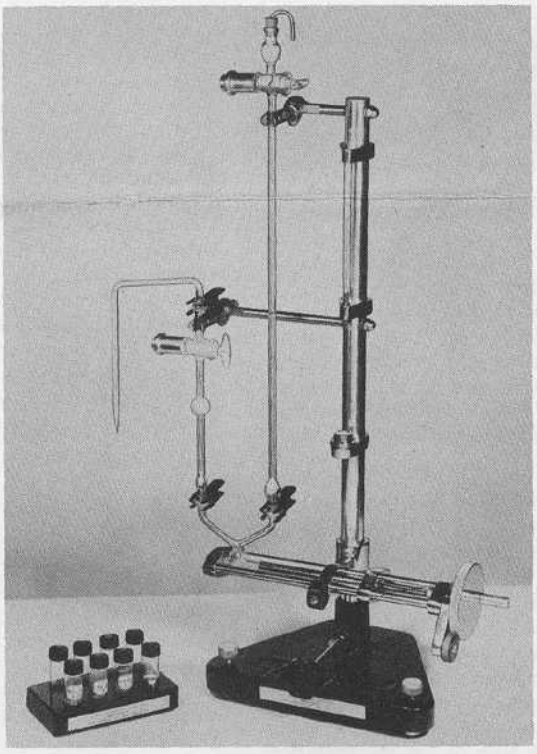
A Major Scientific Development

Kopp-Natelson Microgasometer*

For the Microgasometric Determination of Carbon Dioxide, Oxygen and Other gases

*REF.: NATELSON, S. et al. (1950), Determination of Carbon Dioxide Content with Microgasometer, demonstrated at the Sixth National Chemical Exposition, Chicago, September 5–9.

Patent Pending



Kopp-Natelson Manometric Microgasometer Model 511

- Determination of Carbon Dioxide, Oxygen, Carbon Monoxide, Nitrogen, etc. from ultra-micro volumes (0.03 ml) of Blood, Plasma or Serum.
- No pipette is needed for sampling. Micro-Pipette of precision calibration, contained in the instrument, makes possible direct sampling from fingertip or heel. Pipette is interchangeable, being attached by semi-balljoint.
- Operation is surprisingly simple and rapid. Procedure of drawing in and measuring of sample and reagents, producing of reduced pressure, shaking of mixture in the reaction chamber, and taking of manometric readings at constant volumes is all one continuous operation and is accomplished by manual turning of the wheel.
- No contact with air is possible during sampling or drawing in of reagents because of special technique employed, such as forming mercury seals and mercury globules from the tip of the Pipette.
- A great time saver. Fast and accurate routine clinical analyses. A single determination with washing of the instrument takes but a fraction of the time required with macro devices.
- Easily learned by the technician because of the simplicity of the procedure with a resulting increase in efficiency and comfort.
- The instrument holds less than 7 ounces of mercury and is silent in operation.
- Cuts operating costs drastically because of savings in time, chemicals and mercury, while producing quick positive determinations of unequalled accuracy.
- Thick wall pyrex glass parts which are replaceable and easily interchangeable are used throughout. Vacuum ground stopcocks equipped with Kopp exclusive Tension Lock devices. The manometer is engine graduated in millimeters from 0 to 350 mm.
- Unusually versatile. Macro gasometer analyses, where manometric procedures are used are quickly adaptable to micro quantities with this instrument.
- Portable. Weighs approximately 15 lbs.

KOPP SCIENTIFIC, INC. **405 East 62nd Street** **New York 21, N. Y.**

MANUFACTURERS AND SUPPLIERS OF
SCIENTIFIC INSTRUMENTS AND LABORATORY APPARATUS

COMPLETE STUDY URGED

(Continued from page 1)

FEBRUARY 1, After examination and study of the Articles of Incorporation and By-Laws, the AACC Executive Committee transmitted to Dr. O.A. Bessey as President of the Board the following letter and memorandum.

Dear Dr. Bessey:

Through the kindness of Dr. J.W.E. Harrisson we have been given the opportunity to study the Certificate of Incorporation and the By-Laws of your Board. We are fully aware of the difficulties which had to be faced in such a novel departure Thus, we wish to congratualte you that you have finally fulfilled the task set by the Committee on Clinical Chemistry. As you will be aware, there are several points of no mean importance which are very close to the heart of the American Association of Clinical Chemists, which counts now amongst its membership a considerable segment, if not a majority, of the Clinical Chemists who have been waiting so long for certification.

We are listing in the attached memorandum our objections to certain points in your Articles of Incorporation and By-Laws. As regards the composition of the Board, we are fully aware of the intention of the original nominating societies to balance university personnel, hospital personnel and representatives of independent laboratories. While this principle has been formally adhered to as regards the affiliations of the nine charter members, the distribution between the three groups mentioned should not prevent the nomination and election in the future of a greater number of practicing clinical chemists for all three groups. We feel bound to suggest with due respect to the Board that none of the established medical specialty boards comprises less than 100 per cent practitioners of the specialty to be judged. We do not have to recall in detail the twenty-five years of history comprising the effort to emancipate Clinical Chemistry from the monopoly and dominance of Pathology. It would be a sorry state of affairs indeed if Clinical Chemistry, now that it has come of age, should be unable to govern itself in the same fashion as the medical specialties.

Trusting that we shall soon be able to assure the members of our Association and clinical chemists in general that the Board is removing from its rules the objects of our opposition in the interest of the improvement of the profession and for the benefit of the public we are looking forward to your early reply.

Yours very truly,

Harry Sobotka, Ph.D., President
for Executive Committee

MEMORANDUM

A. Articles of Incorporation.

In the beginning it was the natural procedure for the Board's coming-into-being to be set up by some interested parent organizations. Neither of these three organizations claims to represent the clinical chemists as such. Thus the American Association of Clinical Chemists must be opposed to a perpetuation of this initial expedient. Since, on the other hand, a body which would be self-perpetuating on a mere personal basis is utterly foreign and repugnant to our concepts of government, of law, and of citizenship, the system of election of the members of the Board must be based on nominations from the group of persons, previously certified or eligible for certification. A survey of the composition of the various National Boards of Medical Specialities points the way. It appears to be invariably the custom to have a group of specialists certified; i.e., judged by a board elected from the top ranking members in this specialty, nominated by a College or similar supreme organization, representing the body of previous diplomates. A set-up of this nature with the proper checks and balances must be the ultimate goal of the Board.

The AACC, as witnessed by its Constitution and By-Laws and requirements for membership, does not purport to take the place of a "College of Clinical Chemistry". The AACC recognizes the provision in paragraph 2 of Article VIII for the accession of other nominating societies as a step in the right direction for a preliminary period of, say, three years. The AACC had existed for about two years at the time of the incorporation of the Board. From our previous correspondence with Drs. Bessey and Gaebler we now expect that this provision will be implemented forthwith in respect to the AACC and possibly also to other organizations and that certification with and without examination will be held up until then. The third paragraph of said Article VIII, which relegates the additional members of the Board to membership on sufferance, is objectionable to the AACC, particularly as it pointedly reiterates a standard provision expressed in Article X.

Under the assumption that the situation will be presently improved in the direction indicated, the AACC withholds for the moment its objection to the second paragraph of Article III. But we hold that the purposes enumerated in said paragraph should form one of the tasks of the future organization of Clinical Chemistry Diplomates in order to guarantee the traditional separation of legislative and judicial functions.

B. By-Laws.

The principal objections of the AACC center on Article IX of the By-Laws, which deals with Certification. Before listing the objections, it appears to be necessary to restate or paraphrase this Article IX, since its present language contains certain ambiguities and contradictions.

Section 1 lists certain educational requirements for "applicants". They are (a) a doctorate in Science in a biological science or in Medicine; (b) and (c) additional courses in certain branches of Chemistry; (d) is an escape clause for special cases.

Section 2 says that "applicants shall also meet one or more of the following qualifications". It then lists two qualifications: (a) three years full time experience etc. and (b) five years of professorial rank in certain fields. Paragraph (c) in spite of the preamble of Section 2 does not contain a qualification, but states that persons qualifying "under this Section" may be certified without examination.

Section 3 says that persons without the full formal education, but with at least ten years of practice in a senior position may be certified without examination.

Section 4 deals shortly with examinations, but paragraph (b) permits optional certification without examination prior to a given date.

You will agree that the language of this article is most bewildering. The qualifications of "applicants" in Section 1 and in Section 2 are evidently concurrent, in other words the applicant must have a doctorate degree plus a minimum of special chemistry courses and, in addition, either three years

(Continued on page 10)

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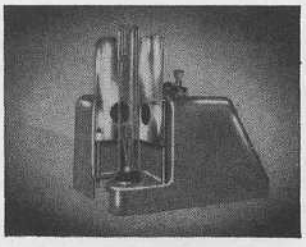

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COMPLETE STUDY URGED

(Continued from page 8)

experience or five years of professorial rank. Thus the separation into two Sections is confusing.

Paragraph (c) of Section 2 refers to "candidates with qualifications under this Section" (obviously Section 2 is meant). From what has been said above, namely that applicants, here called "candidates", must conform both to the qualifications of Section 1 and to one qualification of Section 2, the language of Section 2, paragraph (c) simply means "all candidates". This statement is in principle acceptable to the AACC. However, from the specific nature of Section 2, paragraph (c) and the separate specific statement concerning waiver of examination for incompletely qualified applicants in Section 3, one might construe that the intention of the authors was a different one.

This suspicion is confirmed by Section 4, paragraph (b), which reasserts the possibility of waiving the examination (already expressed by the preceding section for all candidates), but now a time limit is put on those qualified according to Section 2 (a) based on "training and experience". This implies that university professors without experience may be certified without examination even after the limiting date. In the light of this statement, it appears that the reference to "waiver" in Section 2, paragraph (c), was meant not to read "with qualifications under this Section", but "with qualification under paragraph (b) of this Section".

We shall now list our objections to this Article:

I. Section 1 (a) "in biological sciences" may include biochemistry, but no other branches of chemistry. We hold that a substantial number of Clinical Chemists, including some of the most prominent exponents of this specialty, have majored in branches of chemistry other than biochemistry or physiological chemistry. The language should thus read "in chemistry or in one of the biological sciences".

II. Section (b) and (c) "accredited courses in etc." is not good enough. It must read "on the graduate level". The present specification would be satisfied by the chemical courses included in any undergraduate premedical curriculum. No further comment to this point seems to be necessary. Incidentally, the separation of (b) and (c) is misleading and, at best, unnecessary.

III. The AACC is strongly opposed to certification, with or without examination, of persons who do not meet the minimum qualifications of 3 years full time experience. This provision conflicts with the public good. We consider the holding of professorial rank and even the passing of an examination wholly insufficient for certification. Moreover, we feel that "three years full time experience" (Article IX, 2, a) must be qualified by "in a senior position" and also by "within the last ten years". The preamble and paragraph (a) of Section 2 should be amended in this sense, and the paragraphs (b) and (c) stricken out.

IV. No separate provision is necessary for those of the Charter Members who may not meet all the qualification of Section 2, since Article III, Section 2, automatically confers certificates upon "Initial Members".

V. We furthermore suggest that the dead-line for the "grandfather clause" in Article IX, Section 4, paragraph (b) be extended to December 31, 1952 or to June 30, 1953.

VI. In addition to our objections to Article IX, stated above, we also object on similar grounds to Article III, Section 2, line three and four. We suggest that the words "or shall be considered eligible to secure a certificate, which shall be forthwith issued to a nominee upon election to the Board" be replaced by "for a period of at least two years".

The above remarks contain valid reasons for the objections raised by the AACC. We wish to add that there are enough practicing clinical chemists both within and without the AACC of professorial rank whose election would guarantee the proper representation of universities amongst the future members of the Board.

FEBRUARY 20, Letter from Dr. Bessey to Dr. Sobotka, as President of the AACC.

Dear Dr. Sobotka:

This is to acknowledge receipt of your letter and resolution of February 5, 1951. I shall bring your suggestions before the Board at a meeting to be held sometime in the near future.

Sincerely yours,
Otto A. Bessey

APRIL 3, Dr. D.D. Van Slyke, Vice-President of the American Board of Clinical Chemistry was elected Honorary Member of the AACC at the Stated Annual Meeting held in Boston.

APRIL 29, Meeting of Committee on Clinical Chemistry, American Chemical Society under the chairmanship of Dr. Warren M. Sperry, Drs. John G. Reinhold and Louis B. Dotti (alternate for Dr. Harry Sobotka) were present as committee members. The committee report as submitted to the Board of Directors, ACS, by Dr. Sperry was published in the CHEMICAL AND ENGINEERING NEWS, Jan. 14, 1952, Vol. 30 No. 2 p. 157. This report reads in part:

The meeting was devoted almost entirely to a discussion of the certification program. Otto Bessey, Chairman of the American Board of Clinical Chemistry, described in detail the progress which the ABCC has made. The committee was gratified to learn that the ABCC had been incorporated on a permanent basis and that it was proceeding rapidly with the work of certification. The committee was disturbed, however, by information that some clinical chemists are dissatisfied with certain aspects of the certification program as developed by the ABCC. Dr. Bessey was frank in recognizing that some mistakes had probably been made, but he was confident that they would be corrected by the Board as rapidly as possible. It would be surprising indeed if no errors occured in the difficult job of carrying out this pioneer venture.

During the informal discussion the committee offered suggestions which might lead to a clarification of the misunderstandings that have arisen. The committee believes that in such informal action as this it is fulfilling its function of promoting the best interests of clinical chemistry.

By permission of Dr. John G. Reinhold, the following excerpt of a personal letter to Dr. Harry Sobotka, dated May 4, concerning the aforementioned meeting reads as follows:

(Continued next page)

"Dr. Sperry suggested that it would be helpful in dispelling the fears of the group who suspect the Board if Dr. Bessey would draft a statement including the information he presented to the Committee and amplifying the philosophy of the certifying program for possible publication in THE CLINICAL CHEMIST. I assured him that The Clinical Chemist would welcome the opportunity of publishing such a statement, adding that part of the existing difficulty was the failure of the Board to recognize the Clinical Chemist when it had released material previously.

"All of this appeared to provide the basis of an understanding between Board and Association with the Committee acting as mediator. This compromise will gain the objectives of the Association while preserving the "integrity" of the Board. The proposal made was (1) the Board revises the requirements for certification along the lines outlined in the Memorandum. (2) Dr. Bessey addresses a letter to the Association in behalf of the Board explaining its benign motives, some of the semantic difficulties encountered, plans for its future development (3) the Executive Committee in the light of the proposed action for revision of requirements for certification and clarification of the motives and intentions of the Board, rescinds its advice to the membership to refrain from applying for certification and recommends instead that members shall now apply. (4) the unwritten, gentlemen's understanding implicit in Dr. Bessey's remarks to the effect that the Association can anticipate being represented on the Board by additional members and becoming a nominating society."

MAY 22, Letter of Dr. Sobotka to Dr. Bessey.

Dear Dr. Bessey:

To my regret I could not come to Cleveland and there attend the meeting of the Committee on Clinical Chemistry. Drs. Sperry, Reinhold and Dotti have reported on the fruitful discussions which had taken place and we are all looking forward to an early liquidation of the past impasse by our combined efforts.

I hear that you will be so kind as to address a letter of ca. 600 words, dealing with the aims, modus operandi, and the judicial position, in short, with the philosophy of the ABCC, to the Association for publication in its Newsletter. The Executive Committee is standing by to implement your actions by a statement which will be published together with your letter. Since all such material for our Newsletter will henceforth be cleared through the Executive Committee, I suggest that you mail your letter to me, even though you might wish to address it to the Membership at large.

With kind regards,

Yours very truly,
Harry Sobotka, Ph.D.

JUNE 6, Letter from Dr. Bessey to Dr. Sobotka.

Dear Dr. Sobotka:

This is to let you know that the American Board of Clinical Chemistry has authorized me to prepare a short article dealing with the purposes, aims and general philosophy of the Board such as referred to in your letter of May 22. Also, I have authorization to reply to your letter and enclosures of February 5 which contained a number of criticisms of the Board. Since this job comes at a congested time for me and will require circulation of papers to the Board, it may be a month or so before the matter can be completed.

With best regards,

Otto A. Bessey
President

DECEMBER 12, News release from Dr. Harrisson, Secretary of the ABCC to THE CLINICAL CHEMIST for first publication in January, 1952 issue. Printed on page 3.

DECEMBER 17, Dr. O.E. Gaebler, member of the ABCC and former member of the Executive Committee of the AACC corresponded with Dr. Reinhold, and allows his communication to be quoted all or in part. Pertinent observations by Dr. Gaebler follows:

"I wish to take up specifically the matter of the AACC memorandum and what was done about it. Copies of the memorandum submitted to Dr. Bessey were prepared by Dr. Harrisson and submitted to all members of the Board prior to the Chicago meeting. This meeting consisted of six long sessions, May 25-27, 1951. The first session was devoted largely to the memorandum. It became evident at once that if we took up extensive revision of the Articles of Incorporation and Bylaws we would devote all sessions to this, and would spend another year in legal red tape of which we were sick and tired already. So the remaining five sessions were devoted to the function of certification which we were now, for the first time, legally ready to do, and which we will keep on doing to the best of our ability.

"Three dispositions could have been made of the memorandum. It could have been rejected completely, adopted completely, or adopted in part and kept for further study and action. Complete rejection was not even considered for the document contained items of evident merit. Complete adoption would have given everyone the impression that the Board consists of a timid group that jumps through hoops and does not proceed by a process of due thought and deliberation. The AACC would, without doubt, have joined the Board's sponsoring societies in despising a group of this sort. Instead, the third course was adopted, and I am in position to draw upon official minutes and revised bylaws to support this statement.

"It was moved, seconded and carried that Sections 1a and 2a of Article IX of the Board's bylaws be amended to read *"chemistry or the biological sciences"* and "three years' full-time *experience in the immediately preceding 10 years"* precisely as suggested in the memorandum. The amended bylaws were subsequently typed and sent by mail to all members of the Board for a vote by mail. The new bylaws which I have only recently received are amended as stated above, so I assume the vote was unanimous. Otherwise it would have been necessary to wait until the next annual meeting, where a two-thirds vote would suffice.

"The remainder of the memorandum was kept in mind during certification, and was held for further study. None of it was ignored. If the Board were run by a dictator in an arbitrary manner, it could move much faster. The legal and parliamentary course is slower, but will, I am sure, produce more permanent results."

(The two changes, italics, indicated above appear in a copy of the By-Laws of the ABCC dated October 1951. In Article II Section 1a and 2a on page 9 line 7 and page 10 lines 4 & 5 respectively. No other changes, except the renumbering of the Sections of Article III appear.)

1952 JANUARY 2, Resolution passed by the National Executive Committee at a meeting held in Philadelphia is published on page 2. This resolution urges the membership to review the events with the Board and decide for themselves whether they should apply for certification.

ABCC ANNOUNCES FIRST CERTIFICATIONS

The ABCC, Inc., has issued certificates to 47 of the many applicants who have completed the filing of their papers. These are the first certificates to be issued and they represent applicants principally residing in New York, Pennsylvania, Illinois and California. To date, the Board has received nearly 400 requests for certification applications, and expects that many additional requests will be filed before July 1, 1952, the date upon which the certification without examination will be discontinued under the present By-Laws. Requests for such forms accompanied by the required fee of $1.00 may be addressed to the Secretary—Jos. W.E. Harrisson, 1921 Walnut Street, Philadelphia 3, Penna.

According to the Certificate of Incorporation of the ABCC, Section III paragraph 5, the Board will "—prepare and furnish in the public interest a registry of individuals with specialized knowledge in Clinical Chemistry who have from time to time been granted certificates by the Board—". As soon as such a list is available, the names of the newly certified Clinical Chemists with their laboratory affiliations will be published in THE CLINICAL CHEMIST.

The ABCC also announces the appointment of Mr. A.J. Nydick of New York City as its legal counsel. Mr. Nydick is a graduate of the Towne Scientific School of the University of Pennsylvania from which he received the degree of B.Sc. in Chemistry. He attended the University of Pennsylvania Law School and is a member of the New York and Philadelphia bars, specializing in chemical legal matters, particularly in patent and food and drug fields.

EXECUTIVE COMMITTEE MEETS

The meeting of the National Executive Committee of the American Association of Clinical Chemists was held in Philadelphia on January 2, 1952. Those present included John G. Reinhold, President; Albert E. Sobel, Vice-President; Max M. Friedman, National Secretary; Harry Sobotka, Ellenmae Viergiver, Harold D. Appleton (by invitation) and William R. Brown (by invitation).

All order of business was dispensed with to devote adequate time for discussion of certification by the American Board of Clinical Chemistry. Several points of view were presented, including the suggestion to set up a certifying agency within the framework of the Association, or on the other hand to unreservedly support the present Board. The advantages and disadvantages of both positions were discussed at great length. Letters from Drs. Gaebler and Somogyi, members of the Association and members of the Board, to Dr. John G. Reinhold were introduced into the proceedings. The following general conclusions were arrived at:

1. The membership requires some positive action at this time.

2. The extreme positions as noted above would result in dissensions if either were adopted as policy of the Association.

It was therefore unanimously agreed that all the pertinent correspondence between the Association and the Board, and releases by the Board be published in the newsletter so that any individual member may decide for himself whether he wishes to apply for certification. The previous recommendation by the Executive Committee that members refrain from applying for certification was therefore rescinded.

The death of Dr. Jos Kahn, a charter member of the Association and a member of the Editorial Board of the CLINICAL CHEMIST, was noted with deep sorrow. Attached to these minutes is a memorial to his bereaved family.

It was agreed that an Honorary Membership award in the Association should be presented at the Milwaukee meetings in April, 1952.

Margaret Kaser of Milwaukee was selected as chairman of arrangements for the Milwaukee meetings, and Saul Roseman as chairman of the scientific program.

Since many items of the agenda could not be reached due to time limitations it was decided to hold another Executive meeting within a month.

Respectfully submitted,
Max M. Friedman, National Secretary

PROPOSED OFFICERS

(Continued from page 4)

1889. He received his doctorate degree at Columbia University 1914 in biochemistry after attending Missouri and Wisconsin Universities. Post-doctorate work took him to Harvard and to Cambridge. He has been associated with Albany Medical College since 1914. He has held the chair in biochemistry since 1921. He was appointed Associate Dean in 1943.

Dr. Knudson is well known for his work on food and nutrition and was a member of the National Research Council 1943-1945 and did research for the Armed Forces in the last war. His interests center on the biochemistry of lipids; radiation; vitamin D; metabolism in leukemia; metabolism of cholesterol and cholesterol esters; chemical assay of digitalis and strophanthus series.

Dr. Knudson is at present on a year's leave, teaching in the medical schools of Bangkok, Thailand. He will return to this country in July.

ARNOLD G. WARE. Head Chemist Los Angeles County Hospital and Assistant Professor of Biochemistry, University of Southern California, and Chairman of the Southern California Section AACC. Dr. Ware was born in Butler, Illinois, 1915 and received his doctorate in biochemistry from the University of Colorado 1942. He was associated with that institution from 1938-42 as assistant in biochemistry and as clinical chemist in the laboratories of the Colorado General Hospital.

He saw service with the United States Army from 1942-1946. He was appointed Research Associate, at the College of Medicine, Wayne University, associated with Dr. Walter Seegars in a research program concerned with blood clotting.

Dr. Ware is a member of Society for Exp. Biol. and Med., American Society of Biological Chemists, Sigma Xi, International Society of Hematology, Fellow of the American Assoc. for the Advancement of Science. His scientific interests center about blood coagulation; body temperature control; and preparation of fibrinogen by cold fractionation.

LOCAL SECTION NEWS

BOSTON SECTION

The Boston Section held its second meeting of the current season on November 28, 1951, at the New England Center Hospital, Boston. The guest speaker was Dr. Theodore B. VanItallie of the Harvard School of Public Health, who spoke on the subject, "The Use of Intravenous Fat In Man."

Because of the greater calorigenic and protein-sparing characteristics of fat, a suitable intravenous preparation has been long sought for. The Speaker described his own efforts in this direction, which appear to have been successful.

The larger fat-particle size of earlier preparations led to the danger of emboli formation. Using a dairy homogenizer, Dr. VanItallie was able to achieve a particle-size of about 0.5 microns. In addition, the emulston is stable on storage, is not treated as a foreign body, and is very quickly metabolized. It is a mixture of coconut oil, phospholipids (as an emulsifier) and esters of oleic acid. Compared with glucose, an equal number of calories may be infused by vein in one quarter the time. It is used as a 15% emulsion.

Clinical trial in diseases in which intestinal fat absorption is impaired, as nontropical sprue, steatorrhea, etc., has been successful. Receiving no food by mouth, one patient tolerated the intravenous emulsion for 67 days, obtaining as much as 1300 calories per day. Its use appears to prevent depletion of the patient's depot fat and further breakdown of protein, exhaustion of which leads to extreme emaciation.

Pharmacologically, the emulsion is expected to attract great interest. As a vehicle for such fat-soluble substances as vitamins A, E, and K, and the steroid hormones, for example, it would be possible to infuse large quantities in a relatively small volume.

No guest speaker was scheduled for the December 19 meeting of the Boston Section. Instead, because of the Holiday Season, a dinner was planned after which several members presented short talks of clinical-chemical interest.

On January 16, Frank Stratton, chemist of the Boston Police Department, spoke on Toxicology. This meeting, as others, was held in the Stearns Auditorium of the New England Center, Hospital, Boston.

SOUTHERN CALIFORNIA SECTION

Arnold G. Ware, Ph.D., Chairman of the local section, spoke on "Hemoglobin Derivatives" November 6 at Los Angeles County Hospital. An abstract may be expected in the next issue of the CLINICAL CHEMIST.

Paul T. Gilbert, Jr., M.A., was guest speaker December 4 when the local membership met in the South Pasadena offices of Beckman Instruments, Inc. Mr. Gilbert, who has been designing and developing Beckman instruments for several years, spoke on "Flame Photometry". He discussed and demonstrated the latest Beckman flame spectrophometer, an instrument for which he has primary responsibility.

This instrument features a compact metal burner-atomizer unit. The sample solution is drawn in through the lower tip of a palladium capillary, suction and atomizing being accompanied by an oxygen stream issuing under pressure from the narrow annular space surrounding the upper tip of the capillary, fuel (hydrogen or acetylene) being admitted through a second annular space surrounding the first. There rises a steady flame of about five to seven cm. height and about one cm. maximum width. Although the design is quite simple, Mr. Gilbert pointed out that proper functioning requires precise machining and assembling of the unit.

Mr. Gilbert touched on many points pertinent to flame photometry phenomena and instrumentation. The Beckman optical system is designed to collect the light from a small patch of flame (about two by six mm.). The location of this patch may be rather critical since light emission due to a given element varies appreciably along the length of the flame. Characteristics of light emission versus oxygen pressure and fuel pressure were described. A plausible mechanism for sodium-potassium mutual interference (enhancement of sodium light emission in samples containing appreciable amounts of potassium and vice-versa) was given. He speculated briefly on the future possibilities of extremely energetic flames such as perhaps an fluorine-hydrogen flame, pointing out that certain high excitation spark lines (as of calcium) had already been observed in present flames.

To minimize clogging, the capillary bore is larger than that of the glass atomizer supplied with the previous chamber-type model. However, gradual clogging may occur when aspirating solutions supersaturated with gas, since bubbles form within the capillary. Mr. Gilbert said that a momentary lowering of the solution would usually dispel the clogging promptly, and further recommended the use of "desicoted" beakers to contain the solution. For example, it was not possible to aspirate a carbonated soft drink; however, placed in a "desicoted" beaker, the solution rapidly degassed and aspirated satisfactorily thereafter. ("Desicote" is a solution of an organic silicone compound.)

The interlaboratory survey of analytical results is now complete and was the subject of an open discussion meeting January 8 at Cedars of Lebanon Hospital. A full report will be given in the next issue.

On February 5 several local members will present 10 to 15 minute papers on their personal research problems. The meeting is scheduled for Room 113, Wadsworth General Hospital, Los Angeles Veterans Administration Center, 8:00 P.M.

NEW YORK SECTION

Isidore Gubernick, Secretary, will notify members of the exact date and place of the next meeting. Tentative plans call for the meeting to be held Tuesday, January 29, at the New York Academy of Science.

Harry Sobotka, member of the National Executive Committee, and A. J. Nydick, former legal counsel of the AACC, are scheduled to speak on "The Present Status of Clinical Chemistry".

LOCAL SECTION NEWS (Continued)

CHICAGO SECTION

The Chicago Section held its announced business meeting, at which the following new officers were elected:

President – Clarence Cohn, Michael Reese Hospital, Chicago, Ill.
Calumet 5-5540

Vice-President – Samuel Natelson, Rockford Memorial Hospital, Rockford, Ill.

Secretary – Alvin Dubin, Cook County Hospital, Chicago, Ill. Seely 8-2500

Treasurer – Chi Che Wang, Veteran Administration Hospital, Hines, Ill.

Several members will present papers at the Scientific session of the Stated Annual Meeting of the AACC to be held April 3 in Milwaukee, Wisc.

PHILADELPHIA SECTION

The regular meeting of the Philadelphia Section of the American Association of Clinical Chemists was held Thursday, November 29, at Presbyterian Hospital, Dr. Carl Alper of Hahnemann Medical College spoke on "A New Method for Determination of Serum Lipase."

At the business meeting it was moved, seconded, and the motion carried that the Philadelphia Section act favorably on a letter from Dr. Thomas Cope, Pennsylvania Association of Clinical Pathology, suggesting that interested groups get together for the purpose of discussing possible future amendments by the legislature to Bill 1205.

SERUM LIPASE
by CARL ALPER
HAHNEMANN MEDICAL COLLEGE

The determination of serum lipase activity may be simplified by the use of a tributyrin emulsion as a substrate. The emulsion is prepared as follows:

Add 250 ml. of 2% calcium acetate solution to 250 ml. of 0.5% sodium diethyl barbiturate solution. Add to the solution 6.675 mg. of sodium choleate, 0.25 ml. of "Tween 20", and 0.5 g. of Methocel (Dow Chemical Co.). Add 6.25 ml. of tributyrin and mix in a Waring Blendor for 3 to 5 minutes. Adjust to pH 8.55. The emulsion is stable with respect to fat globule size for at least 14 days.

The procedure for the assay of serum lipase is an adaptation of the method of Goldstein, Epstein and Roe, (J. Lab. Clin. Med. 33, 1047 (1948). A study of the effects of substrate concentration, enzyme concentration, butyrate ion concentration, pH and the ionic strength of the buffer permitted the establishment of the following procedure:

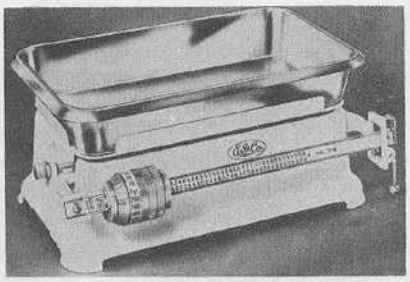
To 20 ml. of buffered tributyrin emulsion is added 1 ml. of serum. Incubate the mixture at 37°C. After 1 hour add 50 ml. of a 90:10 Ethanol (95%): Ether solution to inhibit enzyme activity. Determine the milliliters of 0.1 N NaOH necessary to reach the phenolphthalein end point (for visual estimation) or to adjust the solution to pH 10.65 (for electrometric determination). The milliliters of free-fatty acid liberated in one hour by enzyme catalyzed lipolysis of the tributyrin emulsion is an expression of the units of serum lipase activity. The final procedure was tested on 100 sera of blood donors. The normal range of activity was 0.76 to 1.61 units, with 55% of the results falling in the range of 1.06 to 1.40 units per milliliter of serum.

The determination of serum lipase using the tributyrin emulsion described above overcomes the technical problems of pH control, the nature of the oil-water interface, temperature control, errors associated with titration in an heterogeneous medium, and economy of time. The results obtained with normal sera place a new interpretation on the significance of the lower limit of lipase activity.

LABORATORY APPARATUS
ONE PAN BALANCE

A newly developed One-Pan Beranger Type Balance has recently been introduced by The Emil Greiner Company, 20-26 North Moore Street, New York 13, New York.

The new Balance is especially designed to provide fast, accurate weighings for all rough laboratory weighings, animal weighings or other general laboratory work.



This Balance features a unique new precision mechanism that employs no loose weights. There is only one beam weight to manipulate. This weight is moved along the beam until balance is brought into rough equilibrium. Final adjustment is made on the micrometer, which is an integral part of the beam weight. It is then only necessary to read the kilos and grams, clearly marked on the beam and add the micrometer reading for the total weight.

This compact new balance is extremely simple to operate, and gives quick, exact weighings. It comes in white enamel finish, and is equipped with a detachable chrome-finished pan. A flat plate instead of the pan can be specified on the largest-size Balance.

CM dimensions range from 32x21x13 to 38x26x14, and capacity, KGS from 6 to 14. Prices are from $39.50 to $49.50, depending on dimensions.

STOPCOCK ADAPTERS

3 sizes of stopcock adapters—small, medium and large—to cover the full range of laboratory stopcocks have also recently been introduced by the Emil Greiner Co.

The small size adapter covers the range of 2mm to 4mm stopcocks; the medium size covers 6mm to 8mm; and the large size, 10mm to 15mm.

These Universal Stopcock Adapters are designed for laboratory technicians who require pressure stopcocks for burets, gas sampling, measuring apparatus, etc.

Manufactured completely of corrosion resistant materials, these new adapters eliminate the annoyance of leaking stopcocks and the high cost of special pressure stopcocks.

LABORATORY APPARATUS
MICRO MANOMETRIC GASOMETER

One of the prime advances in the use of ultra-micro methods in clinical chemistry laboratories is the commercial availability of a Micro Manometric Gasometer for the gasometric determination of CO_2 and oxygen in blood, plasma, or serum.

This apparatus was designed by Dr. Samuel Natelson, Rockford Memorial Hospital, Rockford, Ill., newly elected Vice-President of the Chicago Section of the AACC, and a scientist well known for his research on micro methods in clinical chemistry.

The apparatus consists of a precision calibrated ultra micro pipette and a vernier drive screw for analysis of high accuracy with 0.03 ml blood, plasma, or serum. No pipette is needed for sampling. The pipette contained in the instrument makes possible tained in the instrument makes possible direct sampling from fingertip or heel. Pipettes are interchangeable, being attached by semi-ball joint. All glass parts are replaceable and easily disassembled for cleaning. There are minimal mercury losses because of the small volume of mercury used in the apparatus.

Readings are made independent of atmospheric pressure. Volumes are obtained from differences in pressure readings on the manometer before and after absorption of the specific gas measured. Other gasometric analysis where manometric procedures are used may be quickly adopted to micro quantities with this apparatus. Results are said, to equal the precision and accuracy of those obtained with macro instruments.

The apparatus consists of a column secured to a substantial metal base to which are attached the pipette, manometer and other glass parts necessary for sampling and direct measuring of blood in ultra-micro quantities. A reservoir at the bottom of the column is filled with mercury serving as a continuum. A precision ground stainless steel plunger with a vernier screw permits accurate measurements of the required quantities of serum and reagents. A conveniently located shaker is used to facilitate the liberation of gas to be measured. The base is finished in acid-resisting enamel and has two easily adjusted leveling screws. All metal parts are of aluminum, stainless steel, or chromium plated. Glass parts are connected by semi-ball joints. Stopcocks and joints are high-vacuum precision ground. The gasket around the plunger is adjustable and may easily be replaced. Supplied with thermometer for accurately measuring room temperature.

The Kopp-Natelson Micro Manometric Gasometer is distributed and manufactured by Kopp Scientific, Inc., 405 East 62nd Street, New York 21, N.Y.

ULTRAVIOLET SPECTRA OF AROMATIC COMPOUNDS. R.A. Friedel and Milton Orchin, vi + 52 pages and 579 ill. John Wiley and Sons, 440 Fourth Avenue, N.Y. 16, N.Y. $10.00. Reviewed by Harold D. Appleton, N.Y.U. Research Service.

This volume, a collection of ultraviolet spectra, is a good addition to libraries of laboratories that center their interests in this type of work. The emphasis is placed on polynuclear hydrocarbons and includes heterocyclic compounds with functional groups.

Thirty-four pages of simply written text, treats the application of ultraviolet analysis for qualitative and quantitative work in organic chemistry. The 579 spectra illustrations have been transformed to conform to a consistant method of plotting. The spectra are printed on one side of the page so that laboratory spectra may be superimposed. Each spectra is complete with the structural formula of the compound, solvent used, source of material and literature reference. The instrument used is indicated, if known.

The pages are loose-leaf and the book spiral bound with a semi-hard binder. This format makes it very hard to recommend for a much used library reference, though, the publisher may have thought about that in using a very good grade of paper. Libraries may do well to have their reference copies rebound.

BOOK REVIEWS

BACTERIAL PHYSIOLOGY. C.H. Werkman and P.W. Wilson, editors. xiv+707 pages. Academic Press Inc., 125 East 23rd Street, New York 10, N.Y. Reviewed by E.H. Mosbach, Columbia University.

This book consists of 20 review articles contributed largely by recognized authorities in their respective fields. The contents of these articles may be divided roughly into three categories. The first part of the book is devoted to the traditional aspects of bacteria physiology and deals with the chemistry and structure of the bacterial cell, bacterial growth, inheritance and bacterial nutrition. The second part is concerned largely with bacterial biochemistry and contains interesting discussions of bacterial enzymes, bacterial oxidations, the dissimilation of carbohydrates, and the assimilation of carbon dioxide by autotrophic and heterotrophic organisms. This portion the book further contains excellent reviews on nitrogen and mineral metabolism. The third part of the book presents a "series of short contributions illustrating the significance of bacterial physiology in the broader fields of general biology" with five stimulating articles entitled "The Comparative Biochemistry of Molecular Hydrogen", "Assimilation by Bacteria", "Degradation and Synthesis of Complex Carbohydrates", "Significance of Autotrophy for Comparative Physiology", and "Luminous Bacteria". The book appears well adapted for graduate students in bacteriology and biochemistry. It appears somewhat advanced for use at the undergraduate level. There can be no doubt that "Bacterial Physiology" will prove a welcome addition to the library of all research workers in bacteriology, biochemistry and related fields.

NEW MEMBERS ELECTED BY THE EXECUTIVE COMMITTEE
January 1, 1952

Sylvia Blatt	New York, N.Y.
Mary J. Resheter	Benton, Ill.
Ralph N. Cagan	Trenton, N.J.
Eli Gardiner	Forest Hills, N.Y.
Stanley Sapsin	Alhambra, Calif.
Helen C. Cavallaro	New Haven, Conn.
Stephen J. Koziol	Washington, D.C.
Marvin R. Shetlar	Oklahoma City, Okla.
A. George Reifman	Los Angeles, Calif.

BOOKS TO BE REVIEWED

A STUDY OF ANTIMETABOLITES. D.W. Woolley, xiii + 269 pages. John Wiley and Sons, 440 Fourth Avenue, New York 16, N.Y. $5.00.

THE LIPIDS. VOL 1, CHEMISTRY. Harry J. Deuel, Jr. xxiv + 982 pages. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N.Y.

ADVANCES IN ENZYMOLOGY, Vol. XII. F.F. Nord, Editor. xi + 570 pages. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N.Y.

CORRECTION PLEASE

Due to a printing error, the masthead of the November issue of this newsletter was outdated and did not contain the names of the newly appointed Editorial Board and Advisory Board. The masthead as published in this issue is the correct one.

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"GRAPHITE PENCIL" for writing, drawing or sketching on paper, newsprint, cardboard, wood, leather and similar surfaces.

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LABORATORY APPARATUS - REAGENTS - CHEMICALS

The CLINICAL Chemist

NEWSLETTER OF THE AMERICAN ASSOCIATION OF CLINICAL CHEMISTS, INC.

VOLUME 4, NUMBER 2 MARCH 1952

STATED ANNUAL MEETING APRIL 2: MILWAUKEE, WISC.

The 1951 Stated Annual Meeting of the American Association of Clinical Chemists will be held with the Milwaukee Session of the 121st ACS National Meeting, March 30-April 3. Headquarters of the Session and scene of most of the meetings will be the Milwaukee Municipal Auditorium. Members are urged to attend.

The AACC is participating with the Division of Biological Chemistry in the Clinical Chemistry Section Wednesday morning, April 2 with Marchelle H. Power presiding. The range of topics in this and other sections is very wide and of more than usual interest. Symposia covering Antibiotics, Enzymes, Amino Acids and Proteins, Metabolism, and Radiochemistry are among the sessions in the program of this meeting. The program for the AACC scientific session is published.

The Stated Annual Business Meeting of the AACC will be held at 4:30 P.M. on Wednesday, April 2. The meeting will be followed by the Dinner of the AACC which is scheduled to start at 6:30 P.M. The speakers will be Dr. Armand S. Quick of Marquette University noted for his work in the field of the blood clotting mechanism and determination of Prothrombin, and Dr. Hugh J. MacDonald, Chairman of the Department of Biochemistry at Loyola University, Vice Presidential nominee of the AACC and Chairman of the Committee on Education. An honorary membership in the Association will also be conferred.

Milwaukee itself is an extremely interesting city. It has frequently been called the best governed city in the United States and in order to acquaint us with many of the features of Milwaukee there will be a tour of the city on Monday, March 31.

H. G. TERWILLIGER

PROGRAM FOR THE SCIENTIFIC SESSION

Program in conjunction with the Division of Biological Chemistry, 121st National Meeting of the American Chemical Society, to be held Wednesday Morning, April 2, 1952 in the Auditorium, Plankinton Hall, Milwaukee, Wisconsin.

Marchelle H. Power, Chairman

9:00—M. H. Power. Introductory Remarks.

9:05—John G. Reinhold. Standardization of Thymol Turbidity Measurements.

9:20—John C. Claudatus and George T. Lewis. Rapid Photometric Ultramicro Methods for the Determination of Nitrogen, Iron, and Phosphorus following Kjeldahl Digestion of Biological Material.

9:35—Marie H. Berg. The Determination of Sulfhydryl and Potential Sulfhydryl Groups in Blood and its Fractions.

9:50—Gerhard Schmidt, Lowell Greenbaum, Pierre Fallot, and S. J. Thannhauser. A Method for the Determination of the Water-Soluble Phosphoric Diesters of Small Molecular Weights (Excluding Carbohydrate Esters) in Tissues.

10:05—Eugene L. Kanabrocki and Chi Che Wang. Application of Sendroys Iodometric Chloride Titration to Solids.

10:20—Hugh J. McDonald and Edward P. Marbach. Fractionation of an ACTH Preparation by Ionography.

10:35—Saul Roseman, Robert Abeles, and Albert Dorfman. Preparation and Metabolism of C^{14}-Carboxyl Salicylic and Gentisic Acids.

(Continued page 2)

ESTABLISH ANNUAL AWARD FOR CLINICAL CHEMISTRY

THE ERNST BISCHOFF AWARD

The Ernst Bischoff Award of the American Association of Clinical Chemists, Inc. will be presented annually to a chemist on the staff of a hospital or clinical chemistry laboratory who has distinguished himself by achievement and devotion and has helped solve those chemical problems which arise daily in the practice of the medical arts.

H. G. Terwilliger, President of the Ernst Bischoff Company, Ivoryton, Conn., manufacturers of biologicals and pharmaceuticals, and John G. Reinhold, President of the American Association of Clinical Chemists, Inc., announced the establishment of an annual award in Clinical Chemistry.

The award is to be known as the "Ernst Bischoff Award in Clinical Chemistry". The recipient of the award, chosen annually by an Award Committee of the AACC, will receive a sum of $500, a scroll and specially designed bronze medal. The award will be presented to a chemist "on the staff of a hospital or clinical chemistry laboratory who has distinguished himself by achievement and devotion and has helped to solve those chemical problems which arise daily in the practice of the medical arts".

Dr. Reinhold has appointed Harry Sobotka, Mt. Sinai Hospital, New York, Chairman of the first Award Committee. The committee consists of Eliot F. Beach, Metropolitan Life Insurance Co., New York; Joseph Benotti, Tufts College Medical School, Boston, Mass. and Samuel Natelson, Rockford Memorial Hospital, Rockford, Ill.

This committee will select the recipient of the first Ernst Bischoff Award.

The CLINICAL Chemist

Newsletter of the American Association of Clinical Chemists, Inc.

P.O. Box 123
Lenox Hill Station New York 21, N.Y.

VOL. 4, NO. 2 MARCH 1952

VOTE ON BY-LAWS

The Constitution was drawn up and approved by the Organization Committee of the American Association of Clinical Chemists on February 5, 1949, less than two months after its founding. At that time the Association was largely a local group without any clear understanding of the problems that would lie ahead. It is therefore a tribute to the then Committee on Constitution that it had the foresight to draft a document by which the Association is still governed.

The experiences of the past few years have shown, however, that it is now necessary for us to amend the Constitution with adequate By-Laws. After careful study the Executive Committee has approved a draft of By-Laws, published on page 6 of this issue. Also with this issue will be found a letter ballot and an envelope addressed to the National Secretary. Article XIV of the Constitution requires that an affirmative vote of two thirds of the votes counted would be necessary to adopt these By-Laws, "provided that not less than fifty per cent of the full voting membership shall have voted on the proposal.....within sixty days after the same is mailed....."

The membership is urged to please cooperate by returning ballots promptly. The Association would be burdened with the expense of another ballot, should the present one lapse due to inadequate support.

SCIENTIFIC PROGRAM

(Continued from page 1)

10:50—Martin B. Williamson and Herbert J. Fromm. Sulfur Metabolism During the Healing of Experimental Wounds.

11:05—Albert E. Sobel, Albert Hanok, and Albert Hirschman. Composition of Bones, Teeth, and Related Minerals in Relation to Fluid Composition and Diet.

11:20—Penni A. Lipschitz and Albert E. Sobel. Vitamin A Levels During the Human Menstrual Cycle.

11:35—Samuel Natelson. Adrenal Immaturity as a Common Finding in the Premature and Full Term Infant.

11:50—A. G. Mulder, Charles D. Proctor, William Marshall, and Blanche Tigerman. The Effect of Acute Coronary Occlusion in Dogs on the Chemical Constituents of the Heart.

The Division of Biological Chemistry, Richard H. Barnes, Chairman and Otto Schales, Secretary, has organized an excellent program for the four day meeting. Space does not permit publication of the entire program, which would be of interest to our readers. A brief resume follows -

Monday Morning -
Symposium on Antibiotics and General papers.

Monday Afternoon -
Symposium on Enzymes.

Tuesday Morning -
Symposium on Alternate Pathways of Carbohydrate Metabolism.

Tuesday Afternoon -
Symposium on Tryptophan Metabolism.

Wednesday Morning -
Papers in Clinical Chemistry.

Wednesday Afternoon -
Symposium on Chemical Structure and Biological Activity of Growth Factor Analogues.

Thursday Morning -
Symposium on Amino-Acids and Proteins.

Thursday Afternoon -
Symposium on Enzymes, Metabolism and General Papers.

All meetings will be held in the Auditorium, Plankinton Hall. Complete program is published in CHEMICAL AND ENGINEERING NEWS, Vol. 30, No. 7, page 636. February 18, 1952.

MEMBERS INVITED TO EUROPEAN CONVENTIONS

Members have been invited to attend two European Conventions this year.

ASSOCIATION DINNER AT FEDERATION MEETINGS

As in past years, members of the AACC attending the Federation of American Societies for Experimental Biology meetings will hold a dinner-meeting during the convention week. The 36th Annual Meeting of the Federation will be held in New York City April 14-18.

Notices as to the time and place of the "impromptu" meeting will be posted at both the Statler Hotel and the Hotel New Yorker, headquarters for the meeting.

NEW MEMBERS ELECTED BY THE EXECUTIVE COMMITTEE

February 6, 1952

Joseph D. Mann	Rochester, Minn.
A.E. A'Courte	Goldsboro, N.C.
Dorothy Chew	Norfolk, Virginia
Isadore Pitesky	Long Beach, Calif.
William R. Bergren	Altadena, Calif.
F. William Sunderman	Philadelphia, Pa.

EUROPEAN CONVENTIONS

(Continued)

The Netherlands Clinical Chemistry Association has invited the members of the AACC to participate in its Fifth Anniversary celebration to be held in Amsterdam, The Netherlands, during September 1952.

The invitation was accepted by President Reinhold for the Association with the suggestion that the date be moved closer to that of the 2nd International Congress of Biochemistry to be held in Paris, France July 21-27. It was also recommended that the Amsterdam meeting be considered the First International Congress of Clinical Chemistry.

Professor J.E. Courtois, Faculte de Pharmacie, Sorbonne, Paris, France, and General Secretary of the 2nd International Congress of Biochemistry, extended an invitation to all members of the AACC to participate in the second congress.

The 2nd International Congress of Biochemistry will be held in Paris, France, July 21-27, 1952. It will open in the Grand Amphitheatre of the Sorbonne. Congress sessions will be held at the Sorbonne and in the neighboring university buildings.

THE SECRETARY REPORTS

The Stated Annual Meetings of the AACC have now become a highlight of the Association activities. From the first one, which was held in Atlantic City in 1949, these meetings have been very successful. Other meetings were held in Philadelphia in 1950, Boston in 1951, and now Milwaukee in 1952. The sessions usually include a scientific program and symposium on some subject in clinical chemistry, a dinner, and a business meeting. In the past, efforts have been made to carry out this complete program within a one day period.

The Executive Committee has been faced annually with the decisions as to where and when such meetings should be held. It might be of interest to point out some of the determining factors as to the choice of time. Officers and members of the Executive Committee assume their duties on July first of each year. Without the facilities of a permanent office staff it is obvious that fall meetings: would be very inconvenient, since preparations for these would be required over the summer months. Mainly for that reason it has been decided to hold these meetings during the spring.

It is also quite obvious that in view of our relatively small membership scattered over the entire country it is necessary for the Association to hold its meetings in conjunction with some larger scientific society. The choice of the American Chemical Society has been made for its many advantages. Much of the arrangements are carried out for the Association by the Executive offices of the ACS. We have the availability of preparing scientific programs, as well as publicity in the C&EN both before and after the meetings. And not of least importance is the fact that the ACS has been extremely cooperative in making our meetings as successful as they have been. It is also apparent that the Association contributes to the meetings of the ACS by presenting programs in this specialty of chemistry.

An important function that the Association has not yet attempted on an adequate scale is that of employment information. With a bimonthly newsletter this undertaking becomes difficult

(Continued page 5)

THE DEVELOPMENT OF CLINICAL CHEMISTRY IN FRANCE

By

Paul Felix Fleury, *Professor of Biochemistry, Faculty of Pharmacy, University of Paris, Former president of the Societe de Chimie biologique, and the Societe de Biologie clinique*

and

Jean Emile Courtois, *Professor in the Faculty of Pharmacy of Paris, President of the Societe de Biologie Clinique, Secretary of the Societe de Chimie biologique*

I. – The Origins:

As early as the end of the 18th century, Lavoisier the founder of modern Chemistry can also be regarded as the creator of Physiology and Biochemistry.

From that time analytical chemistry was created and developed in the course of the last century by European chemists, many of whom were Frenchmen whose bent of mind is essentially analytical: Chevreul, Gay-Lussac, Thénard, Vauquelin, Dumas etc.

This characteristic of the French mind accounts for the fact that in France particularly, Biochemistry was to show a marked and constant tendency towards its analytical form.

Thus the main part of the work of G. Bertrand, the greatest living French biochemist has been concerned with the determination of mineral elements present in more or less considerable amounts or merely as traces in living matter, constantly revealing his efforts to use a precise analytical method, which he always strives to make more sensitive and accurate.

French pharmacists played a great part in furthering such progress, for they possess a fine scientific heritage and have retained the tradition of the old European apothecaries who contributed so much to discoveries made in the heroic age of Chemistry.

Since by French law no pharmacist may pursue any commercial activity other than the dispension of medicines, many of them have always directed part of their activity to laboratory work.

The list is very long indeed of substances obtained in a crystalline form in the course of analyses of vegetables carried out in laboratories frequently attached to very small pharmacies, a list ranging from quinine, isolated by Pelletier and Caventou, to the numerous alkaloids and various sugars obtained by Tauret.

These laboratories had always carried out urine analyses: tests for glucose and albumin in the first place and in course of time other determinations in urine (urea, chloride) and then in blood and other biological fluids.

But it was chiefly in the hospital pharmacies that many methods, now in current use in French laboratories of clinical chemistry, were perfected: the quantitative determination of phosphate or glucose in urine, tests for bile pigments, determination of chloride, cholesterol, of iron content of blood, etc. . .

II. – The distribution and management of laboratories:

At the present time, regulations concerning the opening of laboratories of clinical analyses and their management fall under the act of March 18th 1946 and the order of May 18th 1946. In accordance with these the following is a brief outline of the distribution of laboratories.

In big towns the hospitals generally have a central laboratory of clinical chemistry attached to the hospital pharmacy and directed by the same head of department. He not only supervises routine analyses but also directs research done in association with the medical staff of the establishment.

Many hospitals are also equipped with laboratories of Serology and Bacteriology generally superintended by Doctors of Medicine who are specialized in that particular branch.

French doctors receive a thorough training in pathological anatomy; so in the hospitals there is a laboratory of pathological anatomy in almost every medical and surgical department. A technical assistant prepares tissue slices under the supervision of the head of the department; these physicians show great interest in histological examinations despite the fact that they are pathologists, surgeons or doctors specialized in other branches.

They make a point of spending a short time every morning in the laboratory examining the tissue slices.

In the built-up areas, there are many private laboratories of varying size, which do analyses in clinical chemistry as well as in Bacteriology and Serology. Almost all these laboratories are directed by qualified Doctors of Medicine or Pharmacists; a few only belong to Doctors of Science or Chemical Engineers. The latter must have specialized in clinical chemistry and cannot open a laboratory without authorization from the Ministry of Public Health which first approaches the Academy of Medicine and the Academy of Pharmacy.

In short almost all private laboratories are directed by doctors or pharmacists; one quite often finds a director who is both a qualified Doctor and pharmacist; one also very commonly finds a doctor and a pharmacist running a laboratory in partnership.

This is to be accounted for by the more or less complementary training of holders of these two degrees.

In France medical studies do not differ essentially from those in other countries. The large number of subjects studied and their constant development leave little time for the study of medical chemistry.

But, on the other hand, it has been tradition in France for the scientific training of the pharmacist to be far more thorough than in most other countries. Courses are only given in institutions of higher education that are an integral part of the universities.

In a five year course, the would be pharmacist receives an excellent training in the double field of physical and natural sciences; very many hours of laboratory work are combined with the theoretical lectures. In particular: these are 2 year courses in Analytical Chemistry and Biochemistry and a course in Bacteriology is taken in the final year.

The Faculty of Medicine and the Faculty of Pharmacy also give diplomas in Biochemistry, Bacteriology and Serology which may be taken after a year of further study by holders of degrees in Medicine or Pharmacy.

It may well be that as a result of the increasing specialization of laboratory work and its development, these two Faculties will associate, combine their courses and give a special degree in clinical pathology.

As France is both industrial and agricultural a large section of the population is scattered in little villages and small towns. But in towns with 1,000 to 5,000 inhabitants, of which there are many, a laboratory of clinical pathology would not be sufficient to ensure the livelihood of its proprietor.

So one or more local pharmacies have laboratories carrying out not only routine analyses in clinical chemistry and Bacteriology but also certain chemical analyses (milk analyses in breeding areas, wine analyses in wine-growing regions, examination of drinking water, etc. . .).

It has been our intention simply to give a broad outline of the distribution of laboratories; actually, in France, which despite its apparent diversity is a homogeneous country, one can find all possible intermediate stages between the research laboratory of clinical chemistry of a big

hospital and the country pharmacists shop which does determinations of sugar and albumin in urine.

The owners of all these various laboratories are grouped in to two scientific Societies; The Societe de Chimie Biologique has 1,700 members, this Society and the Biochemical Society of Great-Britain are the largest associations of biochemists in Europe. The "Bulletin de la Societe de Chimie Biologique", founded in 1914, publishes almost all original research in General Biochemistry done in University, hospital or private laboratories. The Societe de Biologie Clinique is a more specialized Society, with a membership of approximately 1,200 heads of laboratories, more than 60% being qualified pharmacists and most of the others being doctors in medicine. Its publication "Les Annales de Biologie Clinique" publishes original papers on laboratory methods.

III. – The Development of methods:

As in all countries, these methods are incessantly being improved upon. They are constantly increasing in number and variety. It is not within our province here to give any detailed description of them; we shall therefore simply give a very brief list of methods in current use in French laboratories of clinical chemistry.

The determination most frequently asked for is probably that of urea in blood; hypobromite method is the one most frequently used; xanthydrol methods are at present giving way to those using urease.

Glucose determination in blood comes next; various methods are advocated by different chemists, but the ones most frequently used are based on the reduction of iodomercurate or ferricyanide in a slightly alkaline medium. Glucose is determinated in urine as frequently as in blood; the most commonly used methods are polarimetric measurements and determinations using the cupro-alkaline reagent.

Proteins are usually estimated by gravimetric or turbidometric methods; but colorimetric methods using the biuret test are gaining ground.

The determination of cholesterol in blood is frequently requested by doctors; it is carried out with a colorimetric method using the Liebermann test.

Chloride determination in urine by silver nitrate is falling out of practice; but it still remains one of the most current determinations in blood.

Although practised less frequently than those above, many other determinations are very commonly employed; we would note in particular the determination of acetone in urine by iodimetric titration after distillation; bile salts and bile pigment tests in urine and their quantitative determination in blood; iron determination in blood; phosphatase determination in serum; calcium, sodium, and potassium determinations in blood; ketosteroids determination in urine, etc. . .

Liver and kidneys function tests are becoming increasingly important; the provoked galactosury test, the Mac Lagan test, the elimination of dyestuff tests (phenol-sulphonephthalien), clearance tests with mannitol, thiosulphate, para-aminohippuric acid, etc. . .

As in all countries, there is a general tendency to carry out determinations on the smallest possible amount taken from the biological sample.

Chemical micromethods have replaced most of the old macromethods and photometric technique are developing apace.

We hope that this account has given some idea that this organization an evolution of clinical chemistry in France.

IV. – Common features and common problems:

We should however like to point out that the differences which may be found between your organization and ours are apparent rather than real ones.

One of us recently had occasion to verify this fact. During the recent Congress in New York he had the honour and pleasure of being invited to your Society's dinner of conversing informally with members of your Committee and visiting some of your laboratories in New York.

Biochemists active in clinical chemistry are confronted with similar problems in both our countries. Above all that of ensuring and constantly improving technical equipment and keeping to the high scientific standard required in a perpetually advancing branch of knowledge.

Our respective forms of scientific training too are much closer and more similar than the different names of university degrees would lead one to suppose; these different names do of course apply to university systems based on quite distinct conceptions and traditions. But we are often faced with the same difficulties especially with the same paramount necessity of obtaining recognition for the autonomous nature of our specialized studies.

Biochemistry is now one of the most important branches of science; it has had to fight to win its independence from the Sciences from which it originally derived; organic chemistry, analytical chemistry and physiology.

Clinical Chemistry is undoubtedly one of the most important sections of Biochemistry; scientifically speaking it is as distanct from pure analytical chemistry as it is from pure medical science although being closely and necessarily related to these sciences.

Biochemists who work on clinical chemistry are not the technical assistants of other specialists, they are themselves specialists in a rising science to which they must devote the greater part of their activity.

The progress of science inevitably leads to increasing specialization; this progress has given rise to clinical chemistry; it would be running counter to such progress not to consider that specialists in clinical chemistry should be set on the same level as specialists in other branches of chemistry and medicine.

In many countries clinical chemists are establishing their organizations; relations between national associations are as yet in the preliminary stages, but the first signs are promising.

At its last meeting in Washington, in September 1951, the International Union of Pure and Applied Chemistry set up a Biochemistry section. One of the three commissions composing this section will be the Clinical Chemistry Commission. Three members have been nominated to reorganize this commission: E.J. KING (Great Britain), Chairman, W. SPERRY (U.S.A.) and P. FLEURY (France).

The first meeting will be held at the time of the 2nd International Congress of Biochemistry in Paris in July 1952.

Biochemists from all over the world will meet on the occasion of this congress; several sessions will certainly be devoted to the presentation of work in clinical chemistry.

During his stay in the U.S.A. one of us ascertained that many members of your Society intend to come to Paris next year. We have informed our French colleagues of this. They are looking forward to the pleasure of welcoming you, of showing you Paris and France, taking you round their laboratories and entertaining you in an atmosphere of friendly and mutual understanding.

We hope that as many as possible of you will come and then you will learn far more about us than you can from this inevitably rather bald account.

THE SECRETARY REPORTS

(Continued from page 3)

through the medium of the CLINICAL CHEMIST. Perhaps some other form of "employment clearing" might be devised where pertinent information could be exchanged. Any recommendations or suggestions by the membership would be welcome.

From recent information it seems that several metropolitan areas are now in the process of organizing local sections. The advantages gained from activities of local sections make them such that we can only hope for many more in the near future.

Max M. Friedman, National Secretary

PROPOSED BY-LAWS FOR AACC

SECTION I

EXECUTIVE COMMITTEE

(a) The Executive Committee shall meet at the time of the Stated Annual Meeting, and shall also meet at the call of the President or upon written request of five or more Committee members made to the National Secretary.

(b) The proceedings of all meetings shall be published; however, publication may be deferred by a majority of those present.

(c) Any Committee may be discharged by the President with the approval of the majority of the entire Executive Committee.

(d) The President shall prepare the agenda for all Executive Committee meetings, this agenda to be distributed by the National Secretary to the members of the Executive Committee at least ten days before such meetings. The entire membership of the Executive Committee shall be polled at the request of any member of the Executive Committee.

(e) Any member of the Executive Committee may designate an alternate for each meeting by writing to the National Secretary. The extent of the authority of such alternate shall be clearly stated by the member.

(f) The Executive Committee shall review the Annual Budget submitted by the National Treasurer. Expenditures or commitments of funds in excess of fifty dollars shall require approval by the Executive Committee unless included in the Annual Budget.

SECTION II

PRESIDENT

(a) The President shall preside at all meetings of the Executive Committee, and at stated meetings.

(b) The President shall nominate all committees, subject to the approval of the Executive Committee.

(c) The President shall represent or designate delegates to represent the Association in response to invitations by other societies or institutions.

SECTION III

VICE-PRESIDENT

(a) In the absence or inability of the President to perform his stated functions, the Vice-President shall perform the duties of the President.

SECTION IV

NATIONAL SECRETARY

(a) The National Secretary shall be the guardian of the seals and all other official records of the Association.

(b) The National Secretary shall conduct the official correspondence of the Executive Committee.

SECTION V

NATIONAL TREASURER

(a) The National Treasurer shall keep all records pertaining to finances of the Association.

(b) The National Treasurer shall submit a budget for each fiscal year to the Executive Committee in advance of its Stated Annual Meeting.

(c) The National Treasurer shall maintain a fiscal policy within the Annual Budget approved by the Executive Committee.

(d) The National Treasurer shall prepare a complete financial statement of the fiscal year to be published in the newsletter.

SECTION VI

NEWSLETTER

(a) A newsletter shall be published bi-monthly by an Editorial Committee. The name of the newsletter shall be the CLINICAL CHEMIST.

(b) The Editorial Committee shall consist of the chairman and other members designated by the President and approved by the Executive Committee. Appointments shall be for three years. A Managing Editor and other personnel needed may be compensated (within the limitations of the budget assigned by the Executive Committee) at a rate to be determined by the Editorial Committee. Employees receiving compensation shall not be officers of the Association. Members of the Editorial Committee may not be members of the Executive Committee.

(c) An Editorial Advisory Board to consist three members of the Executive Committee appointed annually by the President shall consult with and advise the Editorial Committee in matters of editorial and advertising policy.

SECTION VII

MEMBERSHIP

(a) Where local sections exist, applicants for membership shall be approved by the Membership Committee of that section. After approval by the local section, the Committee on Membership of the Executive Committee shall also approve all applicants. When rejected by any local section, applicants have the right to appeal to the Committee on Membership of the Executive Committee.

(b) Honorary membership shall be conferred by a two thirds vote of the entire Executive Committee. Only one candidate shall receive Honorary membership each year, unless the unanimous approval of the entire Executive Committee is given authorizing additional members, to a maximum of three.

SECTION VIII

LOCAL SECTIONS

(a) The policies of the local sections shall conform to the policies of the Association.

(b) All members of local sections shall be members of the Association.

(c) By-Laws of each local section shall become effective upon approval by the Executive Committee.

SECTION IX

CODE OF ETHICS

(a) The Executive Committee shall approve a Code of Ethics to which all members are expected to conform.

(b) A Committee on Ethics shall be appointed.

(c) It shall be the duty of the Committee on Ethics to determine whether a breach of ethics has been committed by a member.

(d) The Executive Committee shall review the decisions of the Committee on Ethics.

SECTION X

APPROVAL OF BY-LAWS

(a) These By-Laws, if approved as provided in Article XIV of the Constitution, shall become Amendment I of the Constitution.

(b) This section shall not become a part of Amendment I.

NACL CONVENTION

The National Association of Clinical Laboratories will hold its next Convention and Annual Meeting at the Palmer House, Chicago, Ill. on May 8-9, 1952.

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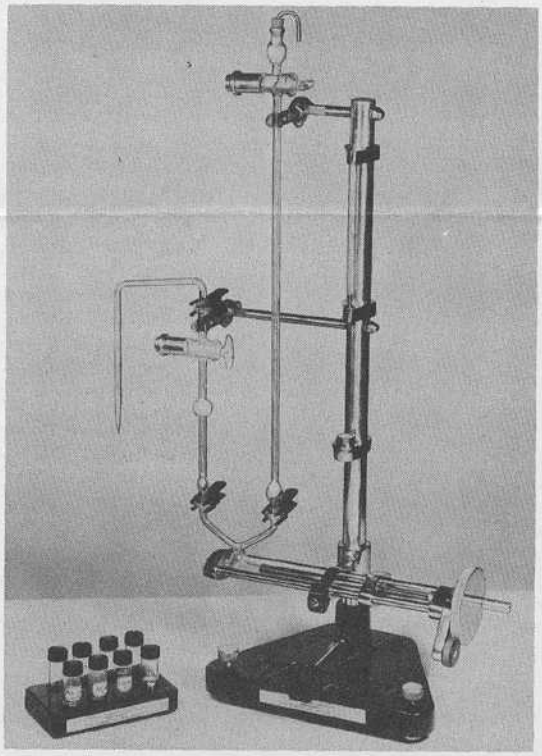

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MANUFACTURERS AND SUPPLIERS OF SCIENTIFIC INSTRUMENTS AND LABORATORY APPARATUS

TRAINING OF CLINICAL CHEMISTS AT THE GRADUATE LEVEL [1]

by

Halvor N. Christensen, Ph.D., Tufts College Medical School, Boston, Mass.

I don't expect in this talk to cover the whole subject of the training of clinical chemists at the graduate level but only to tell you of some of our own experience and viewpoints. I believe the training of senior clinical chemists will (and should) remain heterogeneous. I believe they will continue to come from many sources and with various backgrounds. We haven't any idea of increasing the training period of clinical analysts in general, perhaps the contrary. We don't propose to encourage the adding of a graduate degree to the prerequisites.

What has concerned me is the scarcity of analysts of a competency sufficient to supervise the operation of the clinical chemical laboratory; and who can be hired for what the ordinary run of hospitals can reasonably pay. I want to use the term *supervise* in a broad sense; if a hospital has one chemist (except perhaps in exceptional circumstances) then he is supervising the analyses.

Our thinking is not at present concerned with the top-notch prosperous hospital that can and does employ a good professional director. Instead we are trying to help make available more people of a scarce category: capable, independent analysts who give promise of serving indefinitely in the modest hospitals where more people receive their diagnostic laboratory services. We feel that the failure of biochemistry to deliver what it might at this level is quite abject.

The training of more biochemical Ph.D's no doubt is needed for many activities at present; but these people are snatched up by research, educational, and industrial organizations so quickly that they give at best a temporary service to the hospital.

A very substantial proportion of our college graduates today want to participate in medicine, if not as physicians then in some other capacity. These range widely in their capabilities. I think there are many who would derive satisfaction from service as responsible clinical chemists. I don't think it is difficult for a responsible young person of reasonable intelligence to receive specialized training to the point where their value to a hospital would be twice that of the average technician. Furthermore, I think most of these hospitals are desperate enough so that there would be a great demand for such specialists. That has emphatically been our experience so far in the placement of our graduates. Our plan has been to have this training lead to the Master's degree.

The first prerequisite for students of this program is that they know what they are in for. If they have not had clinical laboratory experience we ask them to arrange for work in a laboratory somewhere so they will know what it is all about. So far the university of requirements for the M.S. degree and those laid down by the American Chemical Society have been followed. Where the student has not had the required work in all the branches of chemistry, admission is arranged as a "special student", to permit make-up of these prerequisites. Reading knowledge of German is required. We prefer not to train people under this program whom we think are of very good Ph.D. calibre since this training is arranged to be terminal. The program is not for students who are eager to participate in research or to see their names in print. Instead, we hope to continue to find people who are content to serve and cooperate in the bringing of medical care to everyone.

Our course of study is quite experimental. The dissymmetry of the medical school curriculum, in that the principal biochemistry course for the medical students occurs entirely in the second semester, is partially responsible for our particular arrangement. Actually a student would have an advantage in the arrangement of his work if he began his study in February rather than in September. Below are illustrated roughly the division of time, first for a student who has all the prerequisites and second for a student who lacks some:

First Semester	*Second Semester*	*Third Semester*
Minor: Adv. Org. or Anal. Chem.	Medical Biochemistry 8 cr.	Research
Practical Clinical Chem.	Practical Clinical Chem.	Seminar
Seminar	Seminar	

First Semester	*Second Semester*	*Third Semester*	*Fourth Semester*
Minor	Medical Biochemistry 8 cr.	Practical Clinical Chemistry	Research
Pre-requisites	Prac. Clin. Chem.	Seminar	
Seminar	Seminar		

Under the term *seminar* we arrange any kind of teaching that we feel is needed. This work is mostly self-teaching by the student who presents reports in assigned areas. The practical clinical chemistry has so far been carried out exclusively in laboratories of the medical school and in all the laboratories of the New England Medical Center under the able direction of Mr. Joseph Benotti. We also have participating in the instructional work Miss Margaret Rourke, formerly of the Massachusetts General Hospital laboratories. This work is arranged so that the various parts are complimentary to each other. The most capable students are named Assistants to the Director of the laboratory during the last part of their study. Under this responsibility they face all the problems of laboratory supervision. By a cooperation with the laboratories of hematology, pathology, bacteriology the men learn enough in these areas so they can do emergency work anywhere or perhaps qualify for supervision throughout the laboratories.

The place of the research problem under this program is not yet precisely defined. We are not trying to train investigators yet we feel there should be no M.S. without a laboratory research. We prefer that the research be an analytical problem.

Now, to look ahead: our volume at present is insufficient to make much of a dent. We wonder if the quality of the training can be preserved if we were to have 4 or 5 men studying at once in one chemical laboratory. We believe the only way to meet the rising demand is to have more nearby laboratories participating. But these laboratories must all represent the best in diagnostic biochemistry. The temptation to exploit the student in the clinical laboratory must be resisted. He must not be kept on a given analysis or instrument beyond the time during which he is learning rapidly. Another problem in amplifying the program is that of cost. The apprentice type of teaching requires much time and equipment. Students frequently require financial aid in order to be able to follow through the program.

We are at the same time carrying on (and this is mostly the work of Mr. Benotti) a "degreeless" training for students who lack a Baccalaureate degree or so many prerequisites that the M.S. program is prohibitive. We think that we should offer all compromises and variants to bring more capable and responsible people into the ranks.

[1] *From a Forum on the Professional Status of the Clinical Chemist. Am. Assoc. Clin. Chem. Inc. New York Section, January 29, 1952.*

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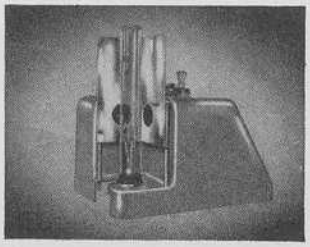

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THE ROLE OF THE CLINICAL CHEMIST IN MEDICAL INSTITUTIONS [1]

by

Harry Sobotka, Ph.D., Chemist to the Mount Sinai Hospital, New York, N.Y.

It might be interesting to find out how many chemists are employed by medical institutions. On one hand, there are the hospitals of the medical schools, strongly departmentalized, each department forming practically a separate unit, often with its own laboratory services. At the other end of the scale, we find highly specialized institutions, particularly for mental health, for tuberculosis and, with the military, for traumatic surgery. They are run by Federal or State Governments and their agencies such as the military. In many — but not all — of these, the chemical problems may be expected to be more or less closely circumscribed.

Between these two extremes, there is the great bulk of public and private hospitals, each with a variety of services, a multiplicity of questions and an innumerable amount of problems. These institutions range from, say, 100 to 1000 and more beds. Including the Veterans Administration facilities, there may be in excess of 3000 hospitals of this nature functioning at this moment throughout the country. We have no exact data as to how many of them employ a chemist. Judging from our membership, which is approaching 500, and which comprises ca. four-fifth hospital chemists, and adding one-third for those who have not yet joined our ranks, there will be about 600 hospitals which have what you might wish to call a "class-conscious" chemist The greater number of hospitals — presumably the smaller ones and those operating in out-of-the-way places — employ in most instances medical technicians, more or less specializing in chemistry.

Let us consider the larger hospitals in urban centers which are the ones who are setting the pace for the rest of the country. They show a disconcerting diversity for organization. The organization, though not the quality of the services rendered, is relatively uniform in Federal institutions, especially Veterans Administration. In Southern California I learned that the laboratories of some private hospitals, or rather their laboratory services, are rented out as concessions to groups of pathologists. In the Middle West, we find group hospitals, where the pathologist, as partner in a business, takes up to 40% of all the laboratory receipts and where the chemist might be offered 1% of his take, of course in addition to his salary. When you come to the Eastern Seaboard, you find clinical chemistry established along more conservative lines, and at the same time probably most alert to new scientific developments and to the impact of the large medical schools.

But one thing is common for all of them, the fact that the laboratories are ruled by the pathologist. I shall talk of the chemist, the pathologist and the clinician in what follows in general, one might say, idealized terms. It is needless to state that there are good pathologists and bad pathologists, good clinicians and bad clinicians, and good chemists and less good chemists. There are even some pathologists and some clinicians who might know more in some field of chemistry than some clinical chemists. I think most of us are agreed that clinical chemistry, like any other kind of chemistry, is the business of the chemist; if often M.D.s are running chemistry laboratories well, then they do so because they are chemists, not because they are pathologists or bacteriologists or surgeons.

Our main fight has seemed to be with the pathologists. Some of them are certainly a catankerous lot, who have for 25 years led the chemists around in circles with all sorts of devices. They have created the term "clinical pathology" to designate not only the quasi no-man's land of urine-analysis, but also strict clinical chemistry as well as bacteriology, hematology etc. But, while these ideas have been incorporated in State laws and City Ordinances — which we shall have to keep on fighting — one can discern that the modern pathologist is accepting the chemist more and more as an equal, who has to be dealt with fairly and with respect.

The reasons for this change of attitude are not hard to find. Important changes have taken place in the history of medicine. The last 60-70 years saw the development of immunological therapy, accompanied by the ascendancy of bacteriology, the introduction of salvarsan as specific chemotherapy, followed by the sulfur drugs with a more general scope, and finally the antibiotics. One can say without hesitation that some diseases have been practically wiped out, that the therapy of others has been radically changed. Except perhaps for tuberculosis and puerperal complications, which are a social rather than a medical problem, this leaves us with diseases of heart and circulatory organs, rheumatic disease and of course cancer as the most important conditions; one might add the problems of general post-operative management.

Important changes have taken place in the history of chemistry: we have learned to determine by practical "clinical" methods sodium and potassium. We have developed methods for such new and novel entities as ketosteroids and protein-bound iodine. For many of the older methods micro-methods have been substituted. In short: Clinical Chemistry has come of age.

Now there is of course much traditional nonsense to be eliminated. The medical profession as a whole wants us and the public to believe that they are something quite special, that they are less interested in material regard than the rest of mankind, that the oath of Hippocrates sets them apart from all others. We will grant that the medical profession, like the clergy, crystallized at an earlier date with a set of ethics, at a time when there was, say, one physician for 10,000 people. But this is a thing of the past. When we look at it in its present-day aspects, the modern pathologist finds that he shares his scientific thinking with the chemist, his scientific colleague, rather than with the clinician, his comrade in an obsolete guild. It is for this reason that clinical chemists must be on the alert and demonstrate their fitness as equal partners. Among the several means to achieve this end, there is educational progress and expansion, subjects ably dealt with by others. The importance of this aspect is witnessed by the fact that important institutions are either having a hard time, or find themselves altogether unable, to secure a qualified clinical chemist.

For those of us who are already beyond the state of education, it is up to our Association and its Local Sections to provide not only lectures, but exchange of samples and standards on a voluntary basis. If I am not mistaken, the Southern California Section has led the way in this respect.

We are codifying the existing proved methods of Clinical Chemistry; the first volume of a series of Annual Handbooks is about to appear within a few months.

There is the question of certification which has unfortunately hit a few snags. I do not want to go into the lengthy controversies on this subject. After due deliberation the Executive Committee of the Association has now left it to the individual members to apply or not to apply for certification to the American Board of Clinical Chemistry. I think the majority of clinical chemists share with me the feeling that the Board, for reasons not of its own making, does not represent clinical chemistry, since two only out of its nine members are practicing clinical chemists. We hope that the Board will change its not very cooperative attitude towards our Association. But until such time, I think that only those of our members will choose to apply for certification, who find it profitable for their profes-

(Continued next page)

[1] *From a Forum on the Professional Status of the Clinical Chemist. Am. Assoc. Clin. Chem. Inc. New York Section, January 29, 1952.*

sional standing vis avis some unenlightened pathologist-director.

Let us rather look into the future! The clinicians are a much greater "menace" in the modern hospital than the pathologists. There are the diagnosticians of bygone days. Although their approach to the patient is rather an artistic than a scientific one, the accumulation of individual experience and a certain "knack" will often reach the right diagnosis, where the "chart" clinician, who looks at the chart rather than at the patient, will fall. These old-timers -- some of them are quite young -- are alright, except when they are unready to accept chemical findings at variance with the values which they expect.

At the other end of the scale you find the clinician, who never, or hardly ever, sees the patient and does his medicine by charts and records. That may be the medicine of the future, but then it must dissociate itself from the traditional tenets of medical superiority and accept the chemist and the other Service Departments as equal partners rather than trying to usurp their functions and to relegate them to the position of technicians.

The ideal and desirable setup appears to me to be teamwork of the clinician with the pathologist and the chemist. Do not forget that the chemist fulfills more than just the one function, namely, to render analytical results. We do not interpret the results for the clinician, if we instruct him about the meaning of our analytical findings, e.g. if we tell him how much lactate solution would be the right amount for a baby with such and such blood findings. I will even go a step further: we will, in the more distant future, not only interpret the results for the clinician, but we will treat the patients whose disease is of a chemical nature. There will be no essential difference between the biologist, nowadays called clinician, the biophysicist, the microbiologist and the chemist. Each of them will be assigned his special field in the fluctuating array of diseases. But until such times have come and in order to make them come, we can best minister to the sick by being good chemists.

COMMENT FOLLOWING DR. SOBOTKA'S TALK

by

Dr. Halvor N. Christensen

I am sure that you have sensed something of an issue between the remarks of Dr. Sobotka and my comments. We are of course talking about different hospitals and different responsibilities. I am reminded of a statement of Dr. Williams of the Bell Telephone Laboratories in this Academy about a decade ago. He pointed out that many people thought he was making a mistake in urging the fortification of bread when society should be supplying everyone with ham and eggs. In my view there are not enough trained chemists to anywhere near fill the ranks if the chemist were given the full responsibility for the direction of laboratory services in every hospital. It is the physician who has the responsibility of determining what services a patient shall receive. He is responsible for their quality. Our best answer is to provide a chemical service which will win respect everywhere. The mere fact that our best clinical chemists have made impressive contributions does not establish that our profession can maintain this level on a nation wide basis. We urge the rapid and efficient training of expert analysts who can fill some of the serious gaps. The difficulty with requiring a Ph.D. biochemist for every position is that we are already scrapping the bottom of the barrel in looking for candidates for Ph.D. study. There are now so many lines of work in our society which demand the most able people that I think more attention must be turned to the specialized training of persons of intermediate calibre.

I feel that the first responsibility of biochemistry is to get good biochemical services to the people.

THE ROLE OF CLINICAL CHEMISTS IN GOVERNMENT SERVICE[1]

by

Lt. Col. Monroe E. Freeman, M.S.C., United States Army

The three major medical programs of the Federal Government are those of the Public Health Service, The Veterans' Administration, and the Armed Forces. Activities for biochemists in the Public Health Service and the National Institutes of Health are primarily in the field of research and investigation; while the Veterans' Administration and Armed Forces maintain extensive hospitalization programs with substantial requirements for specialists in clinical chemistry. Although the Army, Navy and Air Force have separate medical services similar in organization and operation, the medical laboratory services of the Army have reached more clearly defined stages of development; and, therefore, offer the best basis for discussion.

A military requirement for chemists and other science specialists in medical laboratories has evolved rapidly since the beginning of World War II, when need was vaguely expressed by an inactive reserve component, the Sanitary Corps. In 1947, however, the establishment of the Medical Service Corps in the Regular Army included clinical chemists as specialists in the Allied Science Section. This change from an uncertain military status in 1940 to an assured position in 1952 clearly reflected the rapidly increasing importance of chemistry and other biological sciences to medical practice and investigation; and the recognition of this progressive trend by the Surgeon General of the Army.

The significance of clinical chemists in the Regular Army should not be overlooked because they are relatively few in number. They exist, not only to staff the permanent laboratories, but also as a nucleus on which to build, rapidly and efficiently, expanded laboratory services suddenly dictated by a military emergency. If medical mobilization required many biochemists from civilian hospitals, laboratories, or classroom, the best insurance that these specialists would be advantageously assigned and efficiently employed is the actual existence of well trained permanent officers thoroughly familiar with both professional and military aspects.

Two important steps have been taken: an established professional career for biochemists in the Army; and a clearly defined role in any emergency mobilization of medical resources.

Unsolved problems still remain in the development of an Army career for medical chemists. Some of these are common to clinical chemistry anywhere. Others are peculiar to the military. In the procurement of competent officers, it has been necessary to define realistically the level of professional competence required. This has been a controversial subject anywhere in clinical chemistry; but it is further complicated for the Army biochemist because career officer or active duty reservist must be both a soldier and a scientist. Either is a full time job and a realistic compromise is not simple. To lower the standards of professional competence would at once vitiate the element of officer leadership in professional matters. Therefore, the Ph.D. training should be prerequisite; not because of the modicum of research experience or ability entailed, but because the fundamentals of Ph.D. training primarily develop scientific initiative, originality, and self-reliance. These elements, together with a broader understanding of the inter-relationships of science and its practical applications to human affairs are basic qualities of the leadership that is expected and demanded of officers in their scientific duties as well as in their military duties.

Unfortunately, Army hospitals and laboratories can neither afford nor attract the Ph.D. biochemists any more successfully

(Continued next page)

[1] *From a Forum on the Professional Status of the Clinical Chemist. Am. Assoc. Clin. Chem. Inc. New York Section, January 29, 1952.*

CLINICAL CHEMISTS IN GOVERNMENT SERVICE

(Continued from page 12)

than comparable civilian institutions, and the M.S. degree has been the practical minimum. However, all possible encouragement and assistance is given young officers to complete their Ph.D. training before reaching the senior grades of Major and Lt. Col. where a high level of professional competence and leadership is expected.

The attraction of competent chemists to a regular Army career has not been entirely successful, but this problem should be resolved without difficulty by a wider dissemination of information and assurance on several points: that there is a professional career for qualified biochemists in the Army; that they will not be diverted to other occupations except under unusual circumstances; and that there is ample opportunity for professional improvement and advancement, for participation in research, and for responsible work in professional administration and management. Detailed career plans specifically delineate these points.

Utilization of biochemists ranged from routine clinical chemistry to graduate teaching and direction of research in all phases of medical biochemistry. Clinical chemistry in military hospitals has a complicating feature of sudden changes in the number and kind of patients. It is expected that well trained experienced clinical chemists will eventually be able to fill responsible roles as consulting specialists in the larger hospitals. Throughout the United States and major Army installations abroad are general medical laboratories exercising supervisory control over considerable areas. In these laboratories, biochemists function as supervisors and consultants on a wider variety of biochemical problems including laboratory investigation and research activities. The Army Medical Service Graduate School in Washington, D.C. has a mission of research, investigation, and teaching in the field of military medicine. This installation includes a Department of Biochemistry that requires a high level of professional competence in the direction and management of major research projects, teaching and training responsibilities at Graduate School level, and consulting services on the application of chemistry to all phases of military medicine.

While clinical chemists and bacteriologists make up the major part of the medical laboratory specialists, other science specialties such as entomology, clinical psychology, psychiatric social work, and nutrition are included in the Allied Science Section. Specialists in optometry, sanitary engineering, pharmacy, medical supply, and medical administration are represented in the three other Sections of the Medical Service Corps.

REPORT ON THE DEVELOPMENT OF CLINICAL CHEMISTRY IN FINLAND

by

Osmo Helve, M.D., Chairman

and

Aimo Pekkarinen, M.D., Secretary

The Finnish Association of Clinical Chemistry and Physiology was established in 1947 for the purpose of bringing physicians and chemists, interested in these fields of research, into closer contact with one another. At present the membership is 70, i.e. 63 physicians and 7 chemists.

The aim of the Association is to promote the development of clinical chemistry and physiology in this country by means of meetings and publications. Furthermore the following aims may be mentioned: to make laboratory study a separate branch of medicine, to establish posts for laboratory physicians and new laboratories, and to provide them with adequate equipment. The Association is at present discussing with The Medical Association in Finland the question of arranging specialists-rights for laboratory physicians and with The Medical Board the question of arranging laboratory vacancies. We hope to be able to arrange special facilities for training these doctors and chemists in Finland and that they will also have the opportunity of studying abroad.

There are only three hospitals in Finland with either a laboratory physician, permanent or temporary, or a laboratory chemist: two hospitals have a laboratory doctor and one has a laboratory chemist to assist the clinicians. Unfortunately the construction and the equipment of several hospital laboratories are still unsatisfactory. In the new laboratories, with a laboratory doctor or chemist on the staff, there would be facilities for routine and special clinical chemical studies. The laboratory in the Department of Medical Chemistry, Helsinki University, has been of great importance for clinical chemistry in Finland. This Department has also served as the Chief training centre for doctors of clinical chemistry.

The Finnish Association of Clinical Chemistry and Physiology and participates in the publication of the Scandinavian Journal of Clinical and Laboratory Investigation. The 4th Congress of the Scandinavian Association was held in Finland in 1950.

RECENT PAPERS OF INTEREST TO CLINICAL CHEMISTS

Selection Determination of Various Forms of Nitrogen by the Kjeldahl Micromethod.

Marzadro, M. (Inst. Super. Sanita, Rome) Mikrochemie ver. Mikrochim, Acta 38: 372-375 1951

The Determination of Sodium and Potassium in Blood Serum.

Neufeld, O.E. (Repatriation Gen. Hosp. Heidelberg, Victoria) M.J. Australia 38 II 851-854 1951

Microdetermination of Serum Proteins by The Biuret Method.

Jayle, Bonssier, Badin. Bull. Soc. Chim. Biol. 33: 881-882 1951

Qualitative Determination of Barbiturates in Forensic Practice.

Paulus, W. (U. Bonn) Microchemie ver. Mikrochim. Acta 38: 566-573 1951

Simplified Method of Estimating Formaldehydrogenic Corticosteroids in Urine.

Rabinovich et. al. (U. Dijon) Lancet 261: 1201-1202 1951

Corticosteroids in Urine of Normal Persons. Determined by Paper Chromatography.

Burton, et.al. (U. Rochester). J.B.C. 193: 769-779 1951

Paper Chromatographic Analysis of Porphyrins.

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Flame Photometer
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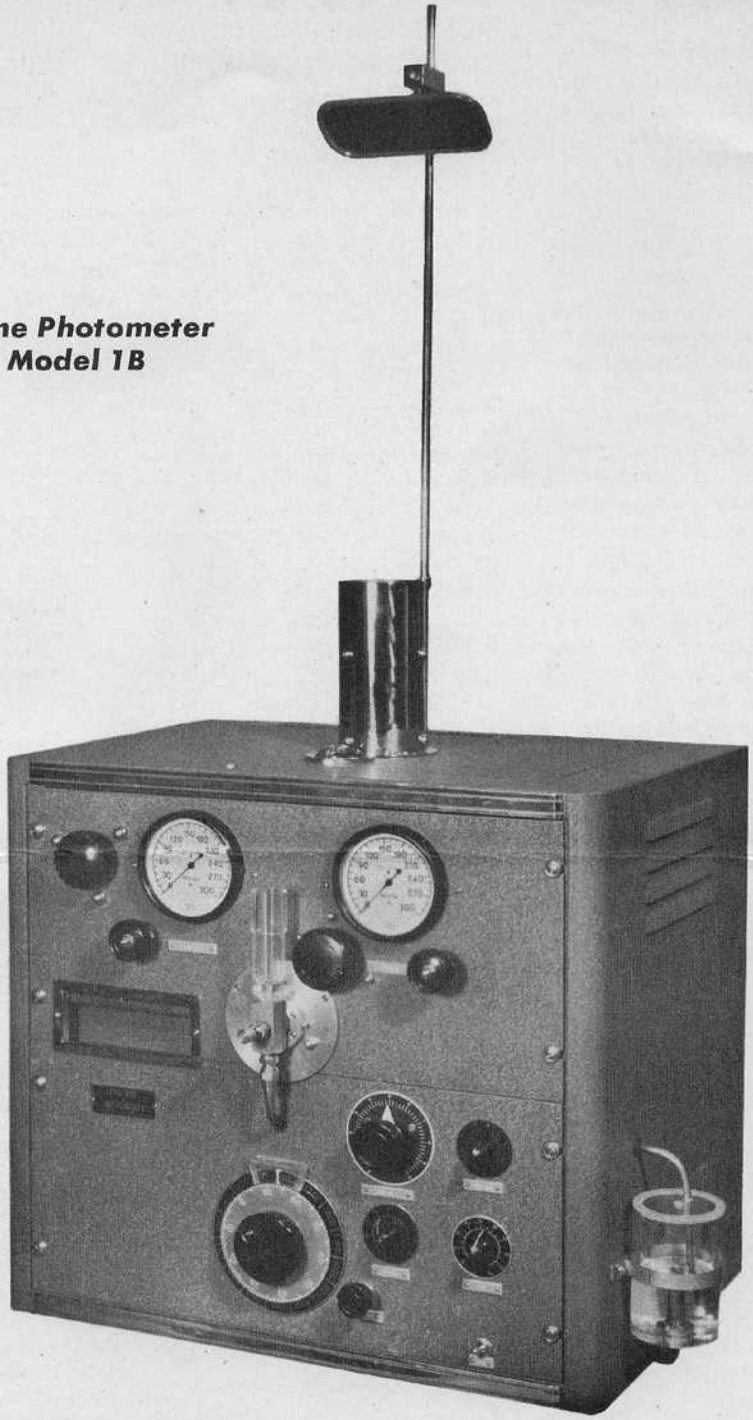

PROCESS & INSTRUMENTS

BROOKLYN 22, N. Y.

LOCAL SECTION NEWS

SOUTHERN CALIFORNIA SECTION

Results of the recent survey of inter-laboratory accuracy were reported and interpreted by Dr. R. J. Henry, chairman of the committee in charge, at the January 8 meeting held at the Cedars of Lebanon Hospital, Los Angeles. The full report of the committee will be published in the April issue of THE CLINICAL CHEMIST. A symposium, emphasizing methods used in the survey, rounded out the program.

Mr. Kenneth Johnson discussed flame photometry, pointing out that most sodium and potassium determinations are now made by some modification of this technique. He spoke briefly on the classical chemical procedures and on the recent separations of sodium, potassium, calcium and magnesium by ion exchange resins.

Dr. Harry Sobel outlined a wide variety of procedures used for calcium determination, remarking on the corresponding wide variation in values obtained by the various methods, which suggests that, for present practical purposes, it may be advisable to determine the "normal range" for each method. He also suggested that ionic calcium, as well as total calcium, should be determined in clinical chemistry laboratories.

Dr. Merle Lewis pointed out that the Kjeldahl procedure is the accepted standard for the determination of total serum protein, but that the biuret procedure is most often used. The biuret procedure is simpler and relatively specific for proteins, although depth of color development varies with the several protein fractions. Although most clinicians are used to albumin globulin ratios as determined by the Howe (Na_2SO_4) fractionation, she pointed out that the ratios determined by the Wolfson-Cohn (Na_2SO_4, Na_2SO_3) fractionation are more accurate as evidenced by better correlation with electrophoretic determinations.

Mr. George Kingsley sketched the historical development of cholesterol determination, enumerating the difficulties encountered with the sensitive color reaction. He suggested the direct extraction of serum with chloroform and color development at reduced temperatures.

BOSTON SECTION

The Boston Section held its third meeting of the current season on January 16, at the Stearns Auditorium of the New England Medical Center. Frank Stratton, chemist of the Boston Police Department, spoke on toxicological methods, with particular reference to those which should be done as well by larger hospital laboratories. This, he felt, would relieve the Police Department Laboratory of frequently unnecessary work, and in some cases provide evidence of the presence of rapidly excreted substances.

Blood alcohol methods were critically examined by the speaker, who felt that methyl alcohol poisoning was on the increase. The method recommended for this alcohol consists of oxidation to formaldehyde, with subsequent distillation into Schiff's reagent. Although acetaldehyde from ethyl alcohol if present as well, would give a colored product with Schiff's reagent, differentiation is easily made with a spectrophotometer.

Mr. Stratton spoke also on the determination of carbon monoxide in blood, stressing that a sample must be drawn immediately to be of any value. The determination of carbon monoxide hemoglobin as he carries it out is also spectrophotometric. The speaker felt that for this test, most instruments are unsuitable because of their too wide exit slit. One, providing a slit of about 5 millimicrons, is required to resolve the absorption bands of carbon monoxide hemoglobin, and in this regard he spoke approvingly of the Beckman spectrophotometer.

Other tests which he felt should be done by hospitals because of their clinical as well as forensic value are barbiturates chloral, and salicylates, These he also discussed technically.

The next meeting will be held at the usual place on February 20, at 8:00 P.M. Herbert Fisher of Tufts Medical School, will speak on "The Applications of Paper Chromatography in Clinical Chemistry."

PATRONIZE OUR ADVERTISERS!

CHICAGO SECTION

The Chicago section of the A.A.C.C. will meet with the Chicago section of the A.C.S. on March 21, 1952 at the Furniture Mart. Dinner will be at 6:30 and the combined meeting will start at 8:00 p.m. At 9:00 p.m. the A.A.C.C. will hold a separate session on "pH Meters." Dr. C. H. Humes of Coleman Instruments, Inc. will speak on the theory of pH meters and the vice-president of the section, Dr. Samuel Natelson of Rockford Memorial Hospital, Rockford, Ill. will speak on the clinical interpretation and value of the pH meter. There will also be a short business meeting.

PHILADELPHIA SECTION

The regular meeting of the Philadelphia Section of the AACC was held at the Hahnemann Medical College on January 31. Cleon Gentzkow, M.D., Ph. D., Colonel, USAMC (ret) and Director of Bureau of Laboratories, Department of Health, Commonwealth of Pennsylvania, spoke on the various provisions of the new State Laboratory Law, (known as Act 389). He discussed the application forms which have been devised and the organization of the Department of Health which will administer the new law.

The provisions of the law were published in THE CLINICAL CHEMIST, Vol 3, No. 5 1951.

NEW YORK – METROPOLITAN SECTION

The New York Section held its meeting on TUESDAY, JANUARY 29, 1952, 8:30 P.M. at The New York Academy of Sciences, 2 East 63rd Street, New York, It presented a FORUM ON "THE PROFESSIONAL STATUS OF THE CLINICAL CHEMIST". The SPEAKERS were, Professor Halvor N. Christensen, Tufts College Medical School, Boston, Massachusetts. "The Training of Clinical Chemists at the Graduate Level"

Dr. Harry H. Sobotka, Mount Sinai Hospital, New York. "The Role of the Clinical Chemist in Medical Institutions"

Colonel Monroe E. Freeman, Army Medical Service Graduate School, Washington, D.C. "The Role of the Clinical Chemist in Government Service"

Dr. Kurt G. Stern, Chairman of the Program Committee presided.

EXECUTIVE COMMITTEE MINUTES

The meeting of the National Executive Committee was held in New York City at the home of Harry Sobotka on February 5, 1952. Those present included John G. Reinhold, President; Albert E. Sobel, Vice-President; Max M. Friedman, National Secretary; Louis B. Dotti, National Treasurer; Harry Sobotka, Ellenmae Viergiver, and Harold D. Appleton (by invitation).

The minutes of the last meeting, previously distributed, were accepted without correction.

The main portion of this meeting was devoted to a discussion of the proposed by-laws to the constitution. A draft, prepared and previously distributed to the Executive Committee, was compared with comments by the individual members. A final draft was approved and is to be published in the March, 1952 issue of the newsletter. Mail ballots are to be distributed with this issue of the CLINICAL CHEMIST for a vote by the membership on these by-laws as provided in Article XIV of the constitution.

Drafts of section by-laws have already been received by the National Secretary from the Metropolitan New York, Philadelphia, and Southern California sections. No action as yet can be taken on section by-laws until by-laws of the national organization are first approved.

The National Treasurer submitted the following financial statement:

Income, July 1, 1951 to February 5, 1952	$2045.84
Expenses, Same period	1350.12
Balance	695.72
Balance, June 30, 1951	1114.89
Bank Balance	$1810.61

A discussion was held concerning the defraying of expenses incurred by members of the Executive Committee while attending meetings. The present regulations provide only for travel expenses up to a maximum of ten dollars for any one meeting, with no reimbursement for the Stated Annual Meeting. Although it was felt that this was insufficient in view of the wide geographical distribution of the members of the Executive Committee, yet no final action was taken at this time.

The death of Dr. Jos. Kahn has resulted in a vacancy on the Editorial Committee of the CLINICAL CHEMIST. It was proposed, seconded and unanimously agreed that A.H. Wolfson of the Goldwater Memorial Hospital, Welfare Island, N.Y. be appointed to the vacancy that expires on June 30, 1953.

The matter of misconduct, alleged misconduct, and unethical practices by any member of the Association was discussed. It was decided not to take any action until a Code of Ethics is formulated and a Committee on Ethics appointed.

A decision has not yet been reached as to the time and place of the Stated Annual Meeting in 1953. The 123rd National Meeting of the American Chemical Society will be held in Los Angeles during March 15-20, 1953. It was agreed, however, that Association meetings in conjunction with ACS meetings are of greatest advantage.

The next meeting of the Executive Committee is scheduled for Milwaukee, Wisconsin, during the Stated Annual Meeting.

Respectfully submitted,

Max M. Friedman, National Secretary

BOOK REVIEWS

THE LIPIDS, THEIR CHEMISTRY AND BIOCHEMISTRY. VOL. 1, CHEMISTRY.

Harry J. Deuel, Jr. xxiv + 982 pages. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N.Y. 1951. $18.50. Reviewed by Harold D. Appleton, N.Y.U. Research Service.

Lipid Chemistry, has been one of the neglected fields of chemistry and up until a few years ago, there were few adequate reference works in this field. With the focus on lipids as the new field of investigation in biochemistry, medicine, and even industrial chemistry, there has recently appeared several small volumes on certain particular phases of fats, waxes, sterols, fat-soluble vitamins and related compounds.

Prof. Deuel's work fulfills the need for a comprehensive volume on lipid chemistry giving the essentials of modern information in less detail than these highly specialized, monographs, but sufficient to serve the needs as a reference volume for the advanced student.

The book is slanted to the interest of materials present in or used by living material. The chapters given to the chemistry of the phosphatides, sterols, fat-soluble vitamins, etc., take more than half the volume. The first chapters give the chemistry of fatty acids and related compounds contained in fats, vegetable and animal oils and waxes.

For a work of this type, Prof. Deuel has made this book extremely readable, with good presentation in tables, charts and excellent indexes. This book would be a welcome addition to both libraries and private collections.

A STUDY OF ANTIMETABOLITES.

D. W. Woolley, xiii + 269 pages. John Wiley and Sons, 440 Fourth Avenue, New York 16, N.Y. $5.00 Reviewed by John J. Burns, Ph.D., NYU Research Service.

It is only fitting that Dr. Woolley who has probably contributed more than anyone else to our present knowledge of antimetabolites should have written on this subject. In this book he very clearly presents the fundamental ideas and methods used in this still very new field of research. Many specific examples of the importance of antimetabolites in nutrition, enzymology, pharmacology and endocrimology are presented in a logical and readable manner. This book is very highly recommended as an addition to the libraries of all those who are interested in the field of biochemistry or one of the related sciences.

QUID NUNCS

An employment clearing house for clinical chemists has been established by the Southern California Section. All inquiries from interested prospective employees or employers should be directed to the chairman, Dr. Joe Goodman, Biochemist, Veterans Administration Hospital, Long Beach, California.

Saul L. Kanter has accepted the position of Biochemist of the clinical laboratory, Veterans Administration Hospital, Palo Alto, California. Mr. Kanter had been associated for a considerable period with Brentwood and Wadsworth General Hospitals at the Veterans Administration Center, Los Angeles.

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Roy W. Bonsnes, The CLINICAL CHEMIST

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Barry Commoner, SCIENCE

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Norris W. Rakestraw, The Journal of CHEMICAL EDUCATION

". . . written in a very clear and concise way, with all the individual reagents and steps in the procedures numbered and well separated for easy reading."
M. G. Mellon, ANALYTICAL CHEMISTRY

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The CLINICAL Chemist

NEWSLETTER OF THE AMERICAN ASSOCIATION OF CLINICAL CHEMISTS, INC.

VOLUME 4, NUMBER 3 MAY 1952

DR. PHILIP A. SHAFFER NEW HONORARY MEMBER

Dr. Philip A. Shaffer, Distinguished Service Professor of Biochemistry, Washington University School of Medicine, St. Louis, Mo., was the recipient of Honorary Membership in the American Association Of Clinical Chemists at the Annual Dinner held Wednesday, April 2, in Milwaukee, Wis.

Dr. Shaffer can be considered one of the pioneers in clinical chemistry, having started his career as first assistant to Dr. Otto Folin at McLean Hospital, Mass., from 1900-1903. He received his doctorate in chemistry and biochemistry at Harvard in 1904 and was instructor in pathological chemistry from 1907-1910. Dr. Shaffer held the chair in biochemistry at Washington University School of Medicine from 1910-1946 and served as Dean from 1937-1946.

Prof. Shaffer treated the members and guests with an informal account of the start of clinical chemistry at the beginning of the century. His recounting the first days with Dr. Folin brought very close the traditions established by the pioneers of the profession.

Dr. Armand S. Quick of Marquette University, well known for his studies of the clotting mechanism spoke on "Random Thoughts On Clinical Chemistry". *(See text in this issue).*

Dr. Hugh J. McDonald, newly elected Vice-President of the AACC and Professor of Biochemistry, Loyola University School of Medicine, spoke on parts of his program for education in clinical chemistry. Dr. McDonald is chairman of the AACC Committee on Education and said that his proposed education standards would make clinical chemistry an independent profession rather than one that is subservient.

Drs. Max M. Friedman, Margaret Kaser, Armand S. Quick, and Philip A. Shaffer *(Courtesy C & E News)*

MILWAUKEE HOST TO AACC MEETING

The Annual Meeting of the Association was held at the Hotel Schroeder, Milwaukee, Wisc. on Wednesday April 2, 1952. The meeting was opened at 5:00 P.M. by John G. Reinhold, President, and those present included Albert E. Sobel, Vice-President; Max M. Friedman; National Secretary; Ellenmae Viergiver, Margaret Kaser, Chi Che Wang, Sam Belfer, John K. Kirby, Sr., Marie H. Carr, Lois Brunner, Joseph Benotti, Harold D. Appleton, Moritz Michaelis, Alex Kaplan, Clarence Cohn, Hugh J. McDonald, Grace Ballard, Margaret Perry, Marschelle H. Power, Santiago Aguajo (by invitation) and Samuel Natelson.

The minutes of the 1951 Annual Meeting held in Boston, Mass. were accepted as previously published with one correction.

The annual report was presented by John G. Reinhold, President of the Association. In this report Dr. Reinhold reviewed the progress made during the past year and especially stressed the advances made by the legislative, education and editorial committees. Major decisions made by the Executive Committee during the past year, such as that dealing with certification of clinical chemists, were reviewed.

The National Secretary presented to the membership a recommendation of the Executive Committee that the annual dues for 1953 be set at $7.50 for full members, and $4.00 for associate members, the increase over the 1952 dues to be applied directly to the newsletter. This increased income by the newsletter would permit the editorial staff of THE CLINICAL CHEMIST to extend its activities by additional coverage of scientific articles. This recommendation was presented as a motion by Sam Belfer, and after some discussion the motion was approved.

The need for a journal of clinical chemistry was generally acknowledged, and the matter discussed at great length. Various opinions were expressed, including the suggestion that the Association consider undertaking such a journal in the immediate future. No definite action was taken at this time.

Dr. Margaret Kaser, Wood, Wisc. made all the arrangements for the meeting and the Association Dinner. Dr. Kaser received the thanks of the entire membership for her work in providing for the excellence of the Fourth Annual Meeting.

The CLINICAL Chemist

Newsletter of the American Association of Clinical Chemists, Inc.

P.O. Box 123
Lenox Hill Station New York 21, N.Y.

VOL. 4, NO. 3 MAY 1952

THE SECRETARY REPORTS

It may be noted from the minutes of the Fourth Annual Meeting, held in Milwaukee, that the dues for 1953 have been increased to $7.50 for full members and $4.00 for associate members. This was adopted by the membership with the assurance that the increase over 1952 dues would be applied to THE CLINICAL CHEMIST, so that the newsletter may extend its services for more adequate scientific information.

Perhaps a review of the fiscal status of the Association might be of interest at this time. In the minutes of the third meeting of the Organization Committee held in New York City on February 5, 1949 is found: "The membership fees for 1949 were set at $5.00 for full members and $2.00 for associate members." At the same meeting the Constitution was adopted with Article XIII; "An annual assessment of dues for the following business year shall be determined by a majority vote of the voting members present at the Stated Annual Meeting." At that time there were two thoughts; one, that the dues should be set at the lowest possible level compatible with adequate operation of the Association; and the other thought was that any changes in annual dues should come only with the approval of the membership.

For two years we functioned with these minimal dues, which were more than enough, as evidenced by the fact that the Association has from the beginning been able to maintain a bank balance. It might be parenthetically mentioned that we have been operating in the past, and hope to continue to operate in the future on this basis, only because many individuals in the Association have been contributing freely and willingly of their time and efforts.

The advent of the newsletter, which three years ago was not anticipated in its present form, made it necessary for the members to vote an increase in dues at the Third Annual Meeting in Boston. The printing and distribution of the newsletter, directory, and ballots require about 60 per cent of our income. Another 15 per cent is returned as a subsidy to the local sections. This permits about one-third of our income, or about $700 per year at the current rate, for all the other activities of the Association. Part of this unspent $700 per year is reflected in the bank balance that is gradually accumulating.

THE CLINICAL CHEMIST in its present form has been an excellent medium in bringing to us the professional activities of clinical chemistry. Having started out with 4 to 6 pages of a small sheet, it now has reached 12 to 16 pages in its present format. The advertising income covers only a fraction of the cost, since the newsletter accepts ads with great care, and the ethics of our advertising policy is beyond question.

There have been many inquiries from our members, and much interest, concerning a journal of clinical chemistry. This matter has been given a great deal of thought by the Executive Committee, and the opinion has invariably been that such a project should not be hastily undertaken. This takes us back again to the increased annual dues. The newsletter will be allotted an additional $100 per issue, beginning in January, 1953, so as to permit the appointment of scientific editors and scientific sections to cover abstracts, reviews, and other items of interest to clinical chemists. It is sincerely hoped that this will meet with the approval of the entire membership. To do otherwise might retard the natural growth of THE CLINICAL CHEMIST.

Respectfully submitted,
Max M. Friedman, National Secretary

FEDERATION MEETINGS FEATURE AACC DINNER

An informal dinner was held for members and guests of the American Association of Clinical Chemists on Tuesday evening, April 15 at Bonat's Restaurant in New York City. The dinner was arranged by the New York Section as an informal meeting of AACC members attending a week of scientific sessions of the Federated Societies for Experimental Biology.

Dr. Warren Sperry, Chairman of the Joint Committee On Clinical Chemistry of the American Chemical Society and the American Society of Biological Chemists, spoke of his committee's report on a proposed pattern for legislation by various state governments for the practice of clinical chemistry. Dr. Sperry could not divulge the committee's report until it is acted upon by the Board of Directors of the ACS and the Council of the ABC.

Dr. O.E. Gaebler, member of the American Board of Clinical Chemistry, spoke informally on the problems of certification and the action taken by the Board on the differences of opinion held by the AACC. Dr. Gaebler noted that the Board did not exclude any of the suggestions that were made by the organization and put into effect a number of them. The suggestion made by the AACC *(C.C. Vol. 4 No. 1 1952)* are under complete study by a Board committee and will be acted upon in the near future.

Dr. John G. Reinhold, President of the AACC presided.

NEW MEMBERS ELECTED BY THE EXECUTIVE COMMITTEE

May 7, 1952

Jane E. McGlauflin	Bangor, Maine
O. C. Beckord	Camden, N.J.
Lt. Bernard Balikov	Battle Creek, Mich.
Gerald B. Dobkin	New York, N.Y.
David Y. Cooper	Bethesda, Md.
Thomas E. Wheeler	Bethesda, Md.
Henry Wishinsky	Arlington, Virginia
Mitchel E. Prushankin	Glenolden PO, Pa.
Eli H. Dubinsky	Boston, Mass.
Frank D. Mann	Rochester, Minn.
Crystil E. Jeck	Oklahoma City, Okla.
C. A. Owen	Rochester, Minn.
Joseph A. Horneff	Haddonfield, N.J.
Robert K. Fiersten	Springfield, Ill.
Charles Ming	Trenton, N.J.
Arthur E. Gurgiolo	Houston, Texas
Hazel K. T. Kay	Los Angeles, Calif.
Bruno Elkan	New York, N.Y.

BOX 123

Letters From Members

Dear Sir:

The members of the Southern California Section of the AACC are very concerned about the appearance in THE CLINICAL CHEMIST of ill-chosen remarks about the medical profession. A good example of this is found in the March 1952 issue in Dr. Sobotka's talk on "The Role of the Clinical Chemist in Medical Institutions."

This publication contained a number of remarks which can do nothing but bring on the animosity of the medical profession. Since THE CLINICAL CHEMIST is the official organ of the AACC these comments are construed as the general attitude of the organization. This is even more true when such comments are made by a past president of the Association. How would the chemist feel if he read in the pages of the Journal of the American Medical Association that he was a "menace" in the modern hospital?

There is another aspect of Dr. Sobotka's talk with which we take definite issue. In the last paragraph he says, "we will, in the more distant future, not only interpret the results for the clinician, but we will treat the patients whose disease is of a chemical nature." It is our impression that the clinical chemist should remain an adjunct to the medical profession and that under no circumstances should he be encouraged to carry on the practice of medicine. His function is to aid and supplement the doctor of medicine when his services are requested. The treatment of patients should be limited solely to the doctor of medicine, and if a chemist feels that desire he should enroll in a medical school.

One of the primary aims of the AACC should be to promote good relations with the medical profession. This can best be done by establishing clinical chemistry as a profession. Every effort should be made to raise the standards of clinical chemistry and of the clinical chemist. It is of the utmost importance to remember that it is not our aim to practice medicine but to help those who do. The treatment of the patient is legally and rightfully in the hands of the doctor of medicine.

It seems to us that our aims could better be accomplished by more careful editing of the material published in THE CLINICAL CHEMIST. Certainly, it is important that our members be allowed to express themselves freely. However, if criticisms of the medical profession are to be made, they should at least be done in a dignified and reasonable manner.

Sincerely yours,

Arnold G. Ware
Richard J. Henry
Kenneth D. Johnson
Executive Committee
Southern California Section
AACC. California

REPORT TO THE ASSOCIATION

by

John G. Reinhold, President
Delivered at the Annual Meeting in Milwaukee, April 2, 1952

As the Association starts its fifth year it also enters new activities and undertakes new responsibilities. Growth in membership has been steady as new names are added to the list each month. Of even greater importance is the loyalty of the old members. It is gratifying that some who have dissented strongly on questions of policy have remained members, regardless, chosing to work within the Association for the views they uphold.

The current year has obliged the Association to decide whether it should uphold the program of the American Board of Clinical Chemistry or undertake independently the evaluation and approval of clinical chemists. The shortcomings of existing Boards in the clinical specialties, presented eloquently by Bean in a recent article, illustrate the nature of the misgivings held by some members of the Association. Another group of our members became apprehensive because of the forbidding legal phraseology of the Board's Charter and By-laws. A Board with some of its membership not closely identified with clinical chemistry undertaking to assert the sweeping authority claimed in these documents thus appeared to endanger the standing of many working in the front line of clinical chemistry, and to threaten that standards applied would not reflect the needs of clinical chemistry as the profession is practiced. The fears concerning the Board have been largely dispelled by its recent statement and by the reassurances given privately by its members. Nevertheless, the Executive Committee thought it best that each member of the Association decide for himself whether to apply to the Board for certification.

The problem of the Board and the Association's policy toward it occupied the attention of the officers and the Executive Committee for much of the year and excluded thought and action on many other questions. Yet it was important to examine this problem with the thoroughness it demanded. My own feeling is that the Board is and has been trying to the best of its ability to serve clinical chemistry. It is my intention to apply for certification, and I hope others who are eligible will do likewise.

One of the more important developments of the year for clinical chemists and others specializing in the science allied to medicine was the introduction and passage of an act for the regulation of analytical, biochemical, and biological laboratories in Pennsylvania. Poorly qualified laboratory directors and marginal laboratory enterprises are prevented from endangering the public or engaging in unethical practices to the detriment of laboratories maintaining high standards. The right of qualified scientists not possessing medical degrees to operate analytical, biochemical and biological laboratories in Pennsylvania is clearly established by this act. Steps to enforce it are proceeding effectively under the critical but friendly supervision of Dr. Cleon Gentzkow, Director of the Pennsylvania State Laboratories in Philadelphia. The advantages of the Pennsylvania Act are partially offset by its omissions and shortcomings. Requirements for approval are far too low and coverage might advantageously be extended to hospital laboratories. However, the latter are free to participate in the screening and inspection programs voluntarily, and it is to be hoped that they will do so. The Association supported the passage of this act, although with reservations.

Legislation inimical to the interests of clinical chemists continues to be a threat in several areas. Efforts, well intentioned no doubt, are being made to establish by law the qualifications of the personnel of clinical laboratories. These attempts narrowly assess competence on the basis of technical knowledge in all branches of laboratory work, with no, or grossly inadequate, considerations for scientific capabilities or ability to conduct research. Another objectionable type of bill attempts to define all laboratory work as the practice of medicine. Surely no more effective method could be devised to discourage recruitment of chemists for hospital and other clinical chemistry laboratories than the knowledge that efforts are being made to restrict opportunities in this way. Happily, no such Bill has been introduced to my knowledge since the unlamented attempt several years ago in New Jersey.

One of the more encouraging signs of progress in the field of legislation is the evidence that unilateral attempts at legislation are giving way to cooperative efforts. Lawmaking in any field affects many individuals and the decent and democratic approach is to consult all of the various parties interested. This is particularly to be expected of the professions where honor and courtesy are traditional.

Scientific activities related to clinical chemistry are being encouraged by the Association. Each of the five local sections is regularly holding scientific sessions. A program of papers dealing with research in clinical chemistry has been a part of the activities of each annual meeting.

A sixth local section now being organized in the Washington-Baltimore-Richmond region, will hold its first scientific program in May.

THE CLINICAL CHEMIST has served the Association well since its founding, and during the current year the abundance of important news has necessitated an increase in size. The resulting increase in publication costs has been only partially offset by additional advertising. Finances of THE CLINICAL CHEMIST will continue to create problems for the Association, and need for its expansion and plans to broaden its scope are responsible for the recent decision to increase dues of members. Decisions concerning editorial matters have been almost entirely the responsibility of the Editorial Committee, acting in some instances in consultation with the Editorial Board. This plan, instituted during the latter part of my predecessor's term, has given the editors greater freedom. This they have used to good advantage.

Members and others have occasionally complained about statements made by correspondents in THE CLINICAL CHEMIST. It is the policy of the Association to encourage expressions of opinion. Each of us has an obligation to place his criticisms and dissents on record. A flow of ideas through THE CLINICAL CHEMIST is perhaps the best of ways to enable the making of sound decisions concerning the Association and clinical chemistry.

Dr. Nelson Young accepted the Chairmanship of the Committee on Standards last fall. That this committee has failed to get started on its important tasks of evaluating laboratory performance, issuance of standards, etc., is entirely the fault of your president who allowed the competition of a multitude of other demands to intervene with formulation of plans and directives. Other equally important projects of the Association have suffered for the same reason. I regret also that my correspondents often have waited far too long for their proposals and inquiries to receive attention.

The report of the Committee on Education prepared by Dr. Mc Donald and published recently in THE CLINICAL CHEMIST has had the desired effect of stimulating thought and debate. It would be timely to acquaint those whose positions in academic institutions enable them to revise curricula with the recommendations of the committee, and also with the supplementary suggestions developed in the discussions of the report.

The committee editing the first volume of methods in clinical chemistry, headed by Miss Reiner, is approaching the completion of its work. Some delays have been caused by the unique plan being used, which requires that each method must be tested independently by two laboratories. The failure of either of the latter to obtain the expected results in some instances has necessitated time consuming correspondence and additional research. Plans for further volumes are under discussion including one dealing with methods for poisons and drugs in body fluids.

A code of ethics has been discussed at

length in two recent sessions of the Executive Committee. It will soon be presented to the membership for their consideration.

The creation of the Ernst Bischoff Award in Clinical Chemistry by the generosity of the Ernst Bischoff Company is indeed an outstanding event. The Association is to be custodian of the award. This new incentive to the development of clinical chemistry is sure to be of major importance.

Honorary memberships conferred on those who have distinguished themselves in the course of a lifetime devoted to clinical chemistry have proven to be one of the most pleasing and rewarding activities of the Association. The knowledge gained from our honorary members of the earlier years of clinical chemistry has given us an awareness of the tradition established by them of devotion to the highest standards of science. It has inspired anew our determination to uphold their ideals. The Association is fortunate to have added to the list of Honorary Members during the past year Drs. Philip A. Shaffer, Norman R. Blatherwick, E. C. King.

Of great value also, are the contacts that are developed as a result of the Association's activities with clinical chemists and their organizations in other countries. Plans are now under way for an international organization of clinical chemists.

Perhaps the greatest benefit that can be derived from our Association, however, is the opportunity it provides for each member to work with his colleagues for the fulfillment of a common goal, the development of clinical chemistry so that it may contribute to the greater benefit of mankind. For those fortunate enough to be members of local sections, these will provide the means for such joint efforts. Geographical factors may prevent close association of those remote from larger medical centers, but groups might be organized on an area basis. No matter how remotely located, each member can contribute by thoughtful analysis of the problems confronting the Association and our profession. Attendance at the Annual Meetings or Clinical Chemistry dinners has been an inspiration to many of us, sufficiently so to justify some sacrifice to make possible attendance at such events. The Association, as the focus and beneficiary of members activities, thus offers opportunities for growth to its individual members that transcend its other funtions. Looking back only two years, I am astonished at the education I have undergone as a result of active participation in the Association's affairs. The friendships made and the inducements to greater professional achievements have been abundant rewards indeed. I hope that all members can share this experience. By getting together and working together for the benefit of our profession there is no limit to what can be accomplished for clinical chemistry.

MINUTES OF EXECUTIVE COMMITTEE
April 1, 1952

The Executive Committee met at the Hotel Schroeder in Milwaukee, Wis., on Tuesday, April 1, 1952. Those present included John G. Reinhold, President; Albert E. Sobel, Vice-President; Max M. Friedman, National Secretary; George T. Lewis, Marschelle H. Power, Ellenmae Viergiver, Harold D. Appleton (by invitation), Margaret Kaser (by invitation), and Hugh J. McDonald (by invitation).

Marschelle Power reported for the Editorial Advisory Committee of THE CLINICAL CHEMIST and pointed out the manner in which it functioned during the past year. The Committee did not feel that any major changes were necessary at this time.

Louis B. Dotti reported for the Committee on Membership and also submitted a Treasurer's report covering the assets of the Association as of March 20, 1952.

Hugh J. McDonald reported for the Committee on Education and summarized the recommendations previously published in the newsletter.

Max M. Friedman proposed that the annual dues for 1953 be set at $7.50 for full members and $4.00 for associate members, the increase over 1952 to be allocated to THE CLINICAL CHEMIST for expansion of services by the newsletter and to allot increased space for scientific articles. After discussion, it was voted that this recommendation be made to the membership at the annual meeting.

Various requests have been made by manufacturers and distributors for the membership list of the Association. Since it was felt that the membership list is an asset of the Association, it was moved, seconded, and passed that the National Secretary be authorized to permit the use of the list by commercial organizations for circularizing purposes at a fee of $50.00 per year.

Colonel Monroe E. Freeman of Washington, D.C. was selected as the representative of the Association to the International Committee on Clinical Chemistry. The delegates to the Congress of Clinical Chemistry to be held in Amsterdam, Holland during 1952 include Miriam Reiner, Warren M. Sperry, Albert E. Sobel, and Kurt G. Stern.

The choice of time and place for the annual meetings in 1953 was discussed at great length. It was felt that the previous meetings in association with the American Chemical Society were very successful. It was also the majority opinion that the next meeting should be held in the fall of 1953 at the time and place of the 124th National meeting of the American Chemical Society.

The standardization of methods for the detection of poisons was discussed. Two viewpoints were presented; one that the present manual on methods sponsored by the Association should include a section on the analyses of drugs and poisons; and the other suggestion was that a separate manual should be attempted. These possibilities will be further explored.

The remainder of the meeting was devoted to a study of the draft for a proposed Code of Ethics. Since this project could only be partially completed, it was decided that the Executive Committee meet again in New York on Monday, April 14, 1952.

Respectfully submitted,

Max M. Friedman, National Secretary

MINUTES OF EXECUTIVE COMMITTEE
April 14, 1952

The Executive Committee met at the Medical Arts Center Hospital in New York City on Monday April 14, 1952 at 8:30 P.M. Those present included John G. Reinhold, President; Albert E. Sobel, Vice-President; Max M. Friedman, National Secretary; Louis B. Dotti, National Treasurer; Harry Sobotka, Ellenmae Viergiver, Oliver H. Gaebler (by invitation), Samuel Natelson (by invitation), and Miriam Reiner (by invitation).

The minutes of the previous meeting in Milwaukee were accepted without correction.

The Executive Committee for 1952-53 and the Nominating Committee for 1952-53, selected by the votes tabulated on April 12, 1952 by tellers Albert Hanok and Andre C. Kilbrick were presented. The Executive Committee will consist of Albert E. Sobel, President; Hugh J. McDonald, Vice President; Max M. Friedman, National Secretary; Louis B. Dotti, National Treasurer; Arthur Knudson, Marschelle H. Power, John G. Reinhold, Harry Sobotka, and Arnold G. Ware. The Nominating Committee will consist of Joseph Benotti, Louis B. Dotti, Samuel Natelson, Miriam Reiner, John G. Reinhold, Harry Sobotka, and Warren M. Sperry.

Oliver H. Gaebler, by invitation of the Executive Committee and as a member of the Association, participated in a discussion of the relationship between the Association and the American Board of Clinical Chemistry. Dr. Gaebler outlined the serious problems that necessarily confront the Board in its initiation of the certifying program. It was indicated that active coooeration of the Association would be welcomed by the Board.

Miriam Reiner reported on the proposed manual of methods in clinical chemistry. Miss Reiner was authorized to submit the manuscript, a critical survey of thirteen methods, for publication.

The remainder of the meeting was devoted to a continued study of the proposed Code of Ethics.

Respectfully submitted,

Max M. Friedman, National Secretary

RANDOM THOUGHTS ON CLINICAL CHEMISTRY

by

Armand J. Quick, Marquette University School of Medicine, Milwaukee, Wisconsin

Clinical chemistry had a long latent period and only in recent years has the spectacular tempo of its development set in. Centuries passed from the time the alchemist philosophized on the appearance of a specimen of urine to the period when the qualitative testing of urine had any semblance of a scientific approach. But only after the pioneer work of Folin, Benedict and Van Slyke did clinical chemistry as it is recognized today come into existence.

With the development of the field of "blood chemistry", came the recognition that a chemical section of the clinical laboratory should be an essential part of the hospital and that it had to have on its staff someone who had basic training in chemistry. In the beginning when the techniques were simple, individuals with minimal chemical skill and knowledge could meet the requirements. As the science of biochemistry and its application to clinical chemistry medicine advanced, the basic requirements of the laboratory technician in chemistry increased. Today the development of clinical-chemical technology has reached a level at which only skilled and well-trained chemists can meet the demands.

One of the pressing problems that confronts the hospital is whether its laboratory should keep abreast with the newer developments or whether it should continue to limit its productivity to its present physical equipment and its personnel. Generally the solution arrived at is a compromise, but irrespective, if any change is initiated, it is likely to be in the direction of chemistry since the most important advances are in this field. Any laboratory, therefore, that is following the current trend of expanding its facilities will require among its personnel trained chemists who meet the requirements of the new specialty, clinical chemistry.

What is required of the clinical chemists? No doubt his most important task is to carry out technical chemical procedures that cannot be entrusted to the clinical technologists. With the advent of endocrinology and its closely allied fields such as fluid and electrolyte balance, as well as the growth of other phases of physiology, many new diagnostic procedures have been developed and new instruments have been introduced. Only an expert can be entrusted to obtain reliable results. But the task of the clinical chemist is not limited to complex tests and apparatus. There is a crying need that simple chemical tests be supervised so that they are done properly.

Due no doubt to the lack of personnel with thorough training in chemistry many useful tests are either soon dropped because of technical difficulties or are never introduced into the clinical laboratory. The hippuric acid synthesis for liver function may be cited as an example. This test is based on sound chemical and physiological principles, and has been found valuable by a number of authoritative investigators in large clinics. It offers a quantitative approach to the functional capacity of the liver and thus yields information not obtainable by the more popular empirical tests. With proper chemical supervision a test such as this can successfully become one of the routine procedures.

There is a definite need for the clinical chemist to exert his influence to improve techniques and to aid in the standardization of many of the common laboratory tests. One may select the clotting time as a good illustration. While the clinical value of this test is a moot question, one can unequivocally state that the manner in which the procedure is carried out in most laboratories makes the results utterly worthless. Almost invariably the test is done at room temperature. Yet no one who has a rudimentary knowledge of chemical reactions would carry out a test which is so markedly influenced by temperature under conditions as vague as room temperature. One might as well work out winter and summer normals to interpret the result. Certainly in an age in which the electron is commonplace, the constant temperature water bath should occupy a place in nearly every laboratory. But even more simple, the thermos bottle can serve as a cheap and convenient portable water bath. If the exact principles of chemistry were applied to as simple a test as the clotting time, the medical literature would be spared the numerous worthless papers based on untrustworthy clotting times. Too often wide ranges of normal values are blamed on biological variations when as a matter of fact the true cause is faulty technique. Thus, the normal prothrombin time if carried out according to the procedure as originally described is 12 seconds, yet numerous studies are reported based on prothrombin time normals ranging from 10 to 20 seconds. That these values are the result of defective technique can readily be proven.

At the request of the writer a graduate student in chemistry without any experience in blood clotting obtained a value of 12 seconds on a sample of normal blood the very first time he performed it. He prepared his reagents and did the test entirely from the written directions and obtained no personal supervision. From this it seems apparent that if a clinical chemist were in charge of procedures such as the prothrombin time, the confusion and chaos would quickly be cleared.

The clinical chemist should in addition to his work of running and supervising tests and procedures have an opportunity if possible to participate in clinical research. Many problems will require the joint effort of the chemist and a clinician. The qualified clinical chemist is entitled to be considered an equal in the venture, and his knowledge, judgment and experience should help to play an important role in maintaining a sound scientific attitude. By participating in research, the clinical chemist not only increase his interest but will broaden his outlook and understanding of his field.

* *Delivered before the Annual Meeting Dinner, Milwaukee, Wis. – April 2, 1952*

NATIONAL OFFICIALS TAKE OFFICE JULY 1

The new national officers and Executive Committee of the American Association of Clinical Chemists will take office July 1, 1952. They will serve until June 30, 1953. The officers are:

President:— Albert E. Sobel
Vice-President:— Hugh J. McDonald
National Secretary:— Max M. Friedman
National Treasurer:— Louis B. Dotti

Members of the newly elected National Executive Committee are: John G. Reinhold, Harry Sobotka, Marchelle H. Power, Arthur Knudson, and Arnold G. Ware.

Ballots submitted by the membership for the Nominating Committee were tabulated on April 22, 1952. Those selected include: Joseph Benotti, Louis B. Dotti, Samuel Natelson, Miriam Reiner, John G. Reinhold, Harry Sobotka, and Warren M. Sperry. The tellers for this ballot were Albert Hanok and Andre C. Kibrick.

The Nominating Committee shall hold office for one year, until April 12, 1953. According to Article IX (b) of the Constitution; "The Nominating Committee shall deliver to the Secretary of this Association a list of persons nominated by them for election as officers and members of the Executive Committee not later than sixty days before the Stated Annual Meeting of this Association."

Members of the Association may propose any candidate of their choice by writing to the Nominating Committee.

ABSTRACTS OF PAPERS ON CLINICAL CHEMISTRY

Presented in Cooperation with The Division of Biological Chemistry ACS as part of the Fourth Annual Meeting AACC

Marchelle H. Power, Chairman

STANDARDIZATION OF THYMOL TURBIDITY MEASUREMENTS. John G. Reinhold, Pepper Laboratory of Clinical Medicine, University of Pennsylvania, Philadelphia, Pa.

Considerable divergence exists in values assigned thymol turbidity readings in different laboratories because of the inadequacy of turbidity standards used for calibration of photoelectric photometers. Tests of barium sulfate suspensions and copper sulfate or Evans blue dye solutions have shown each to be unsatisfactory. However, comparative tests of visual and photometric turbidity measurements show the latter to be far superior if properly standardized. The use of suspensions of borosilicate glass for this purpose was suggested by Charles Jones (personal communication). Colloidal suspensions of glass are stable, easily prepared, and in the photometer deviate only slightly from a linear relationship between absorbance and concentration. However, standardization by some independent method is required. Samples of a glass suspension were distributed to 55 laboratories and the thymol turbidity values reported were evaluated statistically to provide a basis for calculation of a factor for converting absorbance of the standard to units of thymol turbidity. The results of this survey and recommendations concerning the calibration of glass suspensions for turbidity tests are described.

RAPID PHOTOMETRIC ULTRAMICROMETHODS FOR THE DETERMINATION OF NITROGEN, IRON, AND PHOSPHORUS FOLLOWING KJELDAHL DIGESTION OF BIOLOGICAL MATERIAL. John C. Claudatus and George T. Lewis, Medical Research Foundation of Dade County, Miami, Fla.

Digestion is carried out in Kjeldahl tubes graduated at 1 ml. Liquid samples are measured in micropipets; solids are weighed on a simple torsion balance made from a fine glass thread which is the result of drawing out a 2-mm. diameter glass rod. Weights are determined as deviations of this thread measured on a scale equipped with a vernier. The sample is digested with 7.5 N sulfuric acid with the addition of small drops of Perhydrol. When digestion is complete, the reagents necessary to color development are added and dilution is made to the mark with water. Readings are made in a Beckman Model DU spectrophotometer using ultramicro cells.

THE DETERMINATION OF SULFHYDRYL AND POTENTIAL SULFHYDRYL GROUPS IN BLOOD AND ITS FRACTIONS. Marie H. Berg, Department of Dermatology and Syphilology, University Hospital, Ann Arbor, Mich.

The red SH-reagent, 1,4(chloromercuriphenylazo-)2-naphthol Bennet and Yphantis, J. Am. Chem. Soc., 70, 3522 (1948) which was utilized by Flesh and Kun to determine SH-groups in tissue extracts Soc. Exptl. Biol. Med., 74, 249 (1950) and histological sections, was used to determine also potential SH-groups in blood and its fractions. While the mercury compound forms an insoluble precipitate with glutathione, it does not react with sulfhydryl components not containing amino groups.

The oxidized sulfur is reduced with the help of zinc granules and hydrochloride and by working with very small amounts of vital material and comparatively large amounts of organic solvent complete denaturation of the proteins is ensured.

The method is based on measuring the disappearance of color from the solvent, can easily be used with any spectrophotometer, and lends itself easily to application in any clinical or research laboratory.

METHOD FOR DETERMINATION OF THE WATER-SOLUBLE PHOSPHORIC DIESTERS OF SMALL MOLECULAR WEIGHTS (EXCLUDING CARBOHYDRATE ESTERS) IN TISSUES. Gerhard Schmidt, Lowell Greenbaum, Pierre Fallot, and S.J. Thannhauser, Research Laboratories, Boston Dispensary, and Department of of Physiology, Tufts Medical School.

A procedure for the determination of glycerylphosphorylcholine in tissues was described in an earlier publication from these laboratories Federation Proc., 10, 244 (1951) . A method for the quantitative determination of the total phosphoric acid diester fraction was developed on the basis of its complete resistance against prostatic phosphatase. A neutralized protein-free filtrate was treated with copper sulfate and slaked lime for the removal of interfering substances (nucleotides, hexosephosphates). The filtrate was neutralized with oxalic acid, and the supernatant divided into three aliquots, A, B, C. A was was incubated with phosphatase; B was hydrolyzed with N hydrochloric acid for 20 minutes, neutralized to pH 5.6, and subsequently incubated with phosphatase. The amounts of inorganic P in A and B were determined. C served for the estimation of the total phosphorus. C—A represented the amounts of diester phosphorus. The inorganic phosphorus in B must be equal to the total P, since the phosphoric acid diesters of tissues are transformed into phosphoric acid monoesters by short acid hydrolysis.

APPLICATION OF SENDROY'S IODOMETRIC CHLORIDE TITRATION TO SOLIDS. Eugene L. Kanabrocki and Chi Che Wang, Biochemical Research Laboratory, V.A. Hospital, Hines, Ill.

The general accepted methods for chloride determination in solids are laborious and require relatively large quantities of material. The proposed method is simple and may be applied to milligram quantities. If sufficient material is available, a sample of 5 or more grams is carefully and quickly freed from fatty and connective tissues with a razor blade on a piece of glass. It is then cut into thin slices of about 2-mm. thickness and transferred into a microhomogenizer. The well homogenized material is immediately placed in a weighing bottle and samples of 0.2 to 0.7 gram are quickly weighed by difference into flasks containing phosphotungstic acid.

If the material is less than 0.7 gram, it is sliced as above and accurately but quickly weighed into a flask containing phosphotungstic acid. The tissue is then thoroughly minced with the flattened end of a glass rod and the mixture is filtered or centrifuged. The filtrate is treated according to Sendroy's iodometric method for chlorides.

Accuracy of the Method:

Average recovery of standard NaCl	= 101.1%
Average recovery of NaCl added to bread	= 103.3%
Average recovery of NaCl added to human tissues	= 100.6%
Average recovery of NaCl added to veal	= 98.5%
Average deviation from A.O.A.C. method	= 1.3%

FRACTIONATION OF AN ACTH PREPARATION BY IONOGRAPHY. Hugh J. McDonald and Edward P. Marbach, Department of Biochemistry, Graduate School and Stritch School of Medicine, Loyola University, Chicago, Ill.

The technique of ionography, or electromigration on wet paper surfaces, was utilized to fractionate an ACTH preparation obtained from pig pituitaries. With ACTH as the migrant, it was found necessary to develop a suitable color test, inasmuch as none of the standard tests for amino acids or proteins were satisfactory. A modification of the bromophenol blue technique was devised. With a veronal buffer of ionic strength 0.015 and a pH of 5.5, and applying a potential of 6 volts per cm. for 3 hours, the ACTH preparation separated into three fractions: a heavy-staining fraction, A, which moved to the negative pole, a light-staining fraction, B, which moved to the positive pole, and a heavy-staining fraction, C, which did not move. As the pH of the buffer used to saturate the paper was increased to 6.0 to 6.6, the mobility of the heavy-staining fraction, A, was found to approach zero, showing that its isoelectric point was in this region. Most of the biological activity, as determined by the adrenal ascorbic acid depletion test, was found to be in this frac-

tion. The isoelectric point of the light fraction, B, which was found to have very little ACTH activity, was shown to be in the region of 4.2 to 4.8.

PREPARATION AND METABOLISM OF C^{14}-CARBOXYL SALICYLIC AND GENTISIC ACIDS. Saul Roseman, Robert Abeles, and Albert Dorfman, Departments Pediatrics and Biochemistry, University of Chicago, Chicago, Ill.

C^{14}-carboxyl salicylic acid was prepared by reaction of o-methoxyphenylmagnesium bromide with $C^{14}O_2$, followed by hydrolysis of the methyl ether with hydrobromic acid. C^{14}-carboxyl gentisic acid was prepared by reaction of p-dimethoxybrombenzene with butyl lithium, followed by treatment with $C^{14}O_2$ and hydrolysis of the resulting dimethyl ether with hydrobromic acid. Vacuum sublimation yielded analytically pure gentisic acid. It seemed possible that part of the salicylic and gentisic acid given to animals might be completely metabolized to carbon dioxide in view of (a) the fact that the fate of part of administered salicylic acid is unknown [Kapp, E.M., and Coburn, A.F., J. Biol. Chem., 145, 549 (1942); Roseman, S., and Dorfman, A., J. Biol. Chem., 192, 105(1951)]; (b) the structural relationship between gentisic and homogentisic acids; and (c) the fact that salicylic acid is partially converted to gentisic. The administration of the radioactive compounds to mice resulted in the excretion of only small amounts of the injected radioactivity in the respiratory carbon dioxide. The results obtained with salicylic acid agree with reported studies [Schayer, R.W., Arch. Biochem., 28, 371 (1950); Alpen, W. L., et al., J. Pharm. Exptl. Therap., 102, 150 (1951)] These data indicate that gentisic acid is not metabolized by the same mechanism as is homogentisic acid.

SULFUR METABOLISM DURING THE HEALING OF EXPERIMENTAL WOUNDS. Martin B. Williamson and Herbert J. Fromm, Graduate School and Stritch School of Medicine, Loyola University, Chicago, Ill.

Wounds heal more rapidly in animals fed a high-protein diet than in those on a low-protein diet. It had been shown that the methionine content of the diet has a marked influence on the rate of healing of experimental wounds. The effect of different levels of protein intake on the healing of wounds appears to be due to the level of methionine ingested, rather than the protein, or total nitrogen, intake.

When wounded rats are fed a 6% casein diet supplemented with either L-cystine or DL-methionine, containing equivalent amounts of sulfur, they show an identical healing index, which is significantly greater than that found in the control rats fed an unsupplemented 6% casein diet. The healing index is measured in terms of the rate of increase in tensile strength of the healing wound with time. The healing index appears to vary directly with the amount of amino acid sulfur retained by the rats. On the other hand, nitrogen retention does not show this correlation. During healing, the ratio of amino acid sulfur to amino acid nitrogen retained by the wounded animal increases. This excess sulfur is evidently required for the greater demands of the healing wound tissue. The amount of extra sulfur retained is also correlated with the healing index.

COMPOSITION OF BONES, TEETH, AND RELATED MINERALS IN RELATION TO FLUID COMPOSITION AND DIET. Albert E. Sobel, Albert Hanok, and Albert Hirschman, Jewish Hospital of Brooklyn and State University of New York, College of Medicine.

Young cotton rats and albino (Wistar) rats were placed on high calcium-low phosphate and high phosphate-low calcium diets. The CO_3:PO_4 ratios of the enamel and dentin of the molars and incisors and that of the bone was much higher on a high calcium diet than on the high phosphate diet. These changes in CO_3:PO_4 ratios of teeth and bones were related to changes in CO_3:PO_4 ratios of blood serum. On corresponding diets, the CO_3:PO_4 ratios of bones and teeth in the cotton rat were lower than in the albino rats.

$CaHPO_4$ placed in solutions at pH 7.4 containing calcium, phosphate, and carbonate ions are converted to apatite. The CO_3:PO_4 ratios of the solid thus formed are related to the CO_3:PO_4 ratios of the solution. These studies correlate in vivo and in vitro phenomena.

As carbonate can be preferentially dissolved by weak acids, one would predict increased caries susceptibility with high CO_3:PO_4 teeth. Preliminary studies to date indicate that both the incidence and severity of caries are about three times as high in cotton rats with high carbonate teeth.

VITAMIN A LEVELS DURING THE HUMAN MENSTRUAL CYCLE. Penni A. Lipschitz and Albert E. Sobel, Department of Biochemistry, Jewish Hospital of Brooklyn.

Fasting serum vitamin A levels were followed about every other day in nine healthy women between the ages of 19 and 24, for at least two complete menstrual cycles. Definite cyclic trends were manifested. Vitamin A concentrations dropped to a low level during menstruation, rose to a peak near the middle of the cycle, and thereafter proceeded to drop until low levels recurred during the new menstrual period. This trend was more marked in three subjects who received large doses of vitamin A several weeks prior to testing.

Observed changes may be explained by the fact, reported in several papers, that serum vitamin A levels change after the administration of hormones. During the menstrual cycle there are changes in hormonal secretion which may regulate the serum vitamin A levels in the same fashion as do injected hormones.

Our milk studies [Am. J. Diseases Children, 80, 932 (1950)] indicated that the transportation of vitamin A across membranes in the body is favored by high blood levels. Blood level fluctuations during the menstrual cycle may be the transportation mechanism for fulfilling the vitamin A requirements of the endometrium and involuting corpus luteum.

ADRENAL IMMATURITY AS A COMMON FINDING IN THE PREMATURE AND FULL-TERM INFANT. Samuel Natelson, Rockford Memorial Hospital.

Evidence is presented that desoxycorticosterone acetate is effective in maintaining salt balance in immature infants. Cortisone appears to be ineffective in this respect. Chemical procedures are described for the diagnosis of adrenal immaturity in infants by analysis of heel blood. Procedures are described for estimating and following daily pH, sodium, potassium, chloride, hematocrit, sugar, urea, and protein levels from birth. Adrenal immaturity is characterized by a high hematocrit which persists for many days after birth, a high potassium level, and lowered sodium and chloride levels in spite of sodium chloride administered, calculated to correct chloride deficiency.

There is apparently no direct relationship between adrenal immaturity and birth weight. Adrenal insufficiency has been found in newborns weighing up to kg. at birth. Some weighing as little as 1200 grams have not shown this abnormality. However, adrenal insufficiency is most commonly found in the group weighing 2 kg. or less. In this weight group 8 out of 26 studied showed this abnormality.

THE EFFECT OF ACUTE CORONARY OCCLUSION IN DOGS ON THE CHEMICAL CONSTITUENTS OF THE HEART. A. G. Mulder, Charles D. Proctor, William Marshall, and Blanche Tigerman, Department of Physiology, Stritch School of Medicine and Graduate School, Loyola University, Chicago 12, Ill.

The chemical changes occuring in an occluded area of the heart are of considerable theoretical importance as an index of the status of the injured tissue. In these experiments the thorax and pericardium were opened in anesthetized dogs and a branch of the anterior descending coronary artery was ligated. The occlusion was maintained for varying periods, ranging from 2 to 8 hours. At the termination of this time the heart was rapidly removed and frozen. A sample from the occluded area was removed and analyzed, and the results were compared with a sample taken from the nonoccluded portion of the same ventricle, and also with samples taken from control ventricles. In the occluded area there was a marked diminution in the concentration of adenosine polyphosphate and a variable decrease in phosphocreatine concentration. A marked decrease in glycogen content and an increase of lactic acid occurred. The sodium concentration rose and the potassium concentration fell. The significance of these results is discussed.

LOCAL SECTION NEWS

AACC SECTION FORMED IN WASHINGTON, D.C. AREA

Fourteen members and guests of the American Association of Clinical Chemists, representing 12 different laboratory interests in the Washington, Baltimore, Richmond area, met informally with Dr. John Reinhold at Walter Reed Army Medical Center on February 18th to discuss the organization of a Washington section of the A.A.C.C. Dr. Reinhold briefly outlined the objectives, activities, and experiences of the Association. Informal discussion resulted in general agreement on a formal organizational meeting and a scientific program for late April or early May. All A.A.C.C. members of the area, now listed in the Directory, will be notified when arrangements have been completed. Biochemists and clinical chemists who are not members are invited to attend and are urged to consider active participation as members or associate members. Information about qualifications for membership and application forms may be obtained from Miss Miriam Reiner, Gallinger Hospital or Capt. David Seligson, M.C., Walter Reed Army Medical Center.

Lt. Col. Monroe E. Freeman, Chief, Department of Biochemistry Army Medical Service Graduate School, Walter Reed Army Medical Center and Chief, Allied Science Section, M.S.C., Office of the Surgeon General, Department of the Army, was appointed temporary Chairman of the newly formed section.

Other chemists attending were Dr. Arthur Stull, Surgeon General's Office, Dept. of Army, Dr. John Irish, Veterans Administration, Dr. Nelson F. Young, Medical College of Va., Dr. J. Sendroy, N.I.H., Dr. Joseph Roe, George Washington University Medical School, AMSGS, Dr. H. Wishinsky, Georgetown University Medical School, Miss Marie Andersch, University Hospital, Baltimore, Md., Dr. McColgan, Doctors' Hospital and Lt. E. M. Hodes, N.M.C., and Lt. Winer, W.R.A.H.

The first scientific session of the section was held at the Walter Reed Army Hospital May 13. The session featured a Symposium On Clinical Flame Photometry.

Lt. Col. Monroe E. Freeman, Temporary Chairman of Newly Formed Section

The Design of Instruments for Flame Photometry

by

Dr. Robert Bowman, National Institute of Health, Bethesda, Maryland

Clinical Chemical Applications of Flame Photometry

by

Dr. John Reinhold, University of Pennsylvania Medical School, Philadelphia, Pennsylvania

Clinical and Physiological Experiences with Flame Photometry

by

Dr. Robert Berliner, National Institute of Health, Bethesda, Maryland

Following the program, a business meeting of the members of the Association undertook the organization of the Washington Section, application for charter, and election of officers for 1952-53.

BOSTON SECTION

The Boston Section held its fifth meeting of the current season on March 19th at the New England Center Hospital in Boston.

After a short business meeting, a round-table discussion ensued on the determination of serum cholesterol.

Norbert Benotti, Director of the Boston Medical Laboratory, presented a critical discussion of the Sperry method, which was accompanied by an excellent series of 35 mm. slides illustrating its technique. Highlighting his talk was the presentation of data showing the reliability of the Sperry method when portions of identical sera are analyzed by several different workers in other laboratories. The agreement in results obtained in this survey justifies the regard that most clinical chemists hold for the Sperry method.

Carol Cooney of the New England Center Hospital Chemical Laboratory discussed the Kendall method (Forrest Kendall, Goldwater Memorial Hospital, New York) for total cholesterol, (J.B.C. April 1952). This procedure, though offering simplicity, is yet capable of impressive accuracy. Miss Cooney presented data which involved many estimations done by both the Kendall and Sperry methods, the latter being used as a criterion.

Below are tabulated a few representative values excerpted from her talk:

SPERRY	KENDALL (duplicates)
362 mg.%	363, 359 mg.%
229 mg.%	222, 222 mg.%
202 mg.%	206, 206 mg.%
221 mg.%	220, 216 mg.%

It will be seen that the method compares very favorably with the Sperry method and offers great reproducibility in duplicate as well. Briefly, its technique involves saponification of the esters directly in the serum (0.2 cc.) with alcoholic KOH, followed by extraction of the total cholesterol with petroleum ether. The color development is done conventionally by a modified Liebermann-Burchard reagent.

The Boston Section held its fourth meeting of the current season on February 20, at the New England Center Hospital.

The speaker for the evening was Dr. Herbert Fischer, who is on a year's leave to Tufts Medical School from Frankfort, Germany. He discussed paper chromatography from its development in England to techniques which it offers for potential use in clinical chemistry.

He reviewed many techniques, including those for sugars and their phosphate esters, keto acids, carotenoids, steroid hormones and porphyrins, and discussed the specific methods for developing their chromatograms.

Treated also were the applications of paper chromatography in the pharmaceutical field and in inorganic analysis.

NEW YORK – METROPOLITAN SECTION

The last scientific meeting for the 1952 Spring semester of the New York Section was held Tuesday evening, March 25, at the New York Academy of Sciences. Dr. Bernard Klein, Chemist at the Kingsbridge Veterans' Administration Hospital, presided.

The topic of the evening "Sodium and Potassium, Clinical Significance and Quantitation" was discussed by two well known workers in that field. Professor Charles L. Fox, Jr., New York Medical College, spoke on "The Clinical Significance of Sodium and Potassium Determinations". Dr. Fox's talk was very well illustrated with slides featuring actual case histories of various disease states in which the accurate electrolyte determinations played a very important part in the treatment of the patients.

Dr. Joseph Greenspan, of the Process and Instruments Co., Brooklyn, N.Y., designer and manufacturer of a widely used flame photometer spoke on "The Design and Use of Instruments for the Determination of Sodium and Potassium In The Clinical Laboratory". Dr. Greenspan's talk took the main points from the various questions and inquiries received by his office concerning the operation of flame photometers. He also speculated on the further instrumentation for clinical chemistry laboratories, with instruments that are at the moment well beyond the scope of the average hospital budget. He said, "If the demand for such new instruments is forthcoming, manufacturers will make every effort, through design and manufacture to bring the prices within the range of the average laboratory."

Dr. Greenspan also urged the members to write to the manufacturers telling about any complaints or better ideas of design and use of instruments. "It is this way that designers and manufacturers can keep in touch with the laboratories that use the instruments in their daily work."

PHILADELPHIA SECTION

The regular monthly meeting of the Philadelphia section was held Thursday, April 24 at 7:30 p.m. Dr. Earle Barker of the Department of Medicine, University of Pennsylvania Medical School, gave a very clear and interesting talk on kidney function tests.

At the May 22 meeting a group of chemists from Mt. Sinai Hospital, Philadelphia, will discuss their work on blood coagulation.

RENAL FUNCTION TESTS

Earl S. Barker – Hospital of University of Pennsylvania

General principles of functional testing: (1) Functional testing will not make etiologic diagnoses or differentiate acute and chronic disease. (2) There is a wide physiological range in the same individual and an even wider range from one individual to another. "Normal" values are difficult to establish. (3) Physiologic testing frequently gives most information when measuring response to stress. (4) Early characteristic patterns are lost with later diffuse damage. (5) No test is better than its execution.

Measurement of specific renal functions: An understanding of the principles (such as "clearance" and related concepts) involved in these primarily research methods permits a better understanding not only of medical articles, but also of the application of the ordinary clinical tests. (1) Glomerular filtration rate as clearance of inulin, mannitol or endogenous creatinine. (2) Renal plasma flow as clearance of para-aminohippurate or diodrast. Renal vein catheterization permits application to situations in which extraction is decreased. (3) Tubular maximal capacity, by saturating a tubular reabsorptive (glucose) or excretory (para-aminohippurate) system. Represents the mass of functioning renal tissue. (4) Derived functions include "filtration fraction", renal "extraction", "renal vascular resistence", etc.

Clinical methods: (1) Concentration. Specific gravity less than 1.020 after 12 hrs. fluid restriction *("nothing that can be poured")* suggests functional impairment. Mobilization of edema fluid may interfere. (2) P.S.P. excretion parallels roughly renal plasma flow, but also depends on adequate tubular function. Early impairment is demonstrated best in 15 minute specimen. (3) Urea clearance and Blood Urea Nitrogen indicate roughly glomerular filtration. Clearance shows early impairment better, while Blood Urea Nitrogen is best for following late changes. Use of "standard urea clearance" or "maximal urea clearance" depends on rate of urine flow. Endogenous creatinine clearance may ultimately replace urea clearance as a clinical test. (4) Blood chemical changes, especially in electrolytes and acid-base balance may supplement renal function tests. (5) Excretory urography may show functional impairment by inadequate visualization. If Blood Urea Nitrogen exceeds 40 mgms/100 ml., concentration of dye is not likely to permit visualization.

Ordinary clinical functional tests are adequate for management of most patients. The more difficult and time-consuming research tests, are designed to determine generalities from large numbers of tests. Routine urinalysis, cultures, cystoscopy, retrograde urography and other non-functional tests are of great aid in diagnosis and management.

SOUTHERN CALIFORNIA SECTION SURVEY OF INTER-LABORATORY ACCURACY

Pooled serum was collected and analysed by one laboratory for sodium, potassium, calcium, total protein, A/G ratio and total cholesterol. Since all results fell in their respective normal ranges, the pooled serum was fortified with sodium chloride and calcium chloride so that at least two of the analyses should have abnormal results. Aliquots of this serum were then mailed out by first class mail in screw-cap vials to member laboratories in the Los Angeles area with instructions to perform the above-mentioned tests in duplicate and to return the duplicate results anonymously with a notation of the method used, the date of the performance of each test and the date of receipt of the specimen. In nearly every case the samples were received within 24 hours of mailing. In most cases the analyses were performed within 3 days of mailing.

Ten to fourteen laboratories reported on each determination and the results were tabulated and analyzed statistically. The arithmetic means of the reported results with limits, expressed as percentages of means, which would include all of the reported results, are as follows: Sodium 156.8 meq/liter ± 7%, Potassium 5.98 meq/liter ± 10%, Calcium 6.31 meq/liter ± 13%, Total Protein 6.68 gms% ± 9%, A/G Ratio 1.96 ± 15%, Total Cholesterol 255.6

mgs% ± 12%. Total protein was determined in two independent laboratories by Kjeldahl, both reporting 6.9 gms%. This value is taken instead of the mean for the figures quoted above inasmuch as it is presumed to be a better estimate than the mean for the true level of this substance. The values for the A/G ratio reported above are those for the laboratories using the Howe technique of fractionation. Two laboratories using the Wolfson-Cohn technique reported A/G ratio values of 0.85 and 1.03. With this exception, comparison of the various methods used with the results obtained reveal no consistant correlation, probably due to the relatively small number of analyses run by any one method. Comparison of results with the time elapsed between mailing and running the tests also fail to reveal any significant trend. After all results were in, the laboratory which performed the original preliminary analysis again ran the determinations on the sample of the original pooled serum and obtained results not significantly different from its original results.

From the differences between reported duplicates, the coefficients of variation of the means were determined. Limits of three times the coefficients of variation for the analyses are as follows: Sodium ± 1.3%, Potassium ± 1.4%, Calcium ± 2.5%, Total Protein ±5.6%, A/G Ratio ± 10.6%, Cholesterol ±6.9%. Inasmuch as these coefficients of variation are calculated from a relatively small sample, they cannot be considered too reliable. The indications are, however, that the analyses for sodium, potassium and calcium are not quite as good as can be reasonably expected, inasmuch as the differences between laboratories appear to be considerably larger than the precision within laboratories. On the other hand, the precisions within laboratories for total protein, A/G ratio and cholesterol are not much less than the differences between laboratories. It would appear, therefore, that these three tests are pretty well under control, and certainly no great reduction in inter-laboratory differences can be obtained unless the precision within laboratories is increased. Of the 70 analyses reported, only one result can be considered in gross error; this is a calcium report of 4.7 meq/liter.

The Southern California Section of the American Association of Clinical Chemists is planning to continue this type of study, keeping in mind two objectives:

1. To determine the intra- and inter-laboratory errors of laboratories which are presumably reasonably well-controlled in the statistical and chemical sense.

2. Determine the causes of discrepancies where they appear and thereby improve the quality of clinical chemistry in the participating laboratories.

CHICAGO SECTION

The first combined meeting of the Chicago Section of AACC with the Chicago Section of ACS was very successful. It was held on March 21 at the Furniture Club of America.

Dr. Albert Szent-Gyorgi of the Marine Biological Laboratory spoke on "Blueprints of Life" before the combined meeting after the dinner. Dr. Szent-Gyorgi is Director of the Institute for Muscle Research at the Woods Hole institution and he spoke on the aspects of actin and myosin of muscle in contraction.

After the main speaker several Group Meetings were held Our section was well attended – more so than when we have had our previous separate meetings. Dr. Charles A. Humes of Coleman Instruments Co. spoke on the "Theory of pH Meters" and Dr. Samuel Natelson of Rockford Memorial Hospital spoke on "Interpretations of Blood pH in Clinical Medicine." Dr. Natelson is the section vice-president. After the speeches Dr. Humes and Mr. George Kincaid of Beckman Instruments demonstrated their respective pH meters.

The Chicago Section intends to have 2 more joint meetings with the ACS – on April 25 and May 23 – at the Furniture Club of America, 666 North Lake Shore Drive. Dinner at 6:15, Meeting at 7:45 at which main speaker will be Dr. Edgar C. Britton who will talk on "Industrial Research." Afterwards (9:00 p.m.) our local meeting will have Dr. Hugh J. McDonald, Professor and Chairman of Department of Biochemistry, Stritch School of Medicine of Loyola University, talk on "Ionography." Dr. McDonald has been elected national vice-president of the AACC.

NEW INSULIN DESCRIBED

In the January number of the American Journal of Physiology 168, 37, 1952, Fritz Bischoff describes a new insulin which does not form an insoluble precipitate at the pH of the body and yet produces a delayed effect when given either by the intravenous or subcutaneous route. It is formed by changing the regular insulin molecule in an environment of concentrated aqueous urea or methyl urea under specific time-temperature relations. By the subcutaneous route the delayed effect in rabbits and human diabetics is nearly identical to that produced by the depot insulins, NPH Iletin, a protamine zinc insulin, and histone insulin, neither of which produces a delayed effect when administered intravenously.

Dr. Bischoff is a member of the Executive Committee of the AACC and is also a member of the Editorial Advisory Committee of THE CLINICAL CHEMIST. Dr. Bischoff is associated with the Santa Barbara Cottage Hospital Research Institute, Santa Barbara, California.

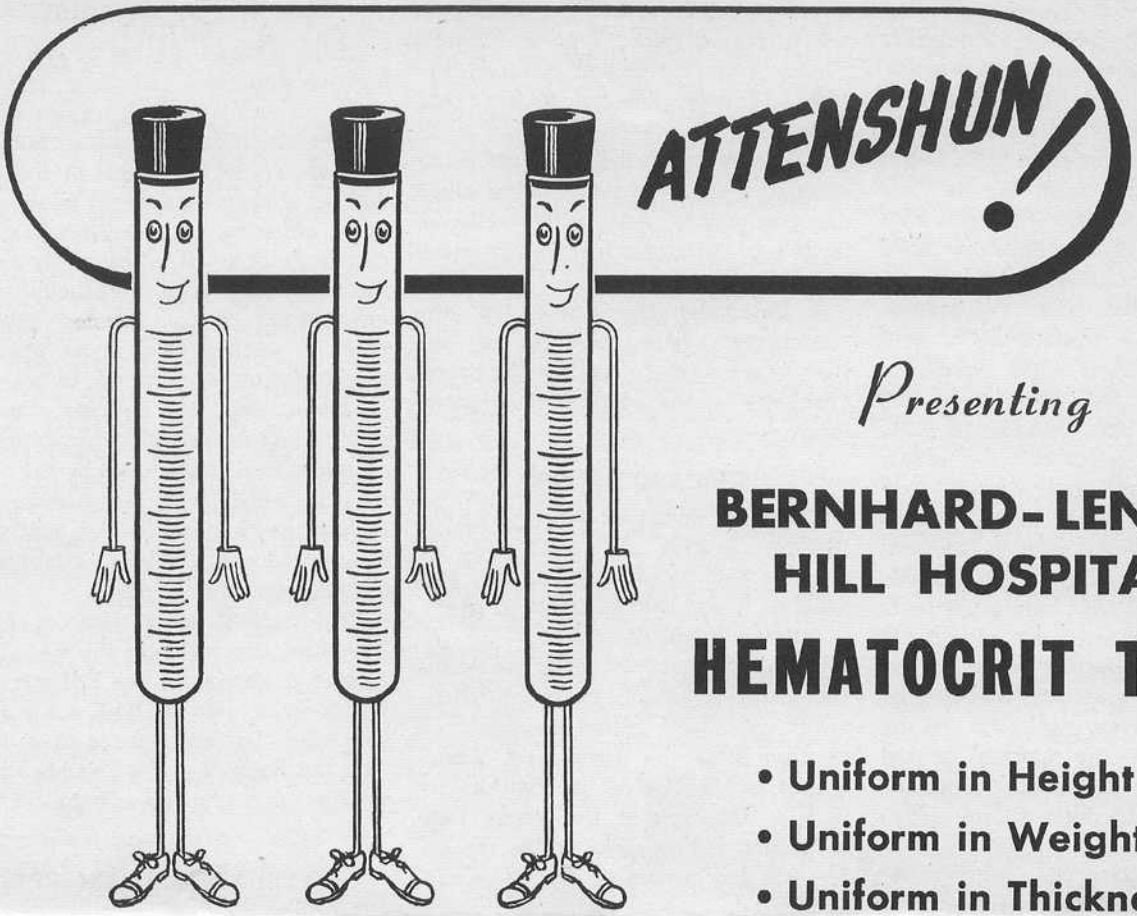
INTERNATIONAL CONGRESS

The Division of Biological Chemistry of the American Chemical Society is cooperating with the American Society of Biological Chemists in an effort to send a few young American biochemists to the International Congress of Biochemistry in Paris this summer.

The selection of applicants will be made by a committee established by the American Society of Biological Chemists. Any American biochemist who is interested, whether or not he is a member of the Division of Biological Chemistry, and who is under 40 years of age should write immediately to Dr. Elmer H. Stotz, University of Rochester, School of Medicine and Dentistry, Rochester 20, N. Y.

SITUATION WANTED

CLINICAL CHEMIST – PhD June 1952, Univ. of Iowa, Iowa City. 27 yrs. old, single, veteran. 3 yrs. experience in routine clinical chemistry lab at University Hospital. Sigma Xi, Phi Lambda Upsilon. Publications. Desires position in teaching hospital with opportunity for research. Eastern U.S. preferred. Saul Green, Pathological Chemistry lab, E-325 University Hospital, Iowa City, Ia.



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The CLINICAL Chemist

NEWSLETTER OF THE AMERICAN ASSOCIATION OF CLINICAL CHEMISTS, INC.

VOLUME 4, NUMBER 4 JULY 1952

CODE OF ETHICS PRESENTED TO AACC

As one of the major accomplishments of their term of office, the outgoing National Executive Committee formulated a CODE OF ETHICS for professional guidance in the practice of clinical chemistry. The last three Executive Committee meetings this spring, saw a major percentage of time spent on this code.

Final wordage was approved at the last meeting of the committee and the code was ordered published in full in this issue of THE CLINICAL CHEMIST, so that the organization membership may study the articles and contribute suggestions before the code is finally approved.

The Guide to Ethics is published on page 6, except for one section, section 3 Article II; Advertising and Publicity. The wording of this section is being prepared to conform with accepted professional ethical standards. It will be published as soon as available.

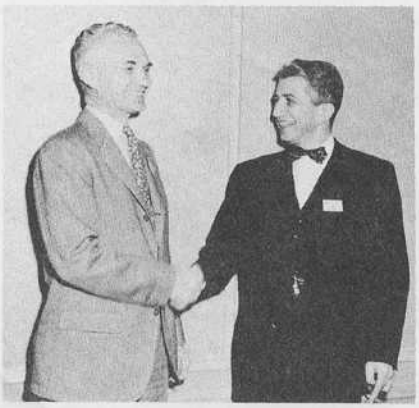
Suggestions as to changes and additions should be sent to the National Secretary, Dr. Max M. Friedman, Queens General Hospital, Jamaica 2, N.Y., or to THE CLINICAL CHEMIST, Box 123, New York 21, N.Y.

BY-LAWS ADOPTED

The first articles of By-Laws for the administration of the American Association of Clinical Chemists, Inc. were adopted by a vote of the membership 202 to 5. The membership was canvassed by mail ballot and the votes were counted at the Executive Committee meeting held in New York, May 27.

With its adoption by the membership the By-Laws, as published in THE CLINICAL CHEMIST, Vol. 4 No. 2 March 1952, are now the official addition to the constitution of the Association.

NEW PRESIDENT



Dr. Albert E. Sobel, newly elected President of the AACC is welcomed to his new office by Dr. John G. Reinhold, outgoing president. (Courtesy Chemical & Engineering News)

AMEND BY-LAWS OF CLINICAL CHEMISTRY BOARD

The American Board of Clinical Chemistry, Inc. has, by amending to the By-Laws, extended the period during which the Board will review applications for Certifications of Clinical Chemists without examination, from July 1, 1952 to December 31, 1952. Applications filed before the December date will be considered by the Board at subsequent meetings.

The Board also authorized publication of a list of those presently Certified. This list is expected to be available from the Secretary about September 1, 1952.

The fee for each application form was increased from $1.00 to $3.00, which will only partly defray the office expense involved in handling these forms. The application forms may be obtained from Jos. W. E. Harrison, Sc.D., Secretary-Treasurer, American Board of Clinical Chemistry, Inc., 1921 Walnut St., Philadelphia 3, Penna. upon forwarding the fee and the name of the applicant as it is to be recorded.

PRESENT BISCHOFF AWARD AT SEPTEMBER MEETING

The Ernst Bischoff Award in Clinical Chemistry will be presented at an Association Dinner-Meeting to be held Tuesday evening, September 16, at Atlantic City, N.J. The Dinner-Meeting has been arranged as part of the program of the 1952 National Meeting of the American Chemical Society, September 14-19.

The program has been arranged by the association program committee, and have been assured by Dr. Otto Schales, Secretary-Treasurer of the Division of Biological Chemistry, that if enough pertinent papers are submitted there will be a scientific session on clinical chemistry that will be held the same day.

The first National Annual Meeting of the American Association of Clinical Chemists, Inc., was held in Atlantic City four years ago. This coming September, that convention city will be the scene of the first presentation of the specially designed bronze medal, scroll, and $500 award to a clinical chemist, for achievements and devotion to the science.

The program for the dinner will feature the first Ernst Bischoff Lecture "An Extrapolation Into The Future of Clinical Microanalysis", delivered by Dr. David Glick, Professor of Physiological Chemistry, University of Minnesota Medical School. Other speakers will be, Mr. H.G. Terwilliger, President of the Ernst Bischoff Company, who will dedicate the first award, and Dr. Harry Sobotka, Chairman of the Award Committee.

The meeting will also feature a short address by Dr. Albert E. Sobel, newly elected President of the Association, titled "Clinical Chemistry In Europe".

The CLINICAL Chemist

Newsletter of the American Association of Clinical Chemists, Inc.

P.O. Box 123
Lenox Hill Station New York 21, N.Y.

VOL. 4, NO. 4 JULY 1952

MICROBIOLOGY BOARD ENCOUNTERS OPPOSITION

The progress made in medicine during the past two decades has depended to a large extent upon the increased utilization of the basic sciences, chemistry, physics and microbiology. The influx of science into the medical arts in this era has made it virtually impossible for any one individual to achieve and maintain competence in all of the basic sciences and the various branches of clinical medicine. As a result, basic scientists have been recruited by those practicing modern medicine and we now see increasing numbers of chemists, physicists and biologists in the laboratories servicing the medical profession.

Means for establishing the competence of the scientist engaged in laboratory work on biological material derived from human sources is a step forward to better public health. The American Board of Clinical Chemistry has undertaken the task for the chemists. Physicists are certified by the American Board of Radiology. Recently plans were formulated for an American Board of Medical Microbiology. In contrast to the American Board of Clinical Chemistry, an independent body organized by the then existing interested chemical societies, the microbiologists planned to include representatives of the medical profession and to request sponsorship of the Advisory Board for Medical Specialists of the American Medical Association. The College of American Pathologists opposes the establishment of this new certifying body.

The practicing pathologist, who may be the administrative head of a laboratory service, has an obligation to the community to exploit as rapidly and fully as possible the contributions of chemistry, physics and microbiology. The employment of experts in this field is essential for the benefit of the patient. To group these scientists under the label "a vast horde of other laymen",* for whatever motive, reveals a lack of appreciation of the contributions made by these scientists both in research and in service. Very few scientists, if any, including pathologists are blessed with the wisdom of knowing all phases of laboratory work. Perhaps the question should be raised as to who is a layman in respect to what. In most cases the pathologist is a layman in respect to the laboratory practice of chemistry and the same may hold true for microbiology.

There is a great difference between the practice of the medical arts and the practice of laboratory science. Competent chemistry is chemistry, whether performed at the request of a practicing physician or for other purposes. It is not the practice of medicine.

The contributions of microbiology in the service of humanity are many. The vaccines and antibiotics are now taken for granted. A team of microbiologists, biochemists, and organic chemists have recently developed a fermentation process for the production of cortisone (C&EN *30*, 2623, 1952). The major advances in the fight against cancer, heart disease, and the diseases of aging are being made at the laboratory benches of the basic scientist. To go on record as opposing the natural integration of science into the medical arts, by imposing restrictions based on the type of university degree, is not in the public interest.

We believe that the College of American Pathologists and the various specialty boards in basic science have a common meeting ground. The goal should not be obscured by differences of opinion on the definition of the practice of medicine. The goal is the improvement of the health of man through expert laboratory service.

*See page 7

THE SECRETARY REPORTS

At the year's end there is always a temptation to summarize the accomplishments of the previous year. With the expiration of the 1951-52 Executive Committee, The Association may look back to a year of real accomplishments.

The increase in membership, activities, and prestige of the organization is well known to the readers of THE CLINICAL CHEMIST. Advances in the field of legislation, liaison with other scientific specialties, and the various gratifying scientific and social gatherings have been adequately described. The code of ethics now drawn up and outlined in this issue of the newsletter indicates that the clinical chemist has not only come of age, but he is ready to govern his own activities.

An interesting development in the past year has been that in international relationships as they pertain to clinical chemistry. The Association was represented at the Diamond Jubilee of the American Chemical Society, along with a great many other domestic and foreign societies. At that time also two eminent scientists, one from Great Britain and another from The Netherlands, were made Honorary Members of the AACC. During the meetings of the International Union of Pure and Applied Chemistry further opportunities presented themselves for contacts with clinical chemists from all parts of the world. At that time your secretary was privileged to attend a dinner meeting of the World Conference of Executive Secretaries of Chemical Societies. These activities resulted in contacts between the Association and various other groups of clinical chemists throughout the world.

From all this one is tempted to conclude that although only a few years ago the clinical chemist was comparatively isolated in his specialty, today he has gained strength and confidence through his affiliations in this and other countries.

Max M. Friedman

BOX 123

Letters From Members

Dear Sir:

I read with interest the Secretary's report in the March issue of THE CLINICAL CHEMIST. The AACC would indeed render a great service to its members by supplying them with employment information. In that connection, I wonder if the Association could not adopt, at least for the present, the system which was previously used by the Federation of American Societies for Experimental Biology (L.K. Andervont, *Fed. Proceedings* 10, 684(1951)." Under that system one of the members acts as the clearing station for employment information and prospective employers and applicants for positions send forms to that individual. I realize the shortcomings of such a scheme, but it would take the financial and administrative burden from the hands of the Association, and, given the proper individual, provide faster and more confidential service than advertisements in THE CLINICAL CHEMIST.

Very truly yours,
Bethesda, Md. *Erich Heftmann*

COLLABORATION STUDIED

The request of the American Pharmaceutical Association for a committee of the AACC to revise the section on "Reagents and Preparations for Use in Clinical Laboratories" of the National Formulary (NF IX), has been studied by the Executive Committee.

At the last meeting of the AACC Executive Committee, a committee, consisting of Louis B. Dotti, Max M. Friedman and George T. Lewis, was appointed to study the effect of collaboration with the APA's revision program, on our Association's standardization program and publications of the Committee On Methods.

NEW MEMBERS ELECTED BY THE EXECUTIVE COMMITTEE
June 10, 1952

A. Harriet MacDonald	Boston, Mass.
John R. Maher	Ft. Baker, Cal.
Eugene M. Baker	Alexandria, Va.
Julia V. Pastewka	Erie, Pa.
Ralph E. Peterson	Silver Spring, Md.
Mary F. Ming	Trenton, N.J.
Penni A. Lipschitz	Brooklyn, N.Y.
Marion E. Webster	Washington, D.C.
Richard H. Ettinger	Washington, D.C.
Harry G. Anrode	Iowa City, Iowa
Jerry Weisberg	Brooklyn, N.Y.
Daniel Sanshuk	Silver Spring, Md.
Joseph Plestina	Chicago, Ill.
Philip E. Halpern	Philadelphia, Pa.
Arthur Stull	Washington, D.C.

DESIGN AND USE OF INSTRUMENTS FOR THE DETERMINATION OF SODIUM AND POTASSIUM IN THE CLINICAL LABORATORY

by

Joseph Greenspan, Ph.D.

Director of Research, Process & Instruments, Brooklyn, N.Y.

Many articles have appeared describing the principle of the flame photometer, the many advantages of the internal standard flame photometer over the absolute type, the constructional features of different versions of this instrument, and the comparative performance characteristics of existing commercially available units. It is not our intention to repeat or extend these discussions. Rather, we shall present a number of questions which have arisen in the daily use of flame photometers and shall attempt to answer these questions from the point of view of a designer of instruments.

One question frequently asked by users of flame photometers is whether it is necessary to use propane or acetylene as fuel. Cannot *illuminating gas* be used? As a matter of fact, illuminating gas can and is sometimes used. It is applicable to many of the flame photometers currently available altho a small change in the burner design may be required. However, the question should really be changed from 'can' to 'should' one use illuminating gas? House illuminating gas varies in composition in different parts of the world, whereas tank propane is rather constant in composition. This may introduce inconsistency of calibration curves if an instrument is moved from one place to another. However, this is not too serious a problem since one can calibrate an instrument at each given location, using the illuminating gas at that particular place.

Unfortunately, there is no guarantee that the illuminating gas will remain constant in composition at any *one* location. It is not at all unusual for a 'slug' of gas of different composition to come thru the gas lines and thereby change the flame color with consequent errors in analysis. Only by watchfulness and by calibrating more frequently can such effects be overcome.

An even more serious problem in the use of illuminating gas is that arising from pressure fluctuations. Illuminating gas from house lines is usually at low pressure, and this low pressure varies thruout the day as the load on the gas lines varies. Since the light output of the flame is a marked function of temperature and, in turn, upon the pressure of the fuel gas, it is very important to maintain constant fuel gas pressure. While this may be accomplished rather easily thru mechanical regulators at the high pressures present in propane tanks, it is not easily done with commercially available regulators at the low input pressures of illuminating gas lines. We would therefore suggest that propane is a preferable fuel until good low pressure gas regulators become available.

A second rather troublesome problem is that due to *background*. Two sources of background should be distinguished: *contamination* from impurities in the air reaching the flame (soap powder, tobacco smoke, laboratory dust, etc.) and *noise level* due to factors such as changes in temperature of flame arising from fluctuations in the "controlled" air and gas supplies.

Contamination can be minimized in several ways: all air reaching the flame should be passed thru an efficient filter; room air must not be drawn up thru the ports or valve openings at the bottom of the burner by closing off all such openings; a chimney with enclosed bottom may be used to surround the flame and thereby prevent room air from reaching the edges of the flame. In most cases, a good filter in the compressed air line is adequate.

The attempts to lower noise level background thru control of air and gas pressures have led designers in many directions. Burners have been designed which use air from the compressor only. These require very careful control of air pressure. Some burners do not require such careful control since they draw up air directly from the atmosphere (in addition to compressed air) and thereby utilize the constancy of atmospheric pressure as a means of regulation of air pressure. However, such use of direct atmospheric air increases contamination background.

Since all available flame photometers introduce the fuel gas directly into the burner, all units require good control of gas pressure to minimize noise. Some instruments rely on illuminating gas line pressure, others on propane tank regulators, and some on special regulators in addition to tank regulators. In any case, background noise depends very much upon the degree of control of the air and gas supplies, even in the case of flame photometers using the internal standard method of analysis.

The use of the internal method of analysis minimizes but does not eliminate the need of good pressure regulation of air and particularly gas supplies since the effective photocurrent ratios will not in general be exactly the same for varying flame conditions.

A third problem which has disturbed instrument designers is that of producing an *efficient atomizer*. Many of the atomizers have an efficiency of less than 5%, i.e. 95% of the spray particles are large and drop out of the air stream before reaching the flame. Atomizer efficiency has been increased in some cases by using very fine capillaries as aerators to produce a fine spray. This, however, results in frequent clogging of the fine capillaries. Another method is to introduce the sample axially directly into the burner, thereby using all of the sample to increase efficiency and thus, light output. The use of a high temperature flame further helps to vaporize the large amount of water present in the particles of spray that do get into the flame.

Another point which frequently disturbs users of flame photometers is concerned with the *life of photocells*. Except for occasional faulty cells, the life of the vacuum type photocells should be very long. This long life should also be true for the barrier layer selenium cells used in many flame photometers provided the cells are *hermetically sealed*. Our tests and reports of performance of several hundred hermetically sealed barrier layer cells in daily use over periods as long as four years in some cases show that practically all of these have maintained their original sensitivity thruout the test period.

A considerable degree of confusion has arisen in the field of flame photometry due to the indiscriminate use of the terms *sensitivity, accuracy* and *reproducibility* in reporting results. The advertising literature in this field has perhaps been the worst offender in this connection. Thus, statements like 'the instrument is accurate to 1%' appear quite frequently. Since several different meanings can be given to this statement, it should be more clearly limited.

An example may perhaps serve to illustrate the difficulty: A given instrument has a noise level background equivalent to 0.004 milliequiv. per liter of Na (and/or K)—i.e. results can be reproduced to 0.004 milliequiv. per liter. The range of the instrument is set to determine between 0.2 and 1.4 milliequiv. per liter. Now, if one is analyzing Na (and/or K) at a concentration of 0.4 milliequiv. per liter, this instrument can distinguish between 0.400 and 0.404 milliequiv. per liter or "1 %" at this concentration. If we perform an analysis at a lower concentration, say 0.2 milliequiv. per liter, we can distinguish between 0.200 and 0.204 milliequiv. per liter or only "good to 2%". Or, if one operates at the upper end of the range, this instrument can distinguish between 1.400 and 1.404 milliequiv. per liter or "better than 0.3%". To state that the instrument is good to 0.3% or to 1% or to 2% are equally misleading statements unless accompanied by the specific concentrations at which these reproducibility percentages were obtained.

Another factor to keep in mind is that the *sensitivity* (i.e. change in reading per unit change in concentration—not to be confused

with 'limit of detectability') is variable in the case of the internal standard method. It should therefore be noted that it is pointless to increase the sensitivity of an instrument to a value which exceeds the noise level background.

The possibility of determining *calcium* by means of the flame photometer is an ever present thought. Since calcium gives a red color to a flame, there is no reason why this color cannot be picked up by the photocell thru appropriate color filters. However, the problem is not one of detection of calcium lines but rather one of interpretation of the readings which are obtained.

Apparently the *intensity* of the calcium lines is affected by all types of interfering substances always present in biological preparations: sodium, potassium, proteins, etc. Analyses of *pure* calcium chloride solutions are straightforward and significant. This is not the case in solutions containing calcium plus sodium plus potassium plus protein unless we can make up a series of standards with composition identical in all respects to the unknowns of biochemical and clinical interest. Only under such circumstances where a clear interpretation of results is feasible will it be worthwhile using higher temperature flames, more sensitive photoelectric pickups, interference filters or monochromators for calcium determination.

An examination of papers and instruments appearing since 1945 shows that they are mainly concerned with details such as type of burner, atomizer, fuel, regulator; photocell, etc. With very few exceptions, we seem to be content to make minor improvements on the original instruments. From a designer's point of view, one wonders why we need a flame (-there are many other methods of exciting spectra) and, if we do need a flame, why spray into the flame (-there are other means of introducing samples into a flame), why use one to five ml. of diluted sample rather than a drop?

It would seem that the research and clinical laboratories, which usually present new ideas for the instrument manufacturers, have not been doing so in this field. It is timely for some research and design work to be done toward production of an instrument, not necessarily a flame photometer, to analyze for Na and/or K in a simple manner, using small samples, and selling for a relatively low cost.

Some of us realize this need and are carrying out the necessary research work. Ideas in this direction, which will probably be forthcoming from the laboratories using these instruments, are very much needed. It should be realized that only by hearing the suggestions—and complaints—of users can the designer of instruments be in a position to meet the requirements of a well functioning instrument of improved and of novel design.

Mention should be made of a few other instruments which are now available for determination of traces of elements and which may be adaptable to clinical problems when further developed and simplified. The various X-ray methods employing secondary emission of photoelectrons, or using X-ray absorption, or X-ray fluorescence look especially promising. Traces of elements have been determined quantitatively in a single biological cell, or even discrete part of a cell, by means of some of these X-ray techniques. Recently, a mass spectrometer for analysis of solids has become commercially available. Traces (parts per million) of cations and many anions may be determined by this means. A minute amount of solid sample is required and many elements and groups can be determined in this trace sample. While this solid mass spectrometer has been used essentially for analysis of rocks, it should be directly applicable to substances such as bone, teeth, food products, and other solid biological materials. Not only can direct analyses be performed with this instrument but also isotopic ratio measurements for those cases where stable isotope tracer experiments are desirable.

It is true that these instruments and a number of others are still in the 'research' stage but they offer such great potentialities for extending the range of determinable elements and biochemical techniques that they should be kept in mind when considering special problems. Of course, their price is prohibitive for most laboratories at this stage of development but, as the demand for such instruments grows, the instrument designers will undoubtedly bend every effort to simplify these new instruments with consequent lowering of price.

MINUTES OF EXECUTIVE COMMITTEE

May 27, 1952

The Executive Committee met at the Medical Arts Center Hospital in New York City on May 27, 1952 at 8:00 P.M. Those present included John G. Reinhold, President; Albert E. Sobel, Vice President; Max M. Friedman, National Secretary; Louis B. Dotti, National Treasurer; Harry Sobotka, Ellenmae Vierqiver, and Harold D. Appleton (by invitation).

The minutes of the April 14, 1952 meeting in New York City, previously distributed, were adopted without correction. The minutes of the April 1, 1952 meeting in Milwaukee, previously distributed, were corrected for paragraph two, where "Editorial Advisory Committee" was substituted for "Editorial Board."

The Association By-Laws, as published in the March, 1952 issue of the newsletter, were adopted as Amendment I to the Constitution by a membership vote of 202 to 5.

Pearl R. Anderson, on behalf of the membership in the Washington-Baltimore-Richmond area, requested that the status of a section be accorded to the group. Since the constitutional requirements have been met, it was moved, seconded, and unanimously approved that this area be designated as the Washington-Baltimore-Richmond Section.

The Philadelphia Section By-Laws were approved as submitted, pending some changes requested by the Executive Committee to bring these by-laws into conformity with the National By-Laws. These amended by-laws are to be returned to the Section for its approval.

Preparations were made for the Ernst Bischoff Award of 1952 which will be presented at the ACS meetings in Atlantic City in September, 1952. Expenses for a guest speaker for this ceremony were approved to a maximum of one hundred dollars.

Approval was given to the present policy of "editorial discretion" in THE CLINICAL CHEMIST as it pertains to potentially controversial comments submitted by members. It was recommended, however, that the Editorial Board should frequently point out that such opinions do not necessarily represent the official position of the Association.

The request of the American Pharmaceutical Association for the AACC to collaborate in revising the section on "Reagents and Preparations for Use in the Clinical Laboratory" of NF IX was discussed at great length. Various comments were contributed, but the majority opinion was that further study should be given to the matter, especially as to the affect such a collaborative project would have on the standardization program and manual of recommended methods sponsored by the AACC. A committee consisting of Louis B. Dotti, Max M. Friedman, and George T. Lewis was appointed to study such a proposed collaboration and make its recommendations.

Louis B. Dotti, National Treasurer, was requested to submit an annual budget for the fiscal year 1952-53 as required by the by-laws.

The code of ethics was completed and tentatively approved. This code is to be published in the July, 1952 issue of the newsletter. Members will be invited to contribute suggestions before final approval by the Executive Committee.

The meeting was adjourned at 10:45 P.M.

Respectfully submitted,

Max M. Friedman, National Secretary

Article I

DEFINITIONS AND GENERAL CONSIDERATIONS

WHAT CONSTITUTES CLINICAL CHEMISTRY

Section 1. Clinical chemistry is that branch of chemistry which deals with the composition of the secretions, excretions, concretions and fluids of the human body in health and disease, and the chemical composition and metabolism of cells and tissues. Also the search for the presence of substances (or their derivatives) given for diagnostic or therapeutic reasons and the search for poisons (or their derivatives) are properly included in the field of clinical chemistry.

WHAT CONSTITUTES A CLINICAL CHEMIST

Section 2. Any individual equipped by education and experience to engage in the practice of clinical chemistry as defined above shall be considered a clinical chemist.

RESPONSIBILITY OF THE CLINICAL CHEMIST

Section 3. The profession of clinical chemistry, as an adjunct to the profession of medicine, has as its ultimate responsibility the welfare of the public. The clinical chemist shall use to the best of his ability his scientific skills and knowledge to the benefit of all men without regard for racial or religious origin.

EDUCATION AND EXPERIENCE

Section 4. The clinical chemist shall have as his goal the acquisition of the best available education and experience in chemistry. He shall strive to constantly enlarge and improve his knowledge.

RELATIONSHIP TO THE MEDICAL PROFESSION

Section 5. The clinical chemist shall deal with the medical profession at all times at the highest professional level. The compensation by the patient for chemical services shall include no rebates or commissions to any persons for solicitation or referral of analyses.

RELATIONSHIP TO THE PATIENT

Section 6. The clinical chemist shall perform no services to the patient except on advice or prescription from any licensed practitioner of the medical arts. All reports and discussion of chemical findings shall be only between the chemist and the physician in charge.

Article II

PUBLICATION, PATENTS, AND ADVERTISING

DISSEMINATION OF SCIENTIFIC INFORMATION

Section 1. The clinical chemist shall freely discuss with his fellow chemists and with scientists in related fields, advances in the science of clinical chemistry. To withhold information for personal gain shall be considered unethical. This Section shall not apply to information classified by a government agency for reasons of national security.

PUBLICATION OF RESEARCH FINDINGS

Section 2. An obligation to publish, after critical evaluations, new knowledge pertaining to the science of clinical chemistry obtained through research or other observations, shall be acknowledged.

ADVERTISING AND PUBLICITY

Section 3. **(to be written)**

PATENTS AND COMMISSIONS

Section 4. It shall be considered unethical for the clinical chemist to receive personal profit for any invention or patent in the field of clinical chemistry pertaining directly to the public health.

Article III

OBLIGATIONS AS A CHEMIST

ACCURACY OF CHEMICAL ANALYSES

Section 1. The clinical chemist shall have as his goal the attainment of the highest precision and specificity that existing procedures permit.

REPORTING OF SIGNIFICANT FIGURES

Section 2. The analyst shall not report figures or decimal places that lack significance.

CRITICAL SURVEY OF METHODS

Section 3. It shall be considered inadequate practice for a clinical chemist to use any procedure that has not been adequately studied in his own laboratory.

REPLICATES AND RECOVERIES

Section 4. The systematic use of controlled procedures, such as replicates and recoveries, shall be considered indispensable to good practice.

RESULTS OF UNCERTAIN MAGNITUDE

Section 5. The clinical chemist shall not report any result of uncertain magnitude of error, unless this uncertainty is clearly made known to the recipient of the report.

Article IV

INTERPRETATION OF RESULTS

DUTIES TO THE PHYSICIAN

Section 1. The clinical chemist shall, at the request of the physician in charge of the patient, outline to the physician the significance of any chemical findings, and suggest further determinations that would aid the physician in making a diagnosis or prognosis.

DUTIES TO THE PATIENT

Section 2. The clinical chemist shall under no circumstances transmit to the patient either the results or the interpretation of the results.

COMPENSATION FOR CONSULTATIONS

Section 3. The clinical chemist shall receive no compensation from the patient for interpretation of results to the physician.

Article V

THE CLINICAL CHEMIST AS AN INDIVIDUAL

A SCIENTIST AT ALL TIMES

Section 1. The clinical chemist shall conduct himself as a scientist at all times.

HIGH REGARD FOR MEDICAL PROFESSION

Section 2. The clinical chemist shall hold in high esteem the profession of medicine, to which he is an adjunct.

RELATIONSHIP WITH ANALYSTS

Section 3. The clinical chemist shall carefully supervise the analysts working in his laboratory. He shall train these workers to the best of his ability, encourage them to attain the highest professional competence, and teach them by word and example to adhere to the ethical standards herein outlined.

PUBLICATIONS AND COLLABORATORS

Section 4. The clinical chemist shall contribute as much as possible to research and advancement of his specialty. He shall encourage those working in his laboratory to do likewise. He shall accept as collaborators whenever possible the junior members of his staff and encourage these members to contribute to the science of clinical chemistry. He shall to the best of his ability assist physicians and other scientists by fully collaborating in their efforts to advance medical science.

Article VI

CONCLUSION

The ethics of the clinical chemist shall at no time be inferior to the standards long prevailing in the medical profession. The outline here presented can act only as a general guide, and shall be periodically reviewed and revised. It is for the individual to judge his professional conduct in the light of his obligation as a scientist to serve mankind.

CERTIFICATION OF MICROBIOLOGISTS OPPOSED BY PATHOLOGY GROUP

The following paragraphs are quoted directly from the Secretary's Newsletter of the College of American Pathologists, April 1952. Space limitation does not permit us to publish the entire comment. The elimination of non-pertinent paragraphs does not alter the meaning or intent of the article. Please see Editorial on page 2. (The Editor)

Attention has already been called to the efforts that have been made to organize a new specialty board — the American Board of Medical Microbiology. The new board would have a status similar to the eighteen specialty boards now in existence. It proposes to issue certificates to Ph.D. workers as well as to physicians. Strange as it may seem the Advisory Board for Medical Specialties is said to have given tentative approval to the new board despite the protest of the College of American Pathologists. The approval will not be effective unless approved also by the Council on Medical Education and Hospitals of the A.M.A.

It is indeed surprising that a proposal of this sort which actually admits non-medical men into a field of medical practice could have succeeded as far as it has. Surely the Advisory Board for Medical Specialties has failed to foresee the implications involved. The certification of non-physicians in one field of medical practice will provide an entering wedge for *clinical chemists, clinical psychologists, radiologic technicians, optometrists, chiropodists, and a vast horde of other laymen into other fields of medical practice.* (italics ours)

. . . . . .

The membership has been informed of the activity of the Board of Governors . . . . the College had sent a formal letter to the Secretary of the Advisory Board for Medical Specialists when it became evident that the proposed new board would be considered. This letter objected to the approval by the medical group of a specialty board designed to certify the competency of non-medical individuals. The exact wording of this letter is as follows:

"The Board of Governors of the College of American Pathologists, presently assembled at the Drake Hotel, takes note of current reports of the organization of a specialty board in microbiology and its presentation to the Advisory Board for Medical Specialties for approval. Should such a board of microbiology be proposed to the Advisory Board for Medical Specialties, the Governors of this College respectfully petition the Advisory Board to withhold final action at this time. It is further requested that the specific provision of any such proposal be made public, to the end that certified pathologists who are members of the American Medical Association be given an opportunity to express their views before any final action be taken on such a proposal.

"The Governors of the College are especially desirous of preserving the principle that *laboratory medicine, including bacteriology, is a part of the practice of medicine* (italics ours), and that certification be restricted to those who are licensed to practice medicine."

PHILADELPHIA SECTION

The regular monthly meeting of the Phila. section was held May 22 at Lankenau Hospital, Philadelphia. Dr. David Meranze and Messrs. Gollub, Schenker, Kaplan and Feldman, of Mt. Sinai Hospital, Phila., talked on Blood Coagulation. The following officers were elected for the coming year: President, Dr. Cecilia Riegel, Lankenau Hospital; Vice-President, Dr. Alexander Keller, Graduate Hospital; Secretary, Albert Sample, Bryn Mawr Hospital.

CHICAGO SECTION

The Chicago Section held its final scientific meeting of the spring season on June 20 at the Chicago YMCA.

Dr. Jerimiah Stamler, of the Cardiovascular Research Department of the Michael Reese Hospital, Chicago, discussed "Cholesterol and Atherosclerosis".

BOSTON SECTION

The Boston Section held its sixth and final meeting of the current season on Wednesday, May 14, at the New England Center Hospital. The speaker of the evening was Dr. Arnold S. Relman, Assistant Professor of Medicine at the Boston University School of Medicine, who spoke on the subject of "Sodium and Potassium Depletion in Clinical Medicine."

The talk was prefaced with a survey of the earlier studies by Peters, Van Slyke, Butler, and others, which led to a greater appreciation of the role played by the electrolytes, and the diagnostic value of their determination in various pathological states.

Dr. Relman outlined in a very lucid manner the basic physiology of electrolyte balance, discussing in some detail the role played by the skin, lungs, kidney and gastro-intestinal tract in the absorption and loss of sodium and potassium. Since sodium is the chief cation of extracellular fluid, he pointed out the great loss which can occur as a result of repeated thoracic and abdominal paracentesis. Greater awareness by physicians of the value of electrolyte studies, coupled with the rapidity with which they may be determined with the flame photometer, will save many patients, he stated.

The meeting concluded with a short business session, after which the Boston Section adjourned for the summer.

SOUTHERN CALIFORNIA SECTION

The current season was concluded with the annual dinner meeting held June 3 at the Carolina Pines Restaurant, Los Angeles. Election of officers featured the program. Richard J. Henry, M.D., Bio-Science Laboratories, automatically succeeded Arnold G. Ware, Ph.D., as Chairman. Merle Lovell Lewis, Ph.D., Research Associate in Biochemistry, University of Southern California Medical School, succeeded Dr. Henry as Program Chairman and Chairman-Elect. Kenneth D. Johnson, Chaney Chemical Laboratory, was returned to a second term as Secretary-Treasurer. In retiring, Dr. Ware thanked individually the various committees and persons who had served the section during the past year; and Dr. Henry, as one of his first acts, asked all these persons to continue with their assignments for the coming year.

Dr. Henry arranged monthly scientific programs throughout the past season. A brief resume of programs not previously reported upon in these columns follows; and, as space permits, appropriate abstracts will appear in later issues of THE CLINICAL CHEMIST.

A symposium devoted entirely to original research papers of members was held February 5 at the Los Angeles Veterans Administration Center. Some of these papers are now in preparation for publication. Kenneth D. Johnson determined serum calcium by direct titration using a sequestering agent ("versenate"). Saul Kanter, Palo Alto Veterans Administration Hospital, determined free ester and total cholesterol without saponification (work carried out at Los Angeles Veterans Administration Center in association with Joe Goodman and Jane Yarborough). Joe Goodman, Long Beach Veterans Administration Hospital, applied this method to learn the effect of insulin shock therapy on serum cholesterol levels. George Kingsley, Los Angeles Veterans Administration Center, determined the striking light enhancement effect of organic solvents, especially acetone, in the flame photometric determination of sodium and potassium. Harry Sobel, Cedars of Lebanon Hospital, reported results on a new rapid iodine method (work in association with Stanley Sapsin). Richard Henry, Bio-Science Laboratories, after giving a few fundamentals of applied statistics, described a careful evaluation of the errors introduced by specific steps of some common clinical chemical methods.

Merle L. Lewis, Ph.D., who set up the Microchemistry Laboratory of the Pediatrics Department, Los Angeles County Hospital, spoke on "Micro-Methods in Clinical Chemistry" (March 4, Los Angeles County Hospital).

Arthur Adamson, Ph.D., Associate Professor of Chemistry, University of Southern California, a pioneer worker in the wartime projects for the separation of rare earths by ion exchange techniques, discussed the history and application of "Ion Exchange Resins" (April 1, Cedars of Lebanon Hospital).

Raymond Abernethy, Head Toxicologist, Office of County Coroner, Los Angeles, explained the "Role of the Toxicologist", discussing a typical day's work and problems and describing some new methods he has introduced in his laboratory, especially the determination of barbiturates by ultraviolet absorption spectrophotometry (May 6, Coroner's Office and Toxicology Laboratory).

The local section has now completed its second survey of inter-laboratory accuracy. This time a serum pool was analyzed in duplicate for protein, chloride, icteric index, quantitative total bilirubin and thymol turbidity. In addition, duplicate sodium and potassium determinations were performed on three separate days. Results will be reported later.

The local section participated in the annual convention of the California Association of Clinical Laboratories, held at Santa Barbara May 17 and 18.

DR. ROBERT B. GIBSON

The Association Dinner held during the Federation meeting the past April in New York, featured a unanimous vote of appreciation to Professor Robert B. Gibson, University of Iowa, for his outstanding work in training doctorate candidates in clinical chemistry. The following is the official letter sent to Dr. Gibson.

Professor Robert B. Gibson
Pathological Chemistry Laboratory
University Hospitals
Iowa City, Iowa

Dear Professor Gibson:

The American Association of Clinical Chemists wishes to express to you an appreciation for the contributions you have made to clinical chemistry. Not the least of your accomplishments have been the many students and associates whom you have trained in an inspiring manner. This must be a particular delight to you, at the time of your retirement from full-time activities.

For the Association, I wish you many more years of good health in which to enjoy your retirement.

Sincerely yours,

Max M. Friedman, Ph.D.
National Secretary

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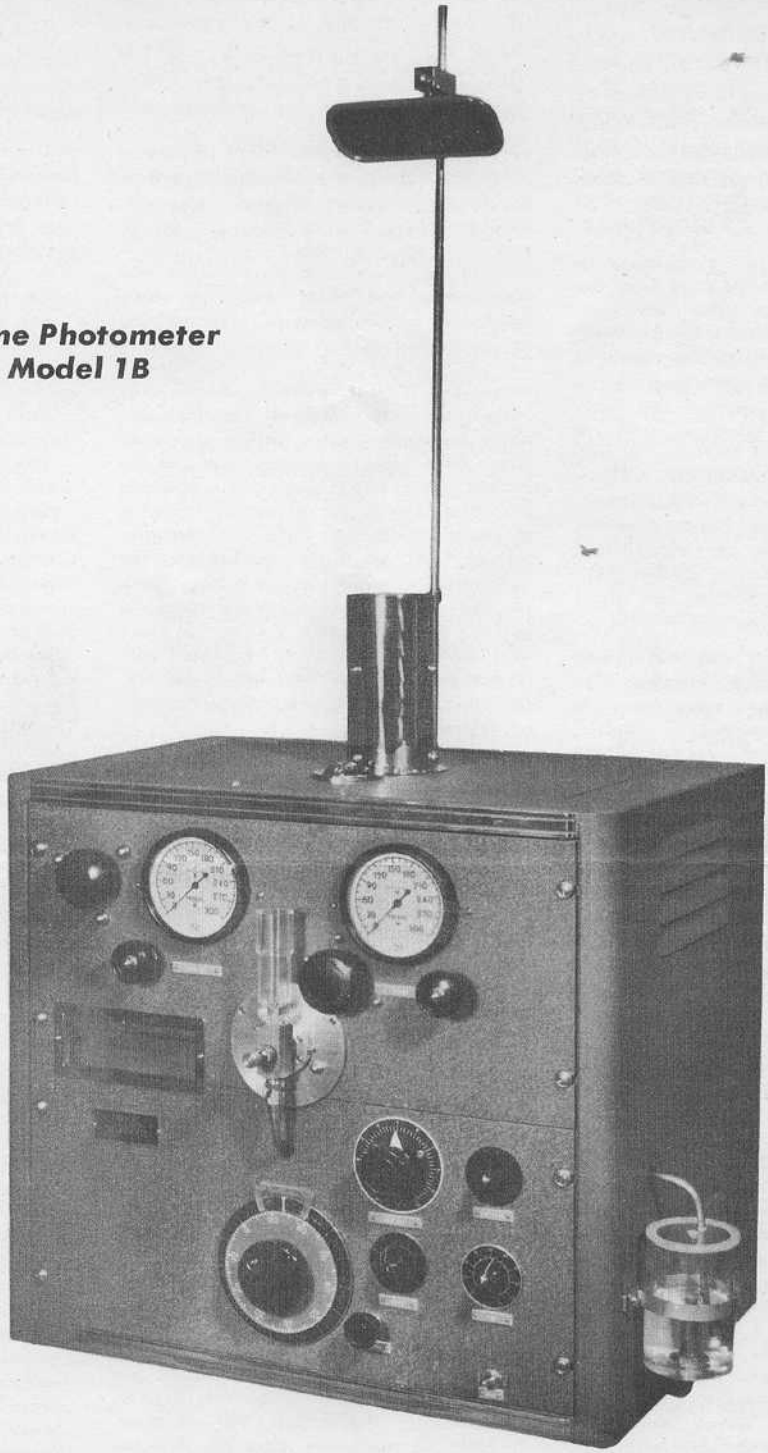
Model 1B



PROCESS & INSTRUMENTS

BROOKLYN 22, N. Y.

CLINICAL CHEMISTRY IN NORWAY

by

Jens Boe, Karl Wolfert and Rolf Askevold

University Trained Chemists Association, Committee for Biochemistry with Medical Chemistry.

MEMORANDUM ON ADMINISTRATION AND DIVISION OF WORK BETWEEN BIOCHEMISTS AND PHYSICIANS AT NORWEGIAN HOSPITAL LABORATORIES.

Modern medicine is a cooperative science, drawing its knowledge from the different branches of the natural sciences. This method has proved to be the best, and often the only possible way to achieve results. Without close cooperation between chemists, physicians and other scientists, the great advances made in medical science during the past decade could not have been realized. Since knowledge is becoming increasingly specialized, it is particularly important that the cooperative spirit should also prevail in daily hospital work, in order to achieve best results.

THE DEVELOPMENT:

For a long time, small ward laboratories have been functioning in our hospital. The chemical work performed there was of a qualitative nature (detection of albumin, sugar, etc.). The work was under the supervision of the ward physician. The methods in use were simple and often dependent on personal judgement. The results were, therefore, not standardized. Such semi-quantitative methods have hampered the development of clinical chemistry as a tool in medicine. In time, increasingly more accurate and quantitative methods were adopted, but the supervision of the laboratories still remained under the physician. These men, however, realized that they were incapable of keeping up with the rapid advances within their own field and also that of biochemistry. This was the reason for the strong demand for establishment of central laboratories.

Previously, physicians had considered chemistry as an assisting science, where no technical knowledge on the part of the personnel was necessary. This attitude has been changed by the rapid development in science. Today, chemical examinations demand fully-trained specialists who are responsible for the accuracy of their results. These results often guide the physician in making a diagnosis and sometimes are the only means for arriving at the correct diagnosis. Certain quick and sure diagnoses, based on chemical findings, will often save the life of the patient. Not only do physicians direct their treatment according to chemical analyses, but also utilize the results to control the course of the treatment. Unreliable chemical determinations are to be classed with unconscientious treatment of the sick.

Future development in clinical chemistry will lead to the full utilization of physico-chemical methods of analysis. Thus, one will become more dependent on the work of chemists and physicists. Ethics demand that the physician do his utmost to aid the sick. This, of course, implies that he must always judge his own competence and never undertake tasks which he cannot manage. Whenever the physician in charge of a case finds that he cannot proceed alone, he consults a specialist. This is regarded as the only correct procedure among medical men, since failure to consult with a specialist might have serious consequences for the patient. This development has introduced a greater demand for specialized training in modern medicine. Thus, the properly trained and qualified chemist is the specialist to whom the physician turns for the correct chemical information. In spite of this, we have a feeling that many still think that everything concerned with illness is a field for the medical man only, including the physicians and particularly pathologists.

TRAINING OF THE PHYSICIAN:

The M.D. receives general medical training (6 years). The scope of the training is to educate M.D.'s capable of working as general practitioners. A specialist in medical biochemistry with physiology (laboratory doctor) must in addition to the M.D. have 1 year as general practitioner, 1 year in a hospital (8 months internal medicine, 4 months surgery). In addition to this, he needs 3 years of practice at a biochemical or physiological laboratory. There is, however, no demand that the education takes place at a laboratory under the supervision of a qualified biochemist. Through his medical education, the physician does not receive sufficient chemical practice, and consequently, he cannot be a biochemist. However, because of his education he will be the liaison between the chemical laboratory and the wards. He learns to appraise and interpret the results of chemical examinations, for the use of physicians in the wards.

TRAINING OF THE CHEMISTS:

The education of the chemists at our universities requires 7 years of study. At our technical high school, the education of chemical engineers takes 4½ years of concentrated chemical study. The chemical engineers frequently have 1-2 years of chemical practice before they commence their study. To graduate, the chemists must prepare a thesis based on *independent research work.* They must show that they can use their knowledge in a logical and critical manner. They are also required to show that they are mature enough to plan a research project, and have the ability to appraise the methods used, the sources of error, their influence on the results, etc. Through this thesis work, they must demonstrate an ability to consult the literature and critically appraise publications. They take examinations in other topics within the natural sciences. Mathematics is a required subject. The course of studies includes general chemistry, organic chemistry, inorganic, analytical, synthetic, and physical chemistry. A biochemist is also trained in physics and biological subjects.

The development, in the past and in the future at our hospital laboratories, demand a thorough knowledge of chemistry, mathematics and physics of the responsible director. The apparatus employed becomes more complicated and are more demanding for thorough training of the director and other personnel. Even with a thorough training in chemistry and bordering natural sciences, the chemist must specialize in this branch of chemistry, and he must continuously read the literature and publications to keep up with the development. Most chemists in medical biochemistry have specialized training and long experience in the hospital laboratory before they can become responsible directors. At a chemical hospital laboratory (central laboratory), the chemist must be responsible for the chemical examinations, the methods and apparatus in use. He must also be responsible for the chemical part of the research work carried out.

ADMINISTRATION TODAY:

Both physicians and chemists are at work today at a chemical hospital laboratory. The administration differs at the different hospitals. At Sentral Sykehuset in Trondheim, a medical doctor is the director of the central laboratory, the same is the case at Drammen Sykehus. At Haukeland Sykehus, the laboratory is under the supervision of a chemist. At Ullevål Sykehus, the laboratory is supervised by a physician (part time work), the remaining personnel are department physician, assistant physician and a chemist. At Aker Sykehus, the director of the laboratory has recognized training, both as a physician and as a chemist. Rikshospitalet has the largest and oldest chemical hospital laboratory in Norway. It was established in 1926, and has for the last 15-20 years functioned as the central laboratory to Rikshospitalet. Since the establishment, the laboratory has been supervised by a a chemist.

CONCLUSION AND SUGGESTION FOR THE ADMINISTRATION IN NORWAY:

Medical biochemistry is the science of the chemical structure of the animal organ-

ism and of the chemical reactions which take place therein. The doctor is trained for his work as a general practitioner. His practical training is a little laboratory work, mostly clinical training. The chemist is educated in the basic sciences (chemistry, physics and mathematics). Practical training and daily laboratory work occupy the whole period of study. The physician is aware that the chemist has proved his understanding of the scientific method by virtue of his training and independent scientific research. The physician however; has to learn this after his graduation if he wants to do scientific work or to use scientific methods in his trade. The laboratory doctors special training is merely practical, partly in the clinic and partly in the laboratory. Laboratory work is lacking in a doctor's training. Practice at laboratories without qualified biochemical supervision is approved.

The tasks at the clinical central laboratories are of a biochemical nature. They are very differenciated and are developing quickly. They call for cooperation between doctors and biochemists. This cooperation is already an approved principle in our country. Such cooperation can only be efficient and lasting with a mutual respect between the two groups, and a complete equality. This means that the laboratory doctor *(pathologist)* and the biochemist are placed administratively equal and get an equal salary. It is understandable that any disagreement on competence could arise on this matter. (See par. about laboratory director at Rikshospitalet.)

The two trade groups' fields of work are sharply divided, but a close cooperation is necessary to complete the tasks of a hospital laboratory. The biochemist's field of work is the biochemical laboratory, which must be run under his administration and supervision. Here, the laboratory doctor is unqualified. The pathophysiological laboratory, the natural link between the laboratory and the wards, must be under the laboratory doctor's administration and supervision. Here the biochemist is unqualified. The laboratory doctor uses his results, but needs advice to use the results of the chemical examinations in the best possible way. Clinical medicine is in a clash between a descriptive period represented by morphology, pathological anatomy, and roentgen, and a humoral period represented by biochemistry, biophysics, and pathological physiology. Humoral pathology, the science of the chemical composition of the cellular and extracellular fluids in a diseased organism, and of the regulation of this composition, has till now not received full recognition in our country.

In bacteriology, one has for a long time seen the advantages and the necessity of using both descriptive and humoral methods to the same extent.

It is the chemists task, by chemical and physical chemical methods, to determine the composition of these fluids, and to state if this composition is abnormal. Therefore he has to be a biochemist. It is the task of the pathophysiologist (pathologist) to transfer this knowledge into practical clinical medicine. Therefore he has to be a physician. Both these tasks are equally important in a modern hospital. Lack of understanding of these facts is the real reason for any disagreement on competence. Only by using both the results of the descriptive and of the humoral methods in clinical medicine, can the best results for our sick and our health be achieved.

For the benefit of the public health in our country, we suggest the following administration at our hospital laboratories. The central hospital laboratory is to be divided into *two coordinated departments:*

1) Pathological physiological department.
   Responsible director: pathophysiologist
2) Biochemical department.
   Responsible director: biochemist.

Both responsible directors must be juxtaposed, administratively and in salaries.

These departments, though independent in nature, must cooperate so closely that they should be under the same roof. This organization will not lead to increased expenditures for our hospitals.

The tasks of the chemist at a biochemical hospital laboratory are:

1) to be responsible for the performance and control of chemical examinations requested by the wards, for use in diagnosis and treatment of the patients.

2) to be responsible for the purchase and use of apparatus, chemicals and all other equipment used in the biochemical laboratory.

3) to take part in scientific investigations with his own personnel.

4) to advise doctors and others who want to work scientifically on biochemical matters.

5) to advise the administration in general chemical questions concerning the operation of the hospital.

6) training and teaching of personnel working in the laboratory.

TRAINEESHIP AND EMPLOYMENT OF BIOCHEMISTS.

To insure the supply of specialists for these positions, there has to be training positions for the biochemists, in the same way and the same extent as in the case for pathophysiologists (pathologists). In the responsible directorship positions of the biochemical laboratories only fully trained qualified biochemists may be employed. At the filling of these positions the application should be sent to a committee for biochemistry, appointed by University Trained Chemists Association (U.K.F.), the Norwegian Chemical Society, (N.K.S.) and Norwegian Civil Engineers Organization (N.I.F.), mutually, for advice on the qualifications of the applicants.

Advertisements of biochemists position should appear in the official advertisement publication and in Tidsskrift for Kjemi, Bergvessen og Metallurgi, which is the trade journal for Norwegian chemists.

NEW BOOKS

ADVANCES IN ENZYMOLOGY, Volume XII

Edited by F.F. Nord. xi — 570 pages. $9.75 Interscience Publishers, Inc. 250 Fifth Avenue, New York 1, N.Y. Reviewed by B. N. La Du, Jr., N.Y.U. Research Service.

Volume 12 in this series contains papers on Oxidoreduction in Chloroplasts by Hill, Mechanisms of Fixation of Carbon Dioxide by Utter and Wood, Enzyme Substrate Compounds by Chance, The Specificity of Peptidases by Smith, The Enzymatic Hydrolysis and Synthesis of Acetyl Choline by Nachmansohn and Wilson, Starch Chemistry by Meyer and Gibbons, Enzymes of Starch Degradation and Synthesis by Bernfeld, Biological Methylation by Challenger and Reaction of Borate with Substances of Biological Interest by Zittle.

The articles are each reviewed with a critical appraisal of the literature and, in addition, much new information is included. The papers are written by experts on the various subjects and the one on carbon dioxide fixation is particularly well done. This volume is a valuable addition to the series and it is highly recommended to those interested in enzymology.

INTERNATIONAL CONGRESS

The Executive Committee appointed Dr. Otto Schales, of the Alton Ochsner Medical Foundation, New Orleans, La., the official representative of the American Association of Clinical Chemists to the Second International Congress of Biochemistry to be held this month in Paris.

POSITIONS OPEN

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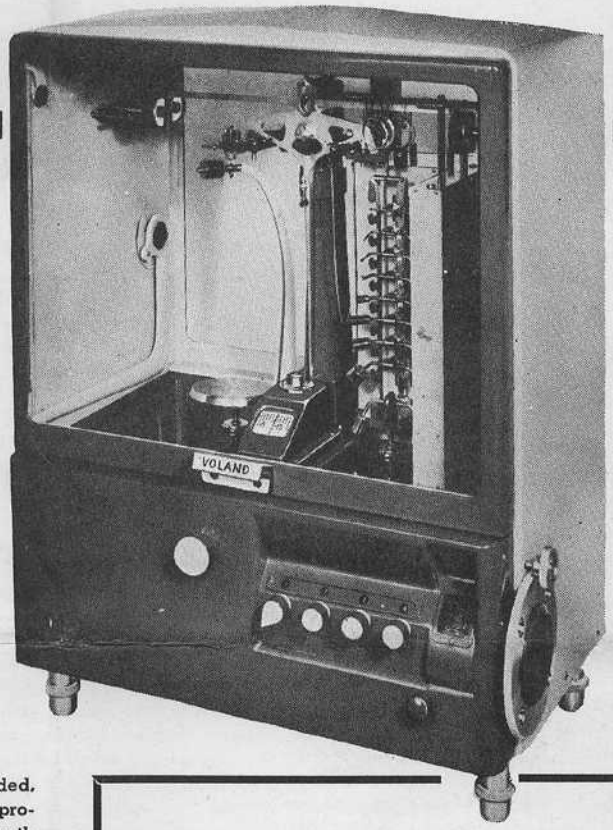

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The CLINICAL Chemist

NEWSLETTER OF THE AMERICAN ASSOCIATION OF CLINICAL CHEMISTS, INC.

VOLUME 4, NUMBER 5 SEPTEMBER 1952

PRESENT FIRST AWARD IN CLINICAL CHEMISTRY

1952 ERNST BISHOFF AWARD PRESENTED POSTHUMOUSLY TO Dr. JOS KAHN

Atlantic City, N.J.:— The first Ernst Bischoff Award In Clinical Chemistry was bestowed posthumously to Dr. Jos Kahn, who until his untimely death last December was chemist to the Maimonides Hospital, Brooklyn, N.Y. The award was made at the special Dinner-Meeting of the American Association of Clinical Chemists and was part of the scientific and social program of 122nd National Meeting of the American Chemical Society, held September 16 in the Belvedere Room of the Hotel Traymore in this city.

Mr. H.G. Terwilliger, president of the Ernst Bischoff Company, dedicated the award and made the first presentation. Dr. Harry Sobotka, Chairman of the first Award Committee, accepted the award on behalf of Dr. Kahn's family. The first Ernst Bischoff Lecture was delivered by Dr. David Glick, Professor of Physiological Chemistry, University of Minnesota Medical School.

In awarding the medal to Jos Kahn, the AACC Award Committee presented the following citation:

"The American Association of Clinical Chemists presents The 1952 Ernst Bischoff Award to Jos Kahn for representing Clinical Chemistry at its best and working for its advancement effectively and in collaboration with his associates. Jos Kahn contributed substantially to the medical sciences, both as an individual and as a member of research groups; provided leadership for the clinical staff, and trained a great many assistants in this specialty. He advanced the cause of Clinical Chemistry as a Charter member and in various offices of the American Association of Clinical Chemists. The work of Jos Kahn is identified with the progress of the professional and ethical standards of Clinical Chemistry."

Dr. Jos. Kahn

The Ernst Bischoff Award, presented annually to a deserving Clinical Chemist by the AACC, consists of a bronze medal, scroll and $500.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE AFFILIATION

The American Association For The Advancement of Science has announced that it has accepted the credentials of the AACC as submitted by the Executive Committee and has elected the AACC as an affiliate society of the AAAS.

With this affiliation the AACC takes its place among the honored and respected scientific organizations of the country. Dr. Michael Somogyi, of St. Louis, Mo., outstanding Clinical Chemist was designated by the AACC to represent our association on the council of the AAAS.

SPECIAL MEETING WELL ATTENDED

by
Virginia C. Brown

The clinical chemist, attending the 122nd National Meeting of the American Chemical Society in Atlantic City, N.J., September 14-19, could not help but realize the truly significant growth of the American Association of Clinical Chemists. Since its first National Annual Meeting, held just four years ago, in the very same location, the development and advances that have taken place are undeniable evidence that clinical chemistry has reached truly professional status.

September 16th was truly Clinical Chemists' Day in Atlantic City with a fine group of scientific papers on Clinical Chemistry held at the Hotel Chelsea. Max M. Friedman presided over the meeting and the wealth of pertinent and timely information, provided by the papers presented, was of evident value to all who attended.

On the evening of the 16th a Dinner-Meeting for members and friends of the AACC was held in the Belvedere Room of the Hotel Traymore. Dr. Albert E. Sobel, the President of the Association, presided and introduced the Officers, Members, and guests who have done so much to bring the organization to the excellent position it now holds. Dr. Sobel gave a resume of the program of activities drawn up for the International Clinical Chemistry Commission. These plans were organized at the 2nd International Congress of Biochemists in Paris in July 1952. Dr. Sobel announced that E.J. King, of Great Britain, has been appointed Chairman of the Commission. It is expected that many fine things will come from this nucleus which will bind Clinical Chemists all over the world. Dr. King is Honorary Member of the AACC.

(Continued page 6)

The CLINICAL Chemist

Newsletter of the American Association of Clinical Chemists, Inc.

P.O. Box 123
Lenox Hill Station New York 21, N.Y.

VOL. 4, NO. 5 **SEPT. 1952**

WE HOPE TO GROW SOON

THE CLINICAL CHEMIST has come a long way since the first typewritten pages published four years ago. We know that the publication is very well received and is quite influential in professional circles.

The editors give freely of their time and efforts and the only financial expenditures are those of the stationery, printing and mailing. Even with this minimum of expense, the newsletter is largest yearly expenditure of the AACC.

With the increase in membership dues in 1953 earmarked for the expansion of the newsletter, we hope to bring to our readers review articles of current scientific interest written by noted investigators and to slowly open our pages to papers on original research. This will serve as a nucleus for a future "Journal of Clinical Chemistry."

The small number of advertisers help only slightly to ease the financial burden to the Association. Our readers are in position to help us increase our paid advertising and thus indirectly increase the amount of articles per issue. There are many manufacturers, scientific supply companies and chemical companies, that do daily business with our readers. A word about your publication to these firms would greatly ease our burden. Just say, "I would like to see your message in the Clinical Chemist."

A page of advertising means another 2,000 word article.

THE SECRETARY REPORTS

Some individuals who have recently become members of the Association may not be aware that engraved membership scrolls, suitable for framing, are obtainable by sending a check for four dollars to the National Secretary, Dr. Louis B. Dotti, St. Luke's Hospital, New York 25, N.Y. Checks should be made payable to the American Association of Clinical Chemists, and should be accompanied by a statement as to the name and degree to be inscribed. A reproduction of the scroll appeared in a previous issue of the CLINICAL CHEMIST.

The dinner meeting at Atlantic City on September 16th, during which the Ernst Bischoff Award was presented, was the start for another busy year. Although these national meetings highlight the activities of clinical chemistry, yet the local section programs remain a most important phase of the Association. It is hoped that before very long every member will also be a member of a local section, whether it be a metropolitan group or in a wider geographical area. The advantages of local sections are quite obvious, and have been frequently noted. Such sections may be formed by "ten or more voting members residing in a geographical area . . . . .".

Although there may be some objections to any active membership drive, yet the fact does remain that there are many qualified individuals who are not yet members of the Association. These persons should be invited by their associates to participate as members in the efforts to advance the scientific and professional standards of clinical chemistry. The membership roster is now approaching five hundred, and a scientific society that has yet to note its fourth birthday may well be proud of that.

We may look ahead with much interest to the expansion of the newsletter for a more adequate coverage of scientific material. This, of course, cannot take the place of a journal for original investigations, but may well prove to be a stimulus for one. It is no secret that such a journal has not yet made its appearance primarily because of financial considerations. There could at no time be any lack of excellent scientific contributions for such a journal of clinical chemistry.

Max M. Friedman, National Secretary

NEW PROCEDURE FOR AWARDS COMMITTEE

The 1953 Ernst Bischoff Award of the American Association of Clinical Chemists will be presented to a recipient during the fifth annual meetings of the Association to be held in Chicago, Illinois in September, 1953. The procedure for the award was determined by the Executive Committee at the Atlantic City meetings.

An award committee of three members, appointed annually, shall receive recommendations from the membership. Based on these recommendations, the committee shall submit three candidates to the honorary members of the Association. The award recipient shall be selected by the honorary members from these three candidates submitted by the award committee.

The award committee for 1953 will consist of Otto Schales, Ochsner Medical Clinic, New Orleans, La. as chairman; Joseph H. Roe, George Washington University, Washington, D.C.; and Fritz Bischoff, Santa Barbara Cottage Hospital, Santa Barbara, Calif.

Members of the Association are advised to consider this matter seriously, and submit their recommendations to the award committee. The prospectus should be as complete as possible, with biography of the scientific and professional attainments of the proposed candidate and a complete statement as to the reasons for the recommendation. The data should be submitted in triplicate to Dr. Otto Schales, 3503 Prytania Street, New Orleans, La. before March 1, 1953.

As is usual in these matters, all correspondence with the award committee will be confidential. The recipient of the Ernst Bischoff Award for 1953 will be announced on or before June 15, 1953.

NECROLOGY

The American Association of Clinical Chemists has been notified of the deaths of two of its members.

Dr. Wilbur R. Tweedy, associated with the Veteran's Administration Hospital, Hines, Ill. died November 23, 1951.

Joseph Hodges, chemist with the Dupray Laboratory, Hutchinson, Kansas.

1953 ANNUAL MEETING

The National Executive Committee has decided to change the time of the Association Stated Annual Meeting from the spring to the fall of the year. This change was made so that interference between the various scientific meetings held in the spring of the year should not deprive the membership from attending their own annual meeting.

The 1953 Stated Annual Meeting of the AACC will be held in Chicago, Ill., the second week of September, in conjunction with the 124th National Meeting of the American Chemical Society. A complete scientific session on Clinical Chemistry will be held in collaboration with the Division of Biological Chemistry.

Members are urged to plan for this meeting and to submit their plans for presentation of scientific papers to the National Secretary, so that a well rounded program may be prepared.

NATIONAL SOCIETY FOR MEDICAL RESEARCH

The AACC Executive Committee has accepted an invitation for membership in the National Society for Medical Research. The NSMR is concerned with the accurate news reporting of medical research and the education of the public in experimental methods used. It has led the fight to provide laboratories with experimental animals by fighting the antivivisection legislation proposed by various States. At present we join more than 250 scientific and civic groups associated in their program.

The Executive Committee authorized the National Treasurer to contribute a nominal sum to the NSMR for their 1952-53 program.

NEW YORK SECTION

As the CLINICAL CHEMIST goes to press, the program committee of the New York Section is preparing for the lecture series of the fall semester 1952-53. The first meeting will be held in October and the announcements will be sent to the members by the Section Secretary. The Executive Committee held a meeting Saturday, Sept. 27 at which time a Nominating Committee was appointed to provide candidates for section offices for the 1952 election.

INAUGURATION OF THE PRESENTATION OF THE ERNST BISCHOFF AWARD IN CLINICAL CHEMISTRY

by

H. G. Terwilliger, *President, Ernst Bischoff Company, Inc.*
Ivoryton, Connecticut

H. G. TERWILLIGER

Doctor Sobel, President — Doctor Sobotka, Chairman, and Members of the First Award Committee — officers and members of the American Association of Clinical Chemists — guests:

Speaking for myself it is a distinct — a personal honor to be with you this evening at the inauguration of a series of annual events — namely the presentation of the Ernst Bischoff Award of the American Association of Clinical Chemists.

As your association continues to grow, both in membership and leadership, and continues to fulfill its important function of providing those essential services to the medical profession, which will enhance the effective practice of medicine, so this annual award will also grow in significance.

In our ethical pharmaceutical business we have been primarily concerned —first with the clinical investigator interested in the development of new drugs—secondly with the practicing physician who uses the available therapeutic drugs. From these individuals we have become keenly aware—vividly aware—of the role of the clinical chemist.

Here, tonight, we find many others who are interested in the role of the clinical chemist. In less than four years, the nationwide membership of this association has grown to nearly 500, and is constantly increasing, with members who show their belief in this association, members who are the present leaders in this scientific field.

Of course there are always problems for leaders, problems that arise out of the specific need for clinical chemists. I will mention only two of these problems. One—to fit into the organization of the various institutions that need clinical chemists, and at the same time to maintain the required professional prestige and independence are essential. Two—to institute and maintain realistic standards of training and accomplishment to the end that medical service be rendered in a satisfactory professional manner.

Success in mastering these two problems will be of little value unless there are available individuals in sufficient number to adequately staff the many positions which will be open,and to serve as a nucleus for further expansion and growth.

In addition to the competent supervisors and technical assistants, the development of your specialty requires above all research workers, and this means individuals of a high order of intelligence and ability, thoroughly grounded in biochemistry and the related branches of physiology and physics, both experimental and theoretical. Upon these research workers rests the responsibility for developing rapid, accurate methods for the determination of various body constituents, methods which the physician whom you serve, must have at his disposal for the diagnosis and proper treatment of the patient.

Of the utmost importance here is the analysis of extremely small samples by special micro-techniques, usually with the help of electrical or optical instruments. You clinical chemists have already contributed significantly to this great field of micro-analysis, and one may confidently expect that you will continue to do so.

One may also anticipate that in the future, your association will establish its own official journal to serve for the publication of the results of your researches.

We of the Bischoff Company are confident that all your problems will be faced and solved by the exchange of ideas already manifested, and the future growth of your association thus assured.

This confidence is expressed by us in the establishment of the Ernst Bischoff Award In Clinical Chemistry, an annual award of a medal, a scroll, and a sum of money.

It is our hope that the award will be of help in the development and growth of the American Association of Clinical Chemists by giving recognition to outstanding accomplishment in your various activities. We hope this award will encourage all workers in the field, and help to draw other gifted people into your organization.

And now I would like to read the scroll for the 1952 award. It reads:

"The American Association of Clinical Chemists presents the 1952 Ernst Bischoff award to Jos Kahn for representing clinical chemistry at its best and working for its advancement effectively and in collaboration with his associates. Jos Kahn contributed substantially to the medical sciences, both as an individual and as a member of research groups: provided leadership for the clinical staff, and trained a great many assistants in this specialty. He advanced the cause of clinical chemistry as a charter member and in various offices of the American Association of Clinical Chemists. The Work of Jos Kahn is identified with the progress of the professional and ethical standards of clinical chemistry."

It is a great pleasure for me to present on behalf of the Ernst Bischoff Company, this medal, this scroll, and the sum of $500.00, to Jos Kahn, chosen by the American Association of Clinical Chemists in recognition of his achievements.

Thank you.

Delivered before the American Association of Clinical Chemists, Inc., at the Dinner-Meeting, Tuesday, September 16, 1952.

AN EXTRAPOLATION INTO THE FUTURE OF CLINICAL MICROCHEMICAL ANALYSIS

The First Ernst Bischoff Lecture, presented to the American Association of Clinical Chemists at the meeting of the American Chemical Society, Atlantic City on Sept. 16, 1952.

by
Dr. David Glick

Department of Physiological Chemistry
University of Minnesota Medical School

An extrapolation into the future of clinical chemistry leads to the greater adoption of micro analytical methods, not only because these are required to extend the scope of the work to tissues and cells, but also because the micro methods are often faster, require less laboratory space, are less expensive per analysis, and permit the use of smaller samples.

Concerning this last point, we can expect that the clinical laboratory of the future will conduct, routinely, complete sets of blood chemistry analysis on single drops of blood—an advance, already begun in a few laboratories, that will greatly augment the value of clinical chemistry for infant and other patients from whom it is difficult to get the quantities of blood now commonly employed for analysis.

In the present consideration we wish to deal with clinical micro methods of even greater refinement than those ingeniously developed in such laboratories as those of Sobel and Natelson. In dealing with this matter I won't employ words like "ultramicro" or "submicro" methods, because these terms are poor indeed. Certain methods that today are called "ultra" or "submicro" in some quarters may be refined 1000 times within a few years. Should we then call the newer methods "ultra-ultramicro" or "sub-ultramicro"? Wouldn't it be better to be more explicit, and use the terms, milligram method, microgram method, and millimicrogram method to designate methods for the analysis of milligram, microgram, or millimicrogram quantities? Parenthetically, I would add that I also deplore the invention of additional symbols such as γ for microgram, and λ for microliter when they are not needed and are actually less descriptive than the logical standard terms, μg. and μl.

The chief analytical techniques now employed in clinical chemistry laboratories are titrimetry, gasimetry, and colorimetry. Titrimetry, convenient enough for common use has already been brought close to the limit of refinement. The burettes and their modifications developed by Linderstrøm-Lang and Holter, Scholander, Gilmont, and others have scale divisions equivalent to 0.1 μl. The burette developed by Benedetti-Pichler and coworkers using a micro manipulator with a moist chamber on the stage of a microscope was designed for use with volumes of 0.05-0.50 μl. The present limit of titration accuracy of about 0.01 μl. will be difficult to better with apparatus that is convenient enough for common use.

Gasimetry has been reduced to the scale where, in instruments such as the Cartesian diver, the total gas volume of the reaction vessel is as little as 0.1 μl. with a sensitivity of 2×10^{-5} μl. While instruments of this type are most useful in certain researches, they are not convenient enough for routine use in clinical laboratories. Analysis of the blood gases in one drop of blood has been described by Scholander and Roughton, and more recently by Natelson, with equipment readily adaptable to routine clinical use.

Colorimetry is especially amenable to clinical chemistry usage. The microcuvette of Lowry and Bessey, for use with the Beckman spectrophotometer, permits absorption measurements with a 1 cm. light path on volumes of liquid as little as 50 μl. A refinement of 10 times is obtained with the microscope colorimeter. This is a modification of the instrument designed by Holter and coworkers. The cuvette is a glass or plastic capillary tube (5-15 mm. long with a bore of 0.5-1.5 mm. diameter) sealed to a microscope slide with a bit of stopcock grease and covered with a microscope cover glass. The volumes of liquid used usually range from 5 to 10 μl. The light beam, made monochromatic with an interference filter or a monochromator, is converted to a parallel beam with a diameter of 0.2-0.4 mm., and it is passed through the center of the cuvette to the low power microscope which transmits it to the photocell over the ocular. The observation eyepiece and mechanical stage facilitate the rapid centering of the light beam in the cuvette. Since the cuvettes are quite inexpensive and easily cleaned, many can be used simultaneously to hasten the work. The cost of the Lowry-Bessey cuvette that I saw last was $20.00. The capillary cuvettes cost 50¢ or less.

In order to extent the usefulness of the microscope colorimeter we have converted it into an ultraviolet, visible, and near infra red spectrophotometer and the same instrument is also arranged to be a fluorimeter. This versatile apparatus, should serve to make possible a wide variety of analysis of biochemically important constituents in samples of tissue no larger than microtome sections, or fluid samples of a fraction of a drop, with the same degree of accuracy as obtained in the macro procedures.

Flame photometry has established its value for routine sodium and potassium determinations on very small samples of serum. But I believe that it will be displaced in the future by emission spectroscopy. The latter holds the unique advantage that a variety of elements can be determined simultaneously on the same blood sample or tissue biopsy. Recent instrumental improvements and more compact and convenient equipment are rapidly bringing this analytical method to the position of practicality for clinical laboratories. The demonstration by Vallee and Pealtie that spectral lines can be intensifield by surrounding the arc with an inert gas such as helium is an important step toward the day when it will be commonplace for you to run routine analysis for sodium, potassium, calcium, and magnesium on the same single drop of serum or bit of tissue which will be your usual sample.

Less immediately applicable, but already nudging their way to a position of consideration are mass spectrometry and radioactivity analysis. With reference to the latter, the measurement of I_{131} in connection with thyroid function tests is already a routine matter in some laboratories. Induction of radioactivity for analytical purposes by subjecting biological samples to pile bombardment is now in an experimental stage, and this could become an important method for elementary analysis at the histological and cytological level. It is not hard to imagine the future establishment of centers to which samples are sent daily for activation analysis by this method.

A technique of analysis that is now being employed in several biochemical research laboratories, and in industry, and one that holds especially intriguing possibilities for quantitative analysis on intact tissues and cells is x-ray absorption analysis.

The principle of this technique is based on the absorption of x-rays of specific wave lengths by each element. A plot of wavelength against absorption gives a discontinuous curve. The particular wavelength at which the absorption jump occurs characterizes the element. The height of the jump, determined by absorption measurement at wavelengths at each edge of the jump measures the quantity of the element. Thus identification and quantitation of elements are possible in solution in a cuvette, or *in situ* in the tissue and cell. Recording of the transmitted x-radiation can be made by photography, Geiger counter, or ionization chamber when samples are in solution in cuvettes. For cells, fibers, or tissue sections photographic recording on fine-grained film is used. The resolution is about 1 μ, and for quantitative work by densitometry of the images on the film the resolution is about 2-3μ. Tissue sections 2 to 15μ thick can be used for analysis of nitrogen, carbon, oxygen, phosphorus, and sulfur. Mineral salts in bone sections can also be determined. When cuvettes are employed, volumes of liquid as small as 0.2 μl. can be used. A feature of the technique is the fact that the sample is not used up in the analysis

(Continued on following page)

BISCHOFF LECTURE

(Continued)

so that the same sample can be subjected to repeated analysis for different elements and is still available for morphologic or other studies at the end.

The exploitation of x-ray absorption for biochemical analysis has derived chiefly from the work of Engstrom at the Institute for Cell Research in Stockholm. In addition to elementary analysis Engstrom has employed x-ray absorption for the determination of dry weight of cells and cell parts. This has been accomplished by using a polychromatic beam of soft x-rays having wavelengths in the region of 8°A. These wavelengths are absorbed by the chief elements of tissue, *i.e.* carbon, nitrogen, and oxygen (hydrogen has little absorption and a calculation can be made to correct for it). The concentrations of other elements that occur in soft tissue, *e.g.* phosphorus, sulfur, chlorine, calcium, etc. are too small to interfere under the conditions chosen.

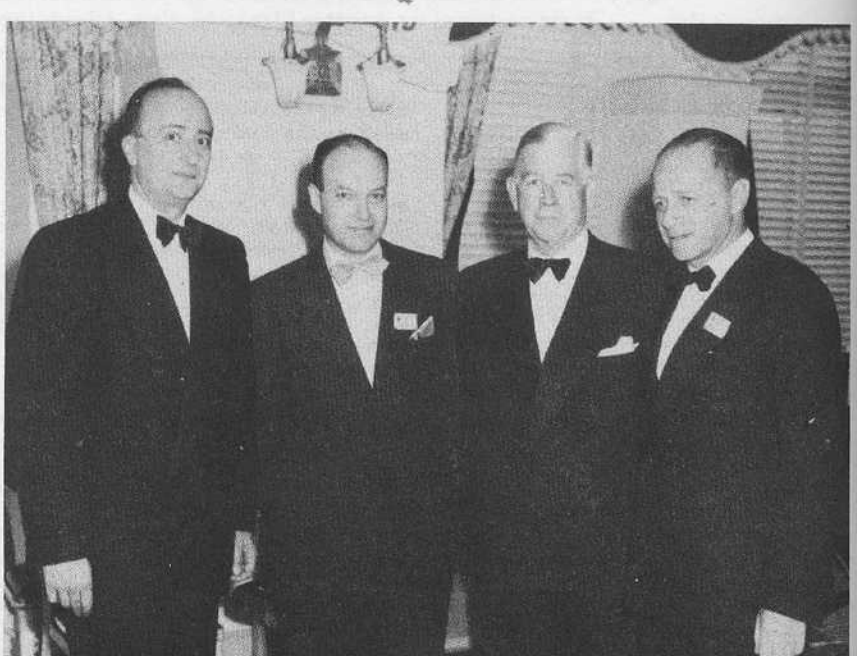
Measurement of dry weight of tissue constituents down to 2-3 μ in size is in itself of limited value, although it is very useful as a basis of reference for analysis of biochemical substances and as an index of certain secretory and other cell functions. However, more extensive possibilities exist. The determination of total mass, before and after treatments designed to remove specific substances, makes available analytical methods for many constituents. Thus, treatment with selected solvents can be used for the removal, and therefore the analysis, of particular lipids, or specific enzymes can be employed to remove certain substances for similar analytical purposes.

Other micro techniques already available will find their way into clinical laboratories. Without attempting to discuss more of them, we should just mention paper chromatography. By means of the microscope spectrophotometer and fluorimeter previously described, quantitative analysis of the separated spots of biological substances can now be performed in many new instances.

It must be evident from our little trip on the currents of methodology that we have had to extrapolate rather little afterall to reveal many new possibilities for the future of clinical micro chemical analysis. Nothing new has been conjured up that isn't already being used or explored for application in non-clinical laboratories.

This is the author's abridgement of the lecture delivered by Professor Glick. The entire lecture with figures has been submitted to the Chemical and Engineering News for publication at a future date.

ATLANTIC CITY MEETING



Discussing the presentation of the first Ernst Bischoff Award in Clinical Chemistry, are (left to right) Dr. Edward Harvill, Director of Research, Ernst Bischoff Co., Professor David Glick, University of Minnesota Medical School, who delivered the Ernst Bischoff Lecture, Mr. H. G. Terwilliger, President of the Ernst Bischoff Co., and Dr. Harry Sobotka, Chairman of the AACC first Award Committee. *(Courtesy of Chemical & Engineering News)*

(Continued from page 1)

Dr. Sobel then introduced Mr. H.G. Terwilliger, President of the Ernst Bischoff Company, Ivoryton, Connecticut. Mr. Terwilliger pointed out the importance played by the Clinical Chemist in solving the many chemical problems which arise every day in the practice of the medical arts. In order to encourage and reward the Clinical Chemist, who has distinguished himself in "Research" and "Service", the Ernst Bischoff Award In Clinical Chemistry has been established and is to be given annually to a chemist chosen by an Award Committee of the AACC. Mr. Terwilliger then presented the first award, posthumously, to Dr. Jos Kahn. Dr. Kahn was, before his untimely death, at Marmonides Hospital, Brooklyn, N.Y. He worked untiringly to further the development and growth of Clinical Chemistry and his efforts, in this field, are well known to all. The award was accepted, for Dr. Kahn's family, by Dr. Harry Sabotka, who was Chairman of the First Award Committee. Dr. Sabotka described the especially designed bronze metal and scroll and pointed out that the award also includes a check for the sum of $500.

Dr. Sobel then introduced Dr. David Glick, Professor of Physiological Chemistry, University of Minnesota Medical School, who was chosen to give the first Ernst Bischoff Lecture. His subject "An Extrapolation Into The Future of Clinical Microanalysis" was of complete and absorbing interest to everyone.

SOUTHERN CALIFORNIA SECTION

Ray Abernethy, Chief Toxicologist, Los Angeles County Coroner's Office, was host to the local section on May 6 for a meeting and inspection at his laboratory. Mr. Abernethy discussed the "Role of the Toxicologist".

The toxicologist must provide such analysis as will enable the coroner to establish the cause of death. Whereas 25 years ago he was primarily concerned with analysis for such poisons as arsenic, cyanide, nicotine and strychnine, today he is much occupied with analysis for alcohol, barbiturates and carbon monoxide. In addition to his analytical duties, he must train police officers in matters pertinent to the efficient identification of poisons: close observation and notations of poisons, drugs, prescriptions and associated items at the scene of death, and proper collection and labelling of these items for subsequent analysis.

Important techniques now used in Mr. Abernethy's laboratory include sublimation and melting point determination, ultra-violet absorption spectrophotometry and X-ray diffraction; and the sense of smell finds practical value in the preliminary identification of several common substances (cyanide, acetone, paraldehyde, etc.).

Mr. Abernethy gave particular attention to the identification and quantitative determination of individual barbiturates by ultra-violet absorption spectrophotometry. His procedures are based on the principle that an extract containing a barbiturate will demonstrate three different and distinct absorption spectra at three different pH values. Any set of three spectra will be characteristic for any one barbiturate, thus providing positive identification. Then the absorption at a proper wave length can be measured to provide the quantitative determination. Measurements are made in the wavelength range from 225 to 265 m u.

PHILADELPHIA SECTION

The Philadelphia Section of the American Association of Clinical Chemists plans to have six scientific meetings during the 1952-53 season.

On October 28, Mr. James J. Moran of the Consumer Research Department of the Kimble Glass Company will present a lecture on "Laboratory Glassware," in which he will discuss the manufacture, use, and care of glass laboratory apparatus. Mr. Moran has been with the Kimble Glass Company since 1920 and is eminently qualified to discuss the subject of his lecture.

For the November 25 meeting, Dr. James Walker, Jr. will speak on "Fluid Balance." Dr. Walker holds a John and Mary R. Markle fellowship in the Department of Surgical Research of the University of Pennsylvania, and for a number of years he has been active in the study of problems of fluid balance.

Dr. Harry Shay, Director of the Fels Research Institute of the School of Medicine of Temple University, will give a lecture on "Liver Function" at the January 27 meeting. Dr. Shay was a member of the founders group of the American Board of Gastro-enterology, and one of his main fields of specialization has been gastro-intestinal physiology.

Final arrangements have not been made for lectures that are planned for February, March, and April.

Anyone not on our mailing list to receive announcements for these meetings may obtain additional information by writing to the secretary, Albert B. Sample at the Bryn Mawr Hospital, Bryn, Mawr, Pa.

EXECUTIVE COMMITTEE MINUTES

September 16, 1952

The meeting of the National Executive Committee was held on September 16, 1952 at 10:30 P.M. at the Hotel Traymore in Atlantic City, New Jersey. Those present included Albert E. Sobel, President; Max M. Friedman, National Secretary; Louis B. Dotti, National Treasurer; Arthur Knudson, Marschelle H. Power, John G. Reinhold, Harry Sobotka, and Otto Schales (by invitation).

The Treasurer's Report as of September 13, 1952 follows:

Income,	July 1 to Sept. 13, 1952	$ 261.00
Expenses,	July 1 to Sept. 13, 1952	925.81
	Deficit	664.81
Bank Balance, July 1, 1952		$1763.44
Less Deficit		664.81
Bank Balance, Sept. 13, 1952		$1098.63

The membership as of September 13, 1952 follows:

Honorary members	6
Full members	291
Associate members	121
Members in arrears one year	24
Members in arrears two years	13
Total membership	455

The Executive Committee, on behalf of the Association, extends thanks to the American Chemical Society and to the Division of Biological Chemistry of the Society, for arranging the scientific program of clinical chemistry and the dinner at which the Ernst Bischoff Award was presented at Atlantic City.

Committee appointments approved included:

Editorial Advisory Board: – Marschelle H. Power, John G. Reinhold, and Harry Sobotka.

Program Committee: – Marschelle H. Power, Otto Schales, and Warren M. Sperry.

Ernst Bischoff Award Committee: – Fritz Bischoff, Joseph H. Roe, and Otto Schales, (Chairman). This Award committee will receive recommendations from the membership (details to be published in the CLINICAL CHEMIST) and from these recommendations three candidates will be selected. The honorary members of the Association shall select one of these three as the Award recipient.

Michael Somogyi of St. Louis was designated as representative of the Association to the AAAS.

The Association accepted an invitation for membership in the National Society for Medical Research. The Society is concerned with the problems of accurate news reporting, education of the public in scientific matters, and removing obstacles to research such as antivivisection legislation. At present more than 250 scientific and civic groups are associated in this program. The National Treasurer was authorized to contribute a nominal sum to the NSMR for the next year.

The invitation by the American Pharmaceutical Association for the AACC to collaborate in the revision of the sections on clinical laboratory preparations of the National Formulary could not be accepted since it was felt that such a project would conflict with the program of the Association in the standardization and evaluation of clinical chemistry methods. The National Secretary was directed to thank the American Pharmaceutical Association for this invitation.

A report of the proceedings in Paris held in July, 1952 concerning the formation of an International Federation of Clinical Chemists was presented. The minutes of that meeting are to be published in the CLINICAL CHEMIST. It was moved, seconded and passed that the AACC take no action on the matter at this time.

Respectfully submitted,

Max M. Friedman, National Secretary

Presented in Cooperation with The Division of Biological Chemistry ACS as part of the 122nd National Meeting

ADRENAL GLYCOGEN STUDIES IN THE GUINEA PIG AND THE ALBINO RAT. *Nancy Lee Noble* and Evangeline Papageorge, Department of Biochemistry, Emory University School of Medicine, Emory University, Ga.

Adrenal glycogen values were established for normal, young, adult, male guinea pigs and albino rats, and the effect of altering the nutritional state was investigated.

Glycogen was isolated by the usual precipitation with alcohol from a potassium hydroxide digest of the tissue, and was then assayed colorimetrically by use of the anthrone reagent without previous hydrolysis. The technique was reproducible as applied to analysis of samples containing 20 to 40 micrograms of glycogen, and values obtained agreed closely with those found by Nelson's reducing sugar method after acid hydrolysis of the isolated glycogen.

Guinea pigs have about 25 mg. of glycogen per 100 grams of fresh gland. This value is remarkably constant among individual animals and is not significantly altered either by fasting or by decreasing the ascorbic acid intake even to scorbutic levels.

Albino rats have a much higher concentration of adrenal glycogen which can be altered by varying the nutritional state. Animals fasted for periods of 8 to 48 hours have about 200 mg. % of adrenal glycogen. Nonfasted animals, or 24-hour-fasted rats given glucose have only about one-half the concentration found in 24-hour fasted controls and the decrease is highly significant statistically.

ESTIMATION OF 7-HYDROXYCHOLESTEROL, 7-DEHYDROCHOLESTEROL, AND BILE ACIDS IN SERUM. Albert E. Sobel, Morris Goldberg, and Solomon R. Slater, The Department of Biochemistry, The Jewish Hospital of Brooklyn, Brooklyn 16, N. Y.

Preliminary to studies of changes in blood steroids in arteriosclerosis, a method has been developed for the quantitative estimation of 7-hydroxycholesterol, 7-dehydrocholesterol, and bile acids in serum.

The nonsaponifiable fraction of 2 ml. of serum is dissolved in acetone-alcohol and treated with an excess of aqueous digitonin until the water content is 54%. The precipitated digitonides are washed with dioxane-ether and ether, split with pyridine, and extracted twice with petroleum ether. The extract is washed with water and evaporated to dryness. The residue is dissolved in ethyl alcohol, and 7-dehydrocholesterol is determined by both ultraviolet absorption and the Rosenheim - Callow reaction. A second serum residue is dissolved in glacial acetic acid, and 7-hydroxycholesterol is determined with activated glycerol dichlorohydrin. Total sterol is determined by the Liebermann - Burchard reaction on a 1/25 aliquot of dissolved sterol residue. Serum bile acids are fluorometrically evaluated by a micromodification of the Baker *et al.* method [Proc. Soc. Exp. Biol. Med., *76*, 216 (1951)].

Normal adults contained 0.3 to 0.9 mg.% of 7-dehydrocholesterol and 7-hydroxycholesterol. Bile acids ranged from 1 to 3 mg.%. Recoveries of these sterols added in amounts found in normal serum were within ± 3% of added values.

A RAPID PRESUMPTIVE TEST FOR THE DETERMINATION OF ALCOHOL IN BLOOD AND URINE. *Irving Sunshine* and Robert Nenad, Institute of Pathology of Western Reserve University, University Hospitals of Cleveland and the Cuyahoga County Coroner's Laboratory, Cleveland, Ohio.

A rapid method for determining the ethyl alcohol concentration of body fluids would be extremely useful both to the staff of the hospital emergency room and to those concerned with vehicular traffic regulation and accident prevention.

Many potentially preventable deaths from trauma or disease have resulted from the erroneous assumption that the odor of an alcoholic beverage combined with coma or with slurred speech and a staggering gait is acceptable evidence that the disability is due to alcoholic intoxication. The desirability of a rapid and simple method for testing for alcohol is obvious. Such a technique is the subject of this discussion.

A 0.5-ml. sample is placed in the outer chamber of the Conway unit; in the center chamber is placed 2.0 ml. of potassium dichromate solution. The unit is then sealed and placed in a steam bath or oven at 100°C. for 20 minutes. The color of the solution in the center chamber is then compared with suitable standards. If necessary, as many as 20 samples can be run concurrently and completed in two hours. In this way, one may rapidly and simply determine whether a given individual is or is not "under the influence."

A SIMPLE TEST FOR URINE BILIRUBIN. Alfred H. Free and Helen M. Free, Biochemistry Section of the Miles-Ames Research Laboratory, Elkhart, Ind.

The detection of bilirubin in urine is a very useful aid in recognition and treatment of certain liver diseases. A test has been devised which is extremely sensitive and specific for bilirubin. It is based on the interaction of bilirubin with a solid stable diazonium salt to produce a bright blue or purple color. Several such diazonium salts have been tested but the one which works most satisfactorily is *p*-nitrobenzene diazonium *p*-toluene sulfonate. This compound is conveniently incorporated into a solid test reagent by mixing with sulfosalicylic acid and sodium bicarbonate. This solid reagent is used as a powder or as a tablet. The test is carried out by placing a few drops of urine on an absorbent test mat of cellulose and asbestos. The solid reagent is then placed on the moistened area and flooded with two drops of water. The characteristic color develops on the test mat within 30 seconds if bilirubin is present.

A large number of tests have been carried out with normal urines and with urines containing bilirubin. The method is somewhat more sensitive than other commonly used urine bilirubin tests. No interfering substances have been encountered in urines from a large hospital population.

A MICRO METHOD FOR THE DETERMINATION OF PHOSPHORUS IN SERUM, URINE, AND STOOL ASH. *Hertha H. Taussky* and Ephraim Shorr, with the technical assistance of Gloria Kurzmann, Department of Medicine, Cornell University Medical College, The Russell Sage Institute of Pathology, and the New York Hospital, New York City.

The method is based on the suggestion of Sumner that the phosphomolybdic acid formed during the first step in the analysis of phosphorus be reduced by ferrous sulfate instead of the conventional aminonaphtholsulfonic acid.

The sensitivity of the method is from 1 to 40 micrograms. Proteins are precipitated from 0.2 cc. of serum with trichloroacetic acid. Protein-free serum filtrate, standard solution, urine, or stool ash solutions are pipetted directly into the colorimeter tubes and the color reaction is carried out in a total volume of 5 ml. The blue color developed is stable for at least 1 hour. The color is read in a Klett-Summerson photoelectric colorimeter with filter No. 66.

Recovery experiments and comparisons with Fiske and Subbarow's method are in good agreement.

A METHOD FOR THE DETERMINATION OF CALCIUM 40 AND CALCIUM 45 IN BIOLOGICAL MATERIAL. William P. Norris and *Blanche J. Lawrence*, Argonne National Laboratory, Chicago, Ill.

In the study of dynamic systems with radioactive tracers, the specific activity, that is, the ratio of radioactive to stable element, is a most useful quantity. A method has been developed in which the

determination of radioactive calcium 45 may be followed by assay of the same specimen for stable calcium 40. Calcium is precipitated as the oxalate from solutions of the ash of biological materials and mounted by filtration in modified fritter Gooch crucibles for counting. The observed count must be corrected for self-absorption to arrive at total calcium 45. The self-absorption curve of observed counting rate versus mass of sample has been determined carefully.

After the determination of calcium 45 the calcium oxalate is dissolved from the crucible in 1 *N* perchloric acid and titrated with hexanitratoammonium cerate in 1 *N* perchloric acid using Setopoline C as indicator. The method has been used successfully with quantities of calcium 40 from 20 μg to 120 mg. with only minor modifications to accommodate the necessary changes in volume.

The factors that influence the shape of the self-absorption curve as well as those that affect the analytical procedures have been examined.

A QUANTITATIVE METHOD FOR THE DETERMINATION OF POLONIUM IN ANIMAL TISSUES. William P. Norris and *Walter E. Kisieleski*, Argonne National Laboratory, Chicago, Ill.

Recent interest concerning the metabolism and toxocity of polonium (Po^{210} RaF 138 *d*, half-life; α, 5.30 mev.) has required the development of a method for the quantitative estimation of polonium in biological material.

Biological material such as whole mice or their isolated tissues is added to Kjeldahl flasks, and for each gram of sample 2.5 ml of concentrated (70%) perchloric acid is added plus a volume of Superoxol (hydrogen peroxide 30%) equal to 1/2 the volume of perchloric acid and a volume of water equal to 1/5 the volume of perchloric acid. Digestion is then accomplished at a controlled temperature of 200° C. in a specially designed digestion rack. The total digestion time for the larger samples is 4 to 10 hours, whereas smaller samples require 15 to 60 minutes. The resultant clear, yellow to white solution is then cooled and made up to volume in 1 *N* hydrochloric acid.

The optimum aliquot taken for assay is approximated to contain 0.01 μc of polonium (370 *d/s*). The aliquot is then diluted to 50 ml with 1 *N* hydrochloric acid from which it deposits spontaneously onto a thin silver disk immersed in the solution. Deposition is facilitated by heating the electrolysis tube in a water bath at 90° to 100° C. Total plating time under the above conditions is between 2 to 3 hours. A count is then made of the α activity on both sides of the plated disk in a standard 52% geometry parallel plate α chamber.

The recovery of polonium from biological materials by the above method has been found to be 100 ± 4%.

Considerations of the type of digestion acids and optimum acid concentration as well as plating time for polonium deposition are discussed.

A NEW COLOR REAGENT FOR THE DETERMINATION OF HEXOSES. Bernard Klein and Milton Weissman, Biochemistry Laboratory, Veterans Administration Hospital, Bronx 68, N. Y.

This paper reports a new color reaction for the identification and determination of hexoses in the presence of pentoses. This test is based upon the action of a strong sulfuric acid solution of chromotropic acid on the hexose to produce a violet color. The reaction depends on the conversion of hexoses to 5-hydroxymethylfurfural and splitting of the methylol group to form formaldehyde which reacts with chromotropic acid. This mechanism is supported by the identical absorption spectra given by the chromotropic acid reaction products of glucose, 5-hydroxymethylfurfural, and formaldehyde and the isolation and identification of formaldehyde as the 2,4-dinitrophenylhydrazone (melting point, 166°). Under these circumstances, pentoses which form furfural, incapable of splitting off formaldehyde, do not react. The common disaccharides lactose, maltose, and sucrose react with the chromotropic acid reagent. The intensity of color produced is related linearly with the concentration of the hexose used but the yield of formaldehyde produced is not quantitative when calculated on a molar basis, as this reaction is probably an alternate pathway for the decomposition of hexoses in strong acid.

A NEW COLOR REAGENT FOR THE DETERMINATION OF HEXOSES. II. THE DETERMINATION OF GLUCOSE IN BLOOD SERUM. Bernard Klein and Milton Weissman, Biochemistry Laboratory, Veterans Administration Hospital, Bronx 68, N. Y.

The application of a new hexose reagent, chromotropic acid in 15 *M* sulfuric acid, to the determination of glucose in blood is presented. One ml of a 1 to 10 protein-free filtrate [Somogyi, J. Biol. Chem., *160*, 69 (1945)] is heated for 30 minutes in a boiling water bath with 5 ml. of reagent (2 mg. per ml.), cooled and diluted to 10 ml. and the optical density read in a spectrophotometer at 570 μ. The concentration is determined from a calibration curve prepared from pure glucose solutions. The calibration curve is linear from 50 to 300 mgs. per 100 ml. The results obtained compare well with those obtained by the Somogyi technique.

ELECTROPHORETIC AND CHEMICAL SERUM PROTEIN FRACTIONS IN PULMONARY TUBERCULOSIS. Abraham Saifer and Irwin Greskes, Biochemistry Department, Division of Laboratories, Jewish Sanitarium and Hospital for Chronic Diseases, Brooklyn 3, N. Y.

In previous publications [J. Clin. Invest., *31*, 1-22, (1952)] quantitative protein flocculation methods were described for the determination of serum gamma globulins and a new biochemical ratio, the total serum-gamma globulin/globulin clot-gamma globulin was introduced. This latter reflects changes in the beta globulin fraction.

The present study deals with the application of these procedures to the sera of 100 patients with pulmonary tuberculosis in various stages. The results in 50 cases were compared with those obtained by salt fractionation and electrophoresis.

The gamma globulin values increased and the T.S./G.C. ratio decreased with increasing severity of the tuberculous process. When followed serially, deteriorating patients showed progressively elevated gamma globulin values and decreasing T.S./G.C. ratio values. Patients who were improving showed converse changes.

All the electrophoretic globulin fractions were elevated in the far advanced group. However, the alpha-2 and beta globulins remained elevated in the arrested group in patients treated with streptomycin plus P.A.S. Both chemical and electrophoretic A/G ratios were shown to decrease significantly with the increasing severity of the disease.

Preliminary work with a group of tuberculous patients being treated with isonicotinic acid derivatives indicates that these serum protein studies may be useful for the objective evaluation of the progress of the patient while under therapy.

IN VIVO CONVERSION OF CAROTENE TO VITAMIN A IN ALLOXAN DIABETES. Albert E. Sobel and Abraham Rosenberg, Departments of Chemistry, Jewish Hospital of Brooklyn and Polytechnic Institute of Brooklyn, Brooklyn, N.Y.

Litter mate Wistar rats (11 litters) were depleted of vitamin A stores. Diabetes was produced in part of each litter by subcutaneous injection of alloxan. 2000 μg. of carotene was administered to each animal in both the diabetic and control groups, and 3 days later, the liver was analyzed for stored vitamin A. The liver vitamin A of the alloxan-diabetic animals was one fourth that of the control litter mates. To another 10 litters similarly treated, 1000 μg. of vitamin A was given. The liver vitamin A of the diabetic animals was 78% of that of the controls, indicating that absorption is practically the same in both groups, and the differences observed with carotene represent a marked defect in ability of the alloxan diabetic animal to convert provitamin A to vitamin A. Studies *in vitro* with the isolated intestinal wall confirmed the above conclusion.

IN VITRO CONVERSION OF CAROTENE TO VITAMIN A IN ALLOXAN DIABETES. Abraham Rosenberg and Albert E. Sobel, Departments of Chemistry, Jewish Hospital of Brooklyn and Polytechnic Institute of Brooklyn, Brooklyn, N.Y.

Litter mate Wistar rats were depleted of vitamin A stores. Diabetes was produced in half of each litter with alloxan. An aqueous dispersion (0.5 ml.) containing 150 micrograms of carotene and 250 micrograms of α-tocopherol was administered to each animal in both groups. The animal was immediately sacrificed and the isolated small intestine was tied off and incubated at 37° C. for 1½ hours in Ringer's solution. The intestine was then carefully washed with Ringer's solution and saponified. The vitamin A was determined on the nonsaponifiable extracts by measuring the difference in light absorption at 325μ before and after ultraviolet irradiation. The determination was considered valid when the difference in the light absorption between 310 and 400μ was that of pure vitamin A.

The vitamin A produced in the isolated intestine of the diabetic animals was only one sixth that of the controls (mean of 10 animals in each group). These findings indicated that in alloxan diabetes there is a marked impairment of the system responsible for conversion of carotene to vitamin A, and confirm our findings *in vivo*.

ENZYMES AND THE PRESERVATION OF TRANSFUSION BLOOD. Otto Schales, Chemical Research Laboratory of the Alton Ochsner Medical Foundation, and the Department of Biochemistry, Tulane University School of Medicine, New Orleans, La.

Plasma may be stored safely for long periods of time, but whole human blood, even under optimal storage conditions, is considered suitable for transfusion purposes during the first 3 weeks after collection.

There occurs, during storage, a gradual change in the red cells so that they lose the ability to survive after entering the circulatory system of the recipient. The decisive chemical events responsible for gradual deterioration are not known. Enzymatic processes might be at work changing the red cell envelope during storage, thus causing an increase in fragility. In vitro, one can observe during storage a progressive increase in osmotic fragility on exposure to hypotonic sodium chloride solution.

Using this in vitro fragility test as a rough measure of red cell deterioration during storage, the effect of enzyme inhibitors on the rate of development of osmotic fragility was investigated. A variety of inhibitors of lipases, proteases, and peptidases was tested. The most promising results so far were obtained with 10-(2-dimethylamino-isopropyl) phenothiazine, which was first introduced as an antihistamine. Maral *et al.* found that it inhibits trypsin and papain. It was recognized as a good preservative for tissues, and Halpern *et al.* investigated its retarding effect on morphological changes in stored blood, but no studies of its effect on the development of osmotic fragility were described.

In our experiments, ACD blood from 10 different donors showed on exposure to 0.6% sodium chloride solution after 21 days storage 6 to 23% and after 42 days 20 to 36% hemolysis. The addition of optimal amounts of the phenothiazine derivative (0.4 millimole per liter) to portions of the same blood samples retarded the development of osmotic fragility to a considerable degree. After 21 days there was observed 0.4 to 4.1% and after 42 days 0.6 to 4.5% hemolysis on exposure to 0.6% sodium chloride solution.

LABORATORY PRACTICE IN SWITZERLAND

From Tolentino: Pedicatric Impressions in Switzerland Minerva, *3*: 707, December 15, 1951.

In the course of a description of the Kinderspital in Zuerich directed by Prof. Fanconi, the author describes the duties of the clinical assistants. He then continues:

"The one thing with which the aids and assistants do not occupy themselves is the laboratory which is completely entrusted to the technical specialists (numerous salaried technical specialists perform all the chemical investigations, the myelograms, basal metabolism and electrocardiographic tracings, whereas the common bacteriological and serological investigations are sent to the University Institute of Hygene. (The concept that the physician should not occupy himself with the laboratory, I have heard approved in other places too, The Translator.) Prof. Wuhrmann (A physician himself) stated in a lecture on electrophoresis that the 'time has passed where the physician could afford the luxury of making, at the end of his rounds, his little discoveries in the laboratory', and indeed the latter in the Medical Clinic is in charge of Dr. Wunderly, a chemical engineer. This can actually constitute an advantage, since the physician devotes more time to the study of the sick, implying the exceedingly practical task to the specialized medical school to turn out good physicians and not biologists and chemists."

After pointing out certain disadvantages, mostly of local geographic nature, Dr. Tolentino concludes:

"It can be said that the laboratory of the Kinderspital functions superbly in the fields with which it is entrusted, a proof of which is the recent introduction of chromatography for aminoaciduria."

BOOK REVIEWS

CHEMICAL CALCULATIONS

By Sidney W. Benson

John Wiley & Sons, Inc. New York. $2.95

Reviewed by Arthur Schulert, Ph.D.

"The amount of mathematical understanding required for 80 percent of first-year chemistry problems is microscopically small. The student's difficulty in doing problems arises not from a lack of mathematical background but rather from a lack of familiarity with the way in which chemists use mathematics."

With this assurance to the reader, Professor Benson proceeds to introduce him to the language of mathematics as it is employed in chemistry. He shows that a large number of problems may be considered as merely sequences of unit conversion factors, the answer appearing as a product of such conversion factors. Applying this technique first to very simple problems (i.e. "Rowboats rent for two bits per hour. What will it cost in dollars to rent a rowboat for two weeks?") the author leads through logical and easy stages to such problems as those involved in chemical analysis, energy changes, the gas laws, and the balancing of equations. The technique is perhaps carried to an extreme in some problems involving titration or dilution. Thus in the example problem, "How would you make 20cc of 3 M HCl from 12 M HCl," (p.86) the author uses two lines and several conversion factors to produce the answer. It is doubtful that many would prefer to employ this method solution to the simple cc x M = cc x M relation.

The book is geared to college freshmen and is recommended for such as a valuable adjunct to their regular chemistry text. It's clear and breezy style should make it quite palatable to the student who ventures in on his own.

PROBLEMS OF LIFE

by
Ludwig von Bertalanffy

John Wiley & Sons — 216 pages — $4.00

"In our time," writes Ludwig von Bertalanffy in his new book, *Problems of Life*, "a fundamental change of scientific conceptions has taken place. The revolutions in modern physics are widely known. They have led, in the relativity and quantum theories, to a radical reform of physical doctrine, outranking the progress made in centuries of the past. Less obvious, but perhaps not less significant in their consequences, are the changes that have taken place in biological thought, changes that have led both to a new attitude toward the basic problems of living nature and to new questions and solutions."

The first attempt to outline the modern view from the standpoint of the biologist is now available in *Problems of Life*, published in August by John Wiley & Sons. A thorough and logical survey of basic biological problems and laws within the framework of the famous author's original "organismic conception," the volume gives a new unitary theory of biology, based on concrete research and progressing to the fundamental and philosophical problems.

"The problem of life," Bertalanffy states, "is one of organization. We find that all parts and processes are so ordered that they guarantee the maintenance, construction, restitution and reproduction of organic systems." He further explains that the task of biology is to establish the laws governing order and organization within the living. "These laws," he writes, "are to be investigated at all levels of biological organization — at the physico-chemical level, at the level of the cell and of the multicellular organization, and finally at the level of communities consisting of many individual organisms."

After advancing the idea of the organism as an integrated unity of interdependent functional activities, Bertalanffy covers the modern conceptions in the various levels of organization, from high-molecular and colloid chemistry, viruses and genes, cytology and histology, to applied biology and the supra-individual units of life. The relation of these conceptions to embryology, morphology, genetics, evolution, behavior, medicine, psychology, philosophy, and other fields is also considered.

The author then examines the possibility of stating exact and quantitative laws for biological phenomena, basing his discussion on the theory of open systems as he has developed it. The principles of biological epistemology are also treated, with discussions of organismic methodology, laws in physics and biology, and the boundaries between science and metaphysics. In his evaluation of the unity of science, Bertalanffy proposes a General System Theory as a super-structure of science; here, general principles are formulated that apply to entities of a different nature and account for the parallelism in the modern development of physics, biology, psychology, sociology, and other branches of science.

Research professor and director of biological research at the University of Ottawa, von Bertalanffy has done theoretical and practical work on his "organismic conception" for twenty-five years. After receiving his Ph.D. at the University of Vienna, he became a professor there and later a member of the medical examination board. As a fellow of the Rockefeller Foundation, he traveled through the United States and lectured at many American universities. His numerous contributions to biology, physical chemistry, medical theory, and related sciences, include eleven earlier books and many scientific papers.

Problems of Life contains 216 pages and is priced at $4.00.

September 9, 1952

NEW APPARATUS

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Ionography is electrophoresis on filter paper and depends on the movement of charged particles, both ions and colloids, in an electric field. Precision Scientific Company's new IONOGRAPH separates and identifies materials such as amino acids and proteins, inexpensively and results are in good agreement with classical methods. Biochemical, clinical and pharmaceutical laboratories are offered a fast and versatile tool which can be operated by the average technician. The IONOGRAPH can use seven filter paper strips, of varying length, as well as wide sheets for two-dimensional work.

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MICRO SIZE STOPCOCK ADAPTERS

New Micro Size Adapters for stopcocks of 2 mm. bore or less, have recently been introduced by the Emil Greiner Company, 20-26 N. Moore St., New York, N.Y. With the introduction of the new Micro Size Adapters, this company now provides stopcock adapters to cover the full range of laboratory stopcocks. By selecting the proper size Universal Stopcock Adapter, any glass stopcock in the laboratory can be converted into a pressure tight stopcock.

These new Universal Stopcock Adapters will be of unlimited benefit to all laboratory workers who require pressure stopcocks for burets, gas sampling, measuring apparatus, etc.

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The adapter consists of an internal adjustable clamp made of corrosion-resistant spring brass, nickel plated, which grasps the stopcock plug and to which is fastened an aluminum screw. Fitting around this clamp is an aluminum barrel which rests against the shell of the stopcock. A beryllium bronze coil spring fits around the aluminum screw and two aluminum nuts are used to fix the compression in the spring against the aluminum barrel. An aluminum washer is used on the small sized stopcocks in the range of the adapters.

NEW MEMBERS ELECTED BY THE EXECUTIVE COMMITTEE

July 1952

Emanuel L. Mandel	Atlanta, Ga.
Bernard H. Armbrecht	Hyattsville, Md.
Stanley Morgenstern	Brooklyn, N.Y.
Harold Schonhom	Brooklyn, N.Y.
Victor Schelling	Detroit, Mich.
Armand J. Courchaine	Holmes, Pa.
Milton M. Cohen	Jamaica, N.Y.
Joseph H. Roe	Washington, D.C.
Charles L. Fox Jr.	New York, N.Y.
Emmett B. Carmichael	Birmingham, Ala.
Heinz T. Kay	Los Angeles, Calif.
Paul Joseph Vollmer	Alexandria, Va.
Gloria Getchell	Los Angeles, Calif.
Helene Thomas Bennett	Yuma, Ariz.
Robert L. Shriro	Dobbs Ferry, N.Y.
Lawrence C. Kier	Iowa City, Iowa
Adeline J. DiPietro	Cambridge, Mass.
Vera A. Thompson	Brooklyn, N.Y.
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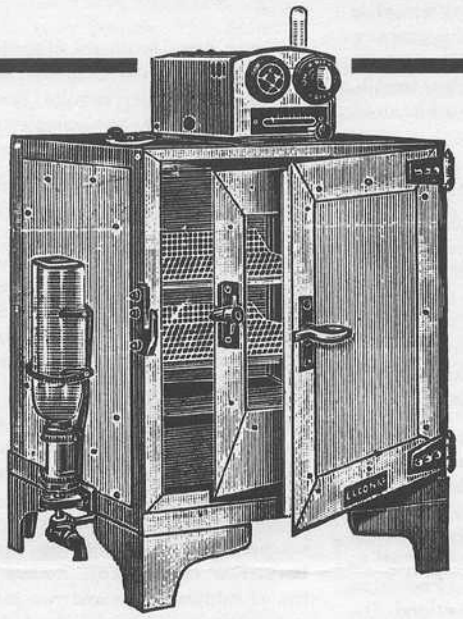

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The CLINICAL Chemist

NEWSLETTER OF THE AMERICAN ASSOCIATION OF CLINICAL CHEMISTS, INC.

VOLUME 4, NUMBER 6 NOVEMBER 1952

INTERNATIONAL ASSOCIATION OF CLINICAL BIOCHEMISTS

Dr. Warren M. Sperry, American member of the Commission on Clinical Chemistry of the Section of Biological Chemistry of the International Union of Pure and Applied Chemistry, and also representative of the American Association of Clinical Chemists to the first exploratory meeting of clinical biochemists held at Sorbonne University, Paris on July 24th, 1952, reported to the AACC Executive Committee at a meeting held November 20th.

Dr. Sperry, with much experience in the mechanics of international scientific organizations, gave members of the committee a well rounded background of such type organizations, together with his ideas of organization functions, duties, financing and methods of membership.

It was proposed in Paris that an International Association of Clinical Biochemists be organized under the auspices or closely associated with the International Congress of Biochemistry. The Commission on Clinical Chemistry of IUPAC would act as the nucleus. In studying the ten resolutions past at the Paris meeting, the National Executive Committee passed the following resolutions.

(Minutes of the Paris meeting are published on page 8.)

1 The AACC approves in principle the participation in the proposed International Association of Clinical Biochemists.

2 The AACC will appoint a representative to the Committee on invitation of the Commission on Clinical Chemistry of IUPAC.

3 It is the sense of the AACC that this international association ultimately be a federation of national societies rather than an association of individual members, with due regard to safeguarding the participation of clinical chemists in those countries that have no national societies.

4 The name be changed to the International Association of Clinical Chemistry rather than the International Association of Clinical Biochemists.

5 The above resolutions to be forwarded to the Commission on Clinical Chemistry.

FIRST VOLUME OF METHODOLOGY IN PRESS

Miriam Reiner, Editor-in-Chief of Clinical Chemical Methods, Vol. I, announced to the National Executive Committee, that the final manuscript is in the hands of the publishers, Academic Press, since October. Galley proofs should be ready shortly and the volume available early in 1953.

The format of the book has deviated somewhat from the original plan, in which two different methods for each constituent were to be included. Twenty methods are included in this volume, with methods for fifteen constituents. The Editorial Board consisted of 27 clinical chemists from that number of laboratories from various parts of the country. All these workers participated in the critical evaluation of the method selected.

Each method is written in great detail with complete laboratory notes as described by participants of the tests. The following methods are included in Vol. I. Amylase, Bilirubin, Carbon Dioxide, (titrimetric) Carbon Dioxide (manometric), Chloride, Creatinine (2 methods), Cholesterol, Glucose (2 methods), Lipase, Phosphatase, Phosphorous, Protein, Albumin-Globulin ratio, Sodium and Potassium, Thymol Turbidity, Urea Nitrogen, Uric Acid.

CLEVELAND MEETING ON PROFESSIONAL PROBLEMS

Dr. O.H. GAEBLER, REPRESENTS AACC AT MEETING OF SCIENTIFIC ORGANIZATIONS

Oliver H. Gaebler, Ph.D., M.D., Edsel B. Ford Institute for Medical Research, represented the AACC at a meeting held on Monday, October 20th in Cleveland, Ohio, in conjunction with the annual meeting of the American Public Health Association. Members of several organizations interested in the Medical-Biological-Chemical field, discussed the nature of their common problems and the desirability of united action in seeking solution to these problems.

Dr. Gaebler reported to the National Executive Committee in a letter addressed to Dr. Albert E. Sobel. Dr. Gaebler's statement follows:

"Like most of the orientation meetings that I have attended, the one at Cleveland covered a great many acres, but wound up with some objectives which it seemed desireable to pursue further. It is my understanding that these will be summarized by Dr. Borg, and that the representatives who were present will then recommend to their respective organizations the appointment of a joint committee to study the matter further.

The letter addressed to you by Dr. Borg, dated Oct. 1, 1952, contains the list of organizations which were asked to send representatives. All were represented with the exception of the ACS and the College of American Pathologists. In the former case, it may not have been known that Dr. Warren M. Sperry should have been contacted. In the latter instance, the reason for absence was not clear. The invitation, like all the others, had

(Continued page 4)

THE CLINICAL Chemist

Newsletter of the American Association of Clinical Chemists, Inc.

P.O. Box 123
Lenox Hill Station New York 21, N.Y.

VOL. 4, NO. 6 **NOV. 1952**

THE SECRETARY REPORTS

This column has attempted in the past merely to report factual information available from the secretary's office, without editorial comments. It would be appreciated, with the permission of the reader, if I may try to editorialize in this issue on a matter of great interest to all of us.

The members will note that the Executive Committee, by unanimous vote, has changed the function of THE CLINICAL CHEMIST from *"Newsletter of the American Association of Clinical Chemists"* to *"The Official Publication of the American Association of Clinical Chemists."* This change, effective January, 1953, was necessary because of the new policy of accepting for publication review articles of scientific interest and also publications containing original work. This new service will certainly be of much value to the science of clinical chemistry.

I am especially interested in this matter since it was my happy privilege to recommend the first Editorial Board, and later to also serve as an editor. It was also with great pride that all of us observed the expansion of the newsletter from a small four-page edition to its present format. THE CLINICAL CHEMIST was an effective means of keeping all the members informed of the professional and scientific phases of clinical chemistry both in our country and abroad. The members of the AACC were better advised of the activities of their society than those of many other professional organizations. Such detailed information should also be available in the future. It is sincerely hoped that the scientific aspects of clinical chemistry, important as they be, will not in the future overshadow the very fundamental professional aspects as they have been presented in the newsletter to this time. Such could best be accomplished by continued cooperation of local sections and individual members.

Max M. Friedman, National Secretary

QUID NUNCS

Nelson F. Young, Richmond, Va., was appointed Editor-in-Chief for Clinical Chemistry Methods Vol. II. Dr. Young was on the editorial board for Vol. I, and will organize the committee for the second volume.

Kurt M. Dubowski was appointed chairman of a committee consisting of Irving Sunshine and Harold D. Appleton, which will explore the possibility of publishing a volume on toxicological methods as part of the method series sponsored by the AACC.

Kurt G. Stern, Professor of Biochemistry, Brooklyn Polytechnic Institute and Chairman of the New York Section, was awarded the Pasteur Medal for contributions to biochemistry at the 2nd International Congress of Biochemistry held in Paris during July.

Dr. Donald D. Van Slyke, Honorary Member of the AACC, was designated to receive the Fisher Award in Analytical Chemistry, sponsored by the Fisher Scientific Company and administered by the American Chemical Society.

CERTIFICATION

Dr. Cecilia Riegel, President of the Philadelphia Section of the AACC announced to the membership, at the business meeting, held October 28, that the status of applications for certification by the American Board of Clinical Chemistry, Inc. is as follows:

Application forms requested	750
Applications received	340
Certificates granted	121
Certificates declined	70
Pennsylvania certificates	14
Applications to be considered	150

The above figures were supplied to her by Dr. Joseph W. E. Harrisson, Secretary-Treasurer of the Board.

NEW PUBLICATION POLICY BEGINS WITH NEXT ISSUE

With the increase in the Association's dues earmarked for expansion of THE CLINICAL CHEMIST, Harold D. Appleton, Chairman of the Editorial Board, presented plans for expansion beginning Vol. V, 1953. All recommendations were approved by the National Executive Committee.

THE CLINICAL CHEMIST was taken out of the newsletter class and designated as the "Official Publication of the American Association of Clinical Chemists". The publication will be styled similar to *SCIENCE* where both news and scientific articles exist in the same publication.

A campaign to increase advertising is now in progress by the mail canvass of 500 leading manufacturers of scientific equipment. It is hoped that the individual members will bring this publication to the attention of their apparatus dealers and distributors.

THE CLINICAL CHEMIST has invited leading researchers to write review articles on scientific topics of current interest to clinical chemists. At the moment four series have been accepted.

1. Application of Ionography to Clinical Chemistry. Hugh J. McDonald
2. Evaluation of Methods for the Determination of Blood Iodine. Albert L. Chaney
3. Rapid Detection of Poisons as Emergency Procedures in Hospital Laboratories. Harold D. Appleton and Irving Sunshine
4. Evaluation of Currently Popular Liver Function Tests. John G. Reinhold

These large review articles will be published serially. Each individual paper will give a complete phase of the problem.

Besides invited articles, the pages of THE CLINICAL CHEMIST are now open for papers on original research. The publication has been submitted to *Chemical Abstracts* for abstraction of published scientific articles.

POST OFFICE RETURNS

With the cooperation of our readers we hope to be able to trace the following members of our organization. Mail is being returned to THE CLINICAL CHEMIST and to the National Treasurer. Names with last known mailing address are published below. If any member recognizes a friend or associate and knows of their new associations, please notify THE CLINICAL CHEMIST, P.O. Box 123, New York 21, N.Y.

Harold Murdock, 916 Delaware Avenue, Buffalo, New York

Henry Wishinsky, 2800 8th Street South, Arlington, Va.

Dorothy Ann Koenig, 5711 Woodlawn, Chicago, Ill.

Donald C. Wood, 120 North Mechanic Street, Carthage, N.Y.

A. Siket, 14 Morton Street, New York 14, N.Y.

Paul Joseph Vallmer, Washington, D.C.

Lester J. Schultz, V.A. Hospital, Montrose, New York

Herbert E. Thompson, Hotel Pick-Ohio, Youngstown 1, Ohio

Dorothea T. Harris, 133 West 74th Street, N.Y.C.

William R. Brown, Hahnemann Hospital, Philadelphia, Penn.

H. Theo. Hanson, Wisconsin General Hospital, Madison, Wisconsin

William Spivack, 5723 Catherine Street, Philadelphia 43, Penn.

Walter E. Lox, Good Samaritan Hospital, Phoenix, Arizona

Alfred M. Reingold, 334 E. Sheldon St., Philadelphia, Pa.

Dorothy M. Feinberg, 106 Revere St., Boston, Mass.

John K. Kirby, Sr., Pennock Hosp., Hastings, Mich.

CHICAGO SECTION MEETING
January 30th, 1953

The January meeting of the Chicago Section will be held on Friday, January 30th, 1953 at 8 P.M. at the Mount Sinai Hospital, 2750 West 15th Place. Dr. I. Davidsohn, Pathologist, Mount Sinai Hospital and Chairman of the Department of Pathology, the Chicago Medical School will speak on "Rh". The meeting is open to the membership as well as all interested persons.

CLEVELAND MEETING ON PROFESSIONAL PROBLEMS

(Continued from page 1)

been made very suddenly. However, late in the meeting, someone made the constructive suggestion that no co-operation of a well-established group could be expected until a more definite program, having in it elements of common interest, could be worked out.

Earlier during the discussion, I was asked about views of the AACC on the relationship of non-medical and medical groups. I mentioned the following:

1. That the code of ethics, which the AACC has worked out, would, in my opinion be a very important pronouncement defining the relationship of the clinical chemist to the doctor. Copies of this might be made available to Dr. Borg for distribution, since I feel that collaboration will be simplified as soon as the various groups define their relationship to Medicine and their other objectives themselves.
2. That the diversity of background in non-medical groups seemed to me to be an important matter. Organizations requiring an M.D. as a prerequisite, begin with members whose premedical training has been partly specified, and whose four years toward the M.D. have been pretty well standardized. This makes for homogeneity and common interest, and simplifies the matter of certification. As you know, I also feel that the heterogeneous background of men in other fields such as clinical chemistry is in some respects most desirable, for it supplies the medical profession with services that could not be provided by persons who have all had similar training.
3. In my opinion the principal basis for friction is a difference of opinion on the fundamental question: "Is the practice of my specialty the practice of Medicine?" When I tossed this into the hopper, the discussion at once began to get lively. I pointed out that the AACC is officially on record in this connection and that, in this respect, my statement could be regarded as more than a personal opinion. Nobody in a medical school cares whether the professor of biochemistry claims that physiology is a mere extension, or vice versa, but passing laws on the subject would be another matter. And, it is, of course, common knowledge that the legal battles usually revolve about the question: "Is this man practicing Medicine without a license?" If so, he is breaking the law in every state. Some of the discussants felt that they are in a sense practicing Medicine because they not only tell the doctor that the outcome of a given test is thus and so, but interpret its significance further when he calls back to inquire about this. The important item here, it seems to me, is "when he calls back." That makes the man who is called a consultant, and the doctor assumes the responsibility for the case. So long as the laboratory man does not advise the patient directly, but supplies the doctor with opinions as well as findings on the basis of which he can arrive at a diagnosis and prescribe treatment, he is not, in my opinion, practicing Medicine. I feel that here is a principle where unanimity of opinion might well be achieved.

In the course of discussion, I also mentioned that in my opinion a doctoral degree (M.D., Ph.D., or D.Sc.), including special courses required in the particular area, plus three years of experience, might become a common goal in certification. This would naturally not be achievable at once, particularly in non-medical groups. In fact, it seemed a bit staggering to some of those present, who felt that the problem is being approached from the wrong end. In other words, one certifies those who do not require certification. I have had many doubts about certification myself, but now hope it will provide many with an objective analogous to that of wanting to fulfill requirements for membership in the American Society of Biological Cehmists or other organizations that set down certain standards."

After consideration of Dr. Gaebler's report, the National Executive Committee voted that the AACC favors the principle of an association of organizations of laboratory disciplines that supply services to medicine, provided that the Code of Ethics of the AACC remain a minimum standard. Dr. Gaebler was appointed as representative of the AACC to the permanent organization. The AACC will also meet reasonable expenses.

REPORT ON SECOND SURVEY OF INTER-LABORATORY ACCURACY

Conducted by Southern California Section
April 1952

Aliquots of pooled serum, sterilized by passing through a Seitz filter, were mailed out by first class mail in sterilized screw-cap vials to member laboratories in the Los Angeles area with instructions to perform the following determinations: total protein, chloride, sodium, potassium, total bilirubin, icterus index, and thymol turbidity. Each test was to be performed in duplicate and the results were to be returned anonymously with a notation of the method used, the date of the performance of the test, and the date of receipt of the specimen. In addition, it was requested that duplicate analyses for sodium and potassium be performed on three successive days to get an idea of the ***between day*** error of these analyses.

Eight to twelve laboratories reported on each determination and the results were analyzed statistically. The arithmetic means of the reported results with limits, expressed as percentages of means, which would include all of the reported results, are as follows: total protein 6.5 gms% ± 12%, chloride 99.0 meq/liter ± 10%, sodium 142.5 meq/liter ± 4.6%, potassium 4.85 meq/liter ± 23% (if one laboratory is excluded, these limits become ± 14%), total bilirubin 1.36 mgs% ± 29%, icterus index 16 units ± 37%, thymol turbidity 3.9 units ± 154% and -75%. Total protein was determined in two independent laboratories by Kjeldahl, reporting 6.6 and 6.8 gms%. The average of these latter reports was used for the calculation of the limits given above for reported protein values. Comparison of the various methods used with the results obtained reveals no consistent correlation. Comparison of results with the time elapsed between mailing and running the tests also fails to reveal any significant trend.

From the differences between reported duplicates, estimates of the coefficients of variation of the means were calculated. Limits of three times the coefficients of variation for the analyses are as follows: total protein ± 2.9%, chloride ± 2.4%, sodium ± 1.8%, potassium ± 3.5%, total bilirubin ± 13%, icterus index ± 7%, thymol turbidity ± 3%. As indicated by analysis of variance, the variation *between laboratories* is highly significant for every analysis. There is no significance *between days* in either the sodium or potassium determination.

Sodium, potassium, and total protein were also included in the First Interlaboratory Accuracy Survey conducted by the same group of laboratories (THE CLINICAL CHEMIST, May 1952). A comparison of the results obtained in the two surveys reveals errors of the same general order of magnitude.

The differences between laboratories for total bilirubin, icterus index, and thymol turbidity are adjudged larger than desirable, and it is the plan of the Southern California local section to make a study of the contributing causes.

(This statistical survey was prepared by Dr. R. J. Henry.)

COMMITTEE ON EDUCATION

Dr. Hugh J. McDonald, Chairman, submitted the following report of committee activities to the National Executive Committee, November 17, 1952.

As you may recall, the Committee, last year, (C.C. Vol 3 No. 6 p. 4) appointed a Sub-Committee under the chairmanship of Doctor Clarence Cohn of Michael Reese Hospital, Chicago, to study the problem of the "training of technicians". Doctor Cohn may possibly have something to report on this matter, and I suggest that he be contacted directly.

There is an important perennial problem, namely the further education of graduate students in medical biochemistry, some educational counsellors, and even some of our own members, to a clearer appreciation of the broad scope of clinical chemistry. Too many of our own associates still register surprise when the full-time investigator in clinical chemical re-

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MINUTES OF EXECUTIVE COMMITTEE
November 20, 1952

The minutes of the previous meeting at Atlantic City, published in the September, 1952 issue of THE CLINICAL CHEMIST, were approved without correction.

Miriam Reiner reported for the Editorial Committee and noted that the first volume of the *Book of Methods* is now in preparation by the Academic Press. Twenty methods are to be included, and these were tested by twenty-seven individuals. A vote of thanks was given to the Committee on the completion of this important task, and Nelson F. Young of Richmond, Virginia was invited to form an Editorial Committee for the second volume of the *Book of Methods*. Kurt M. Dubowski (chairman), Irving Sunshine and Harold D. Appleton were requested to report on a proposed manual of toxicological methods.

Harold D. Appleton reported for the Editorial Board of THE CLINICAL CHEMIST and noted that "the first year has found THE CLINICAL CHEMIST gaining in stature as the spokesman for the profession." The newsletter is now circulated in nine countries and various library groups have requested complete files. Plans for 1953 include scientific features of which three series have already been accepted for publication and it is hoped that THE CLINICAL CHEMIST will serve both as a news organ and as a journal. It was moved, seconded and approved that henceforth the newsletter be known as "The Official Publication of the American Association of Clinical Chemists." It was also recommended that a Business Manager be selected to supervise the financing of the publication while the present Editorial Board would be concerned only with editorial policy. Ellenmae Viergiver was invited to fill the three-year vacancy on the Editorial Board.

Hugh J. McDonald completed the report for the present Committee on Education and noted "a tendency of the practical professional aspects of clinical chemistry to over-shadow and essentially obliterate the strictly scientific aspects." It was suggested that "such an impression of the profession can hardly compete with the attractive research opportunities now offered by so many industrial and governmental laboratories." It was also suggested that the opportunities in clinical chemistry have not been suitably publicized. A vote of thanks was given the Committee on Education on the completion of its task, and Emmet B. Carmichael of Birmingham, Alabama was invited to form a new Committee.

Oliver H. Gaebler represented the AACC at a meeting held on October 20, 1952 in Cleveland, Ohio. Members of several organizations interested in the medical-biological-chemical field discussed the nature of their common problems and the desirability of united action in seeking solutions to these problems. To that end the AACC was invited to join in the formation of a permanent committee. It was moved, seconded and approved that the AACC favors the principle of an association of organizations of laboratory disciplines that supply services to medicine, provided that the Code of Ethics of the AACC remain a minimum standard. Dr. Gaebler was appointed as representative of the Association, and the AACC would meet reasonable expenses.

The Southern California section requested an opinion as to the advisability of student affiliate memberships to a section, such affiliates to be assessed only the nominal costs of publications. The bylaws require that members of any section must also be members of the Association. Article III of the constitution defines membership levels, and an amendment to the constitution would be necessary for student affiliate membership as provided in Article XIV. It was also noted that at the present time such students would be eligible as associate members.

An International Association of Clinical Biochemists was discussed at great length. Warren M. Sperry, the American member of the Commission on Clinical Chemistry of the International Union of Pure and Applied Chemistry, was present at the meeting and provided in detail the proceedings of the Paris meeting on July 24, 1952 during the Second International Congress of Biochemistry. It was proposed in Paris that an International Association of Clinical Biochemists should be formed under the auspices, or closely associated with, the International Congress of Biochemistry. The Commission on Clinical Chemistry of the IUPAC would act as the nucleus for a Committee of the International Association of Clinical Biochemists. The AACC passed the following resolutions:

1. The AACC approves in principle the participation in the proposed International Association of Clinical Biochemists.
2. The AACC will appoint a representative to the Committee on the invitation of the Commission on Clinical Chemistry of the IUPAC.
3. It is the sense of the AACC that this international association ultimately be a federation of national societies rather than an association of individual members, with due regard to safeguarding the participation of clinical chemists in those countries that have no national societies.
4. The name be changed to the "International Association of Clinical Chemistry" rather than the "International Association of Clinical Biochemists."
5. The above resolutions to be forwarded to the Commission on Clinical Chemistry.

The Program Committee was instructed to prepare a symposium for the 1953 AAAS meeting and also a session on clinical chemistry at the same meeting.

The meeting was adjourned at 12:45 A.M.

Respectfully submitted,
Max M. Friedman, National Secretary

BOOK REVIEWS

THE IMMATURE INFANT, Correlation of Clinical and Chemical Observations. A Working Manual For Physicians and Chemists. 126 pages, Illus. 1952. Compiled and edited by Samuel Natelson, Woodruff L. Crawford, Franklin A. Munsey. Published as an educational service by a grant from Endo Products Inc. Reviewed by Harold D. Appleton, Goldwater Hospital, N.Y.

Those of us who have heard Dr. Natelson report on his work with premature infants, and those who have seen the exhibit of this subject by this group from Rockford Memorial Hospital, Rockford, Ill., at the convention of the AMA in Chicago this past June, wondered if there would ever be a compilation of the "ultramicro" methodology, so that the same service could be available in other institutions.

This book compiles the clinical and laboratory data to support the theory that "adrenal immaturity" is the common finding in the premature infant, and presents the method of treatment for these patients according to the "Rockford Plan". It is for this reason that the data would be of extreme interest both to clinical chemists and pediatricians. The clinical chemist is a full partner in this plan. The results of the described methodology determines the treatment. The second half of this book gives the normal values for infants and the levels that abnormalities will reach together with method of calculating fluid to correct deficiencies.

"Ultramicro" chemical procedures are well described. These include, drawing the blood samples, method for hematocrit, blood iron, sodium and potassium, protein, chloride, sugar, urea nitrogen, CO2 content, non protein nitrogen, blood pH, oxygen content, serology and blood culture. Though the equipment used would not be found in every laboratory, certain of these tests could be performed with ordinary equipment. The special equipment described are now stocked by equipment dealers.

Looking ahead towards the extension of clinical chemical research, these methods offer means of working with small animals, in tissue slice studies, enzymes studies, as well as for certain cases where adequate blood samples are not available.

The book is in a soft metal ring binder, printed on good paper, and should be part of every laboratory library. It would be worth the price if there was a charge for it. As it is sent free to interested scientists, the authors and publishers should be congratulated for their work and generosity. Copies are available from the Medical Director, Endo Products Inc., 84-40 101 Street, Richmond Hill 18, New York.

SYMPOSIUM ON RADIOBIOLOGY. The Basic Aspects of Radiation Effects on Living Systems. James J. Nixon, Editor-in-chief, xii + 465 pages. John Wiley & Sons Inc., 440 Fourth Ave., N.Y. 16, N.Y. 1952 $7.50.

The proceedings of a symposium held at Oberlin College, June, 1950 sponsored by the Sub-Committee on Radiobiology of the Committee on Nuclear Science, of the National Research Council, have now been presented to all that are interested. For this symposium, the committee attempted to bring together the experimental radiologists, chemists, physicists and biologists for an open discussion of the present knowledge of the biological effects of ionizing radiations.

The editor has done a good piece of work in organizing the 23 presentations. He introduces the subject to the reader with essays on the fundamental theories of the primary interaction of ionizing radiations with matter. Following this introduction, papers on theoretical radiation chemistry, effects on water and then a series of presentations of radiation effects on cells are presented. The symposium is concluded with a consideration of the effects of radiation on mammals. Each paper is followed by a discussion which emphasizes the highlights of the presentation. It is here, that one recognizes the names of distinguished researchers not included in the essays.

The book will provide a good introduction to the subject matter for people interested in this field and for those newcomers that want an overall picture together with a survey of the literature to June 1950. The absence of a subject index will make this book lose effect as a reference source.

NEW BOOKS

A LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY, 7th Ed. by D. Wright Wilson, University of Pennsylvania, 293 pages $3.25 The Williams and Wilkens Co., Baltimore 2, Md. 1952

CONDENSED REVIEW OF PHARMACY by George W. Furo. John Wiley & Sons, Inc., 440 Fourth Ave., N.Y. 16, N.Y. 1952.

COMMITTEE ON EDUCATION

(Continued from page 5)

search is included under the term "clinical chemist". The tendency of the practical professional aspects of clinical chemistry to over-shadow and essentially obliterate the strictly scientific aspects, is apparently still prevalent.

Most graduate students in medical biochemistry whom I have interviewed, have revealed an opinion that the clinical chemist is still simply a "technician", who does a daily chore of analyses in a hospital for a living, and who is not much interested in the scholarly pursuit of knowledge. Such an impression of the profession can hardly compete with the attractive research opportunities now offered by so many industrial and governmental laboratories.

When *"Chemical & Engineering News"* ran a series of articles on "Careers in Chemistry", about a year ago, they did not to my knowledge include a section on "clinical chemistry", as such. I should like to suggest that Doctor Murphy, the editor, be informed of this omission, and that approval be sought for an article for C. & E.N. about clinical chemistry. Such an article, it seems to me, ought to be prepared, as a joint effort, by a special AACC committee appointed for the purpose. Every effort should be made to bring out all the fascinating areas of professional and scientific endeavor that are included under the broad designation of "clinical chemistry". It should also try and dispel many of the wrong notions, still floating around, about the type of work that lies in store for the young biochemically trained Ph.D. who is trying to reach a decision as to whether he should enter the field of clinical chemistry.

NEW MEMBERS ELECTED BY THE EXECUTIVE COMMITTEE

September – 1952

John R. Washington	Montgomery, Ala.
Miles E. Drake	Vineland, N.J.
Sidney Becker	Waterbury, Conn.
Eaton M. MacKay	Oakland, Calif.
Adrian Hainline, Jr.	Cleveland, Ohio
Donald G. Remp	Detroit, Mich.
Mary Ruth Dietrich	Kansas City, Mo.
Rufus A. Nichols,	Brooklyn, N.Y.

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INTERNATIONAL ASSOCIATION OF CLINICAL BIOCHEMISTS

Unconfirmed minutes of a meeting of Clinical Biochemists on 24th July, 1952, at the Sorbonne University, Paris, during the Second International Congress of Biochemistry

The meeting was convened at 4:50 p.m., with Professor E.J. King, (U.K.) in the Chair.

The Chairman opened the meeting by explaining that clinical biochemistry was served at present by a number of individual national societies and instanced particularly the National Society of Holland, who were holding their 5th Anniversary this summer. They had proposed to call an international meeting to celebrate this event in Amsterdam, but since they would almost coincide in time with the International Congress in Paris they had kindly agreed to postpone until now the discussion of the formation of an international association of clinical biochemists. He explained that the Biochemical Congresses are organized by a committee which is in association with the International Union of Pure and Applied Chemistry. The latter have set up a small commission of clinical chemists, whose members are:

Professor E.J. King (U.K.)
Professor W.M. Sperry (U.S.A.)
Professor P. Fleury (France)

This commission has collected ideas from biochemists in a number of countries. It is suggested that an association of clinical biochemists should be formed and should be closely associated with the International Biochemical Congress. The chairman had drawn up a memorandum containing ten clauses which he then read to the meeting, and proposed that discussion of each of the clauses should be taken separately.

CLAUSE I.

"An international association of clinical biochemists shall now be formed whose function shall be to advance knowledge and promote the interest of biochemistry in its clinical (medical) aspects."

DISCUSSION.

The Chairman felt that this association should remain on a fairly informal footing and one of its main functions should be to provide a forum for the discussion of ideas on international cooperation.

Dr. D. Jaumain (Belgium) said that the word "clinical" implied the functions of a medical practitioner. Clinical biochemistry was an integral part of clinical pathology and an international society of clinical biology was already in existence. Its members were entirely medical practitioners, and he, therefore, felt that the formation of the proposed association was mistaken.

Dr. A.L. Latner (U.K.) said that this statement was entirely contrary to the functions of modern medicine, since nowadays efficient medical treatment requires the cooperation of teams which include non-medically qualified chemists.

Professor W.M. Sperry (U.S.) felt that this discussion was one of semantics only. He thought that the word "clinical" did not necessarily denote a medical qualification, although he admitted that, in similar discussions taking place in the United States, great efforts had been made to identify "clinical" with a medical qualification.

Professor E.J. King (U.K.) said that he had followed discussions of this type in several countries which had all finally adopted the word "clinical".

Professor P. Fleury (France) pointed out that France had a similar society, to which doctors, pharmacists, veterinarians and chemists were admitted on equal footing. He felt that Dr. Jaumain was not representative of Franco-Belgian opinion.

Dr. A.E. Sobel (U.S.A.) agreed that the word "clinical" did not necessarily denote a medical qualification, and said there existed a symbiotic relation between the doctor and the chemist. In fact he said in many hospitals chemists are now members of the hospital boards.

Dr. J.C.M. Verschure (Holland) said that the province of the clinical biochemist was limited to analytical work on specimens and did not extend to treatment of the patient, which is the proper function of qualified medical practitioners. He said that the clinical biochemist "treated urine, not the patient".

Dr. B. Josephson (Sweden) felt that if clinical biochemists wished to be treated as specialists then the formation of an international body was necessary. He thought that the only qualification for membership was an interest in the subject.

Dr. D. Jaumain (Belgium) reiterated that the word "clinical" implied the examination of patients.

Professor W. M. Sperry (U.S.A.) then suggested that Dr. Jaumain should propose some other suitable word.

Dr. D. Jaumain (Belgium) replied that it was not his job to find another word to replace "clinical", which was, in his opinion, quite unsuitable.

Dr. J. Harkness (U.K.) reminded the meeting that the Association of Clinical Pathologists of Great Britain were recently asked to admit non-medically qualified biochemists to their membership, but found themselves unable to do so.

Dr. R. Askevold (Norway) said that membership in this association should be dependent on competence and not possession of any particular diploma. He wondered whether the word "medical" instead of "clinical" would meet the case.

Dr. A. L. Latner (U.K.) said that in his opinion opposition to the word "clinical" came mainly from older medical practitioners and was motivated by personal reasons.

Dr. B. Josephson proposed that the meeting should proceed with the other business and leave the question of the name of the association until last.

Professor R. Vivario (Belgium) remarked that without the word "clinical" the title failed to convey the special sense which was required.

Professor H. Diacono (Tunis) suggested "clinical applied biochemistry".

Dr. D. Jaumain (Belgium) suggested "biochemistry in its application to medicine". However, *Professor R. Vivario* (Belgium) proposed that a vote should be taken on the clause in its initial text.

Dr. G. Thomas (U.K.) seconded this proposal, which accordingly went to the vote.

In favour, 30; *against*, nil; *abstentions*, 1.

CLAUSE II.

"The commission on clinical chemistry of the Section of Biological Chemistry of the International Union of Pure and Applied Chemistry shall act as the Committee of International Association of Clinical Biochemists."

DISCUSSION.

The Chairman pointed out that the International Union of Pure and Applied Chemistry had already appointed this Commission on Clinical Chemistry. He suggested that it would be convenient for this Commission to act as the nucleus of the Committee of the International Association, with power to appoint to themselves further members. He asked the meeting to discuss this matter and to decide whether this was their wish.

Dr. M. Reiner (U.S.A.) thought that this was a very good arrangement.

Dr. A. E. Sobel (U.S.A.) proposed that the Clause should be modified to make it quite certain that eventually the Committee should consist of representatives elected from national societies as they came into being.

The Chairman said that he did not feel that he was competent to modify the Clause in such a way that the Committee would be made up entirely of nationally elected members, but felt that he could reasonably promise that the Committee should include such members. The Clause was therefore redrafted to insert the word "initially" after the word "act" and to add: "The Committee shall subsequently include representatives from national societies."

Professor R. Vivario (Belgium) asked whether the Association was intended to be a federation of national societies.

The Chairman replied that on the contrary it was in itself an international society.

Professor H. Diacono (Tunis) wished to know whether members of this Association must necessarily be already members of national societies.

The Chairman said no.

The modified clause was put to the meeting.

In favour, 25; *against*, nil.

CLAUSE III.

"The Committee shall set up special committees to deal with specific matters of special nature (e.g., with internationally agreed ways of expressing results) as may seem indicated from time to time."

This was adopted unanimously.

CLAUSE IV.

"The Committee shall make attempts to ascertain the titles of existing societies of clinical biochemistry (or societies serving the same function under different names) and of their officers; and it shall endeavour to promote the foundation of societies in countries where they do not already exist."

This was adopted unanimously.

CLAUSE V.

"From the lists of names of members in existing societies and from the names of other such persons who may be ascertained to be practicing clinical biochemistry, the Committee shall prepare an international list of clinical biochemists with their addresses, and, where ascertainable, their principle scientific interests."

Adopted unanimously.

CLAUSE VI.

"The International Association of Clinical Biochemists will meet during, and before or after if deemed advisable, the International Congress of Biochemistry, and its members will use the clinical chemistry section of the Congress as a forum in which to present their communications."

Dr. A. E. Sobel (U.S.A.) wondered whether the International Association could hold meetings at other times.

The Chairman said that this was covered by following clauses.

The clause was adopted unanimously.

CLAUSE VII.

"The Committee shall represent to the local organizing committee of the Congress that symposia on subjects of special interest to clinical biochemists be held during the Congress and possibly during the day (or two) preceding the Congress."

Adopted unanimously.

CLAUSE VIII.

"The Committee shall encourage and attempt to promote meetings on an international regional basis."

Adopted unanimously.

CLAUSE IX.

"The Committee shall receive and circulate information regarding special new techniques and other matters of interest which might not be readily available through the ordinary vehicles of publication."

Adopted unanimously.

CLAUSE X.

"The Committee or a Sub-committee shall arrange for the circulation of solutions and samples for the comparison of methods and results; and shall attempt to standardize the results of such methods as are usually reported in units or in some other arbitrary way."

Adopted unanimously.

OTHER BUSINESS.

Dr. A. E. Sobel (U.S.A.) proposed a vote of thanks to the Committee for the work it had done. This was carried unanimously.

Dr. B. Josephson (Sweden) suggested that in future congresses emphasis should be placed on topics of general interest to clinical chemists, e.g., lectures by leading biochemists and symposia on subjects of interest to clinical biochemists.

The Chairman proposed that Dr. I. D. P. Wooton (U.K.) should act as Secretary to the Committee. Carried unanimously.

The meeting closed at 6.15 p.m.

APPENDIX A.

Resolutions concerning the formation of the International Association of Clinical Biochemists, which were read to the initial meeting in Paris on 24th July, 1952:

I. An international association of clinical biochemists shall now be formed whose function shall be to advance knowledge and promote the interest of biochemistry in its clinical (medical) aspects.

II. The commission on clinical chemistry of the Section of Biological Chemistry of the International Union of Pure and Applied Chemistry shall act initially as the Committee of the International Association of Clinical Biochemists. The Committee shall subsequently include representatives from national societies.

III. The Committee shall set up special committees to deal with specific matters of special nature (e.g., with internationally agreed ways of expressing results) as may seem indicated from time to time.

IV. The Committee shall make attempts to ascertain the titles of existing societies of clinical biochemistry (or societies serving the same function under different names) and of their officers; and it shall endeavour to promote the foundation of societies in countries where they do not already exist.

V. From the lists of names of members in existing societies and from the names of other such persons who may be ascertained to be practicing clinical biochemistry, the Committee shall prepare an international list of clinical biochemists with their addresses, and, wherever ascertainable, their principle scientific interests.

VI. The International Association of Clinical Biochemists will meet during, and before or after if deemed advisable, the International Congress of Biochemistry, and its members will use the clinical chemistry section of the Congress as a forum in which to present their communications.

VII. The Committee shall represent to the local organizing committee of the Congress that symposia on subjects of special interest to clinical biochemists be held during the Congress and possibly during the day (or two) preceding the Congress.

VIII. The Committee shall encourage and attempt to promote meetings on an international regional basis.

IX. The Committee shall receive and circulate information regarding special new techniques and other matters of interest which might not be readily available through the ordinary vehicles of publication.

X. The Committee or a Sub-committee shall arrange for the circulation of solutions and samples for the comparison of methods and results; and shall attempt to standardize the results of such methods as are usually reported in units or in some other arbitrary way.

PHILADELPHIA SECTION MEETING
January 27

Dr. Harry Shay, Director of the Fels Research Institute of the School of Medicine of Temple University, will present a lecture on "Liver Function" at the January 27, 1953 meeting of the Philadelphia Section. Dr. Shay was a member of the founders group of the American Board of Gastro-enterology, and one of his main fields of specialization has been gastro-intestinal physiology.

An informal dinner in honor of the speaker will be held at the Lido Restaurant, 3331 Woodland Avenue, Philadelphia, Pa. at 6:00 P.M. preceding the meeting. Reservations for the dinner may be made up to 11:00 A.M. on January 24 by writing or calling the secretary, Albert B. Sample, at the Bryn Mawr Hospital (Telephone: *BR*yn Mawr 5-1800).

CHICAGO SECTION

The Chicago Section of the AACC met Friday evening, December 5th at the Stritch School of Medicine of Loyola University. The speaker for the evening was Dr. Hans Popper, Director of Pathology of Cook County Hospital and Director of Medical Research, Hektoen Institute for Medical Research. Dr. Popper spoke on "Conditioned Amino Acid Deficiency".

NEW YORK SECTION

The New York Section held its first meeting of the 1952 Fall semester at the New York Academy of Science, Tuesday evening, October 28, at which officers of the section and members of the Executive Committee were elected.

Kurt G. Stern, Professor of Biochemistry at the Polytechnic Institute of Brooklyn, assumed the post of chairman, from that of vice-chairman, according to the section by-laws. The past Chairman, Israel S. Kleiner, Professor of Biochemistry at New York Medical College, became a member of the Executive Committee. Bernard Klein, Kingsbridge Veterans Hospital, was elected Vice-Chairman. Abraham Seifer, Jewish Hospital for Chronic Diseases, became Secretary-Treasurer.

Eliot Beach, of the Metropolitan Life Insurance Company, was reelected to the Executive Committee. Other members elected to the Committee are: Jacob Klinger, Metropolitan Hospital, Alexander Greenstein, Bellevue Hospital, and I.J. Greenblatt, Beth-El Hospital. The latter two received a tie vote and the membership decided to allow both to serve instead of having a run-off vote.

Doctor Albert E. Sobel, National President, reported to the Section on the formation of an International Organization of Clinical Chemists. The plans for this organization were formulated at the 2nd International Congress of Biochemistry in Paris in July, 1952. The Chairman of the International Organization is Doctor E. J. King, of Great Britain. Doctor King is also an Honorary Member of the American Association of Clinical Chemists.

Doctor Stern presented an interesting resume on types of instrumentation that are being used in European laboratories at the present time, and which could be used to great advantage in American laboratories. Among the instruments discussed were European-type spectrophotometers, paper electrophoresis equipment, and an ingenious electron microscope which can be built very cheaply and which Doctor Stern brought to this country in a small suitcase. The AACC is proud to report that Doctor Stern was awarded the Pasteur Medal at the 2nd International Congress of Biochemistry.

SOUTHERN CALIFORNIA SECTION

The new season of monthly scientific meetings opened September 9 at the Los Angeles County Hospital. The results of the second interlaboratory accuracy survey were presented to the membership and guests by Miss Maxine Wertman, committee member, followed by a discussion of the "Statistics of Interlaboratory Accuracy Surveys" by Dr. R. J. Henry, committee chairman. An abstract of the survey results, prepared by Dr. Henry, will be found elsewhere in this issue.

Pietro de Nicola, M.D., Associate Professor, Department of Internal Medicine, University of Pavia, Italy was guest speaker on October 7 at the Hollywood Presbyterian Hospital. Dr. de Nicola discussed his work on the "Clinical Evaluation of Hyperglobulinemias".

Kenneth D. Johnson, Chaney Chemical Laboratory, spoke on November 5 at the Cedars of Lebanon Hospital, dealing with various phases of "Spectrophotometry in the Clinical Chemical Laboratory."

Arthur W. Adamson, Ph.D., Professor of Chemistry, University of Southern California, who addressed the group last April 1, has provided the following abstract. As a pioneer wartime worker in a field that has since shown remarkable development, benefiting clinical and other chemists alike, Dr. Adamson is especially qualified to appraise the subject of "Ion Exchange."

ABSTRACT OF TALK ON "ION EXCHANGE"

By

A. W. ADAMSON, Ph.D.

Professor of Chemistry,
University of Southern California

"Ion exchangers are solids capable of a stoichiometric exchange of one ion for another. Historically, soils were the first ion exchangers to be studied; even Aristotle remarked on the ability of soils to freshen sea water. With the development of synthetic, high capacity, and rapid acting exchangers, which began in 1935, the whole field received tremendous impetus. Today there are several monographs on the subject, but even they are inadequate to cover the subject completely.

"On the practical side, important applications include the softening and deionization of water; removal of trace impurities (calcium from milk, salts from wine, recovery of copper from pickling baths, separation of fission products from plutonium, etc.); separation of similar species (fractionation of rare earths, amino acids, alkaloids, isotopes); analysis, by replacement of difficulty titratable ions by hydrogen ions. In general, ion exchange methods may be somewhat fussy and time consuming, but are capable of a very high degree of efficiency and effectiveness.

"The physical chemistry of ion exchangers is of considerable current interest. Present day exchangers consist of a rather open three dimensional net of aromatic hydrocarbon units, with sulfonic, carboxylic, or phenolic groups, in the case of cation exchangers, and amine groups, in the case of anion exchangers. These groups are scattered randomly, and the exchange is a kind of double decomposition process in which, say, one metal sulfonate is converted to another. Since the sulfonic groups are immobile, there is an internal Donnan membrane effect whose theoretical treatment is currently much discussed. The rates of ion exchange are controlled by diffusion and it has not yet been possible to develop a complete theoretical treatment of the various coupled diffusion processes.

"Ion exchange separations are most efficiently carried out by means of the column or chromatographic procedure, whereby bands of "adsorbed" ions are moved down the column by appropriate eluants. Complete separation of similar ions is possible by this technique. Thus if species A and B have distribution coefficients differing by only 1%, initially superimposed bands of A and B will be completely separated, in theory, when the eluting solution has moved them down the column a distance approximately one hundred times their width. In practice, such bands tend to become diffuse, and several theoretical treatments have been developed to describe the situation."

PHILADELPHIA SECTION

The first meeting of the 1952-53 season of the Philadelphia Section, American Association of Clinical Chemists, was held at 7:45 P.M. on Tuesday, October 28, 1952 in Alumni Hall of the Hospital of the University of Pennsylvania. Prior to the meeting, there was an informal dinner in honor of the speaker at the Lido Restaurant.

The president, Dr. Cecilia Riegel, introduced Mr. James J. Moran of the Customer Research Department of the Kimble Glass Company, Vineland, N.J., who spoke on "Volumetric Glassware."

Illustrating his lecture with numerous lantern slides, Mr. Moran considered the many details involved in the manufacture of precision volumetric laboratory glassware, with emphasis on calibration techniques and the tolerances that might be expected in the routine use of such equipment. Precautions that should be taken in preserving the accuracy of calibrated glassware were also discussed.

Following his lecture, Mr. Moran showed a most interesting sound moving picture in color that took the audience on a trip through all departments of the Kimble Glass Company and showed the elaborate machines and processes that are used in assuring the uniformity and accuracy of the various pieces of volumetric glassware.

After the motion picture, Mr. Moran answered questions related to the subject of his lecture.

Members of the Association remained for a short business meeting after the scientific program, and Dr. Riegel discussed the processing of applications for certification by the American Board of Clinical Chemistry as described to her by Dr. Joseph W. E. Harrisson, Secretary-Treasurer of the Board.

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BOSTON SECTION

On October 16, 1952, at 8:00 P.M., the Boston Section A.A.C.C. held its first meeting of the 1952-53 season at the New England Medical Center. Preceding the speaker of the evening, the annual election of officers took place. The following were appointed:

Norbert Benotti, Chairman
Arthur Detore, Vice Chairman
Esther Thomas, Secretary-Treasurer

Dr. I. S. Rosenberg of the Endocrine Research Laboratory of the New England Medical Center spoke on the subject of "Serum Proteins and Lipids by Paper Electrophoresis."

Since its inception, paper chromatography could accomplish separation of larger molecules as proteins only with great difficulty. A great advance in the latter direction came about in 1950 when Tiselius and Durrum observed that protein-separation was possible if buffered paper was placed in an electric field. The method, the speaker felt, has advantages over conventional chemical ones, inasmuch as it possesses greater sensitivity, and requires relatively little apparatus. In European hospitals it apparently is quite widely used.

Dr. Rosenberg explained that his interest in paper electrophoresis was stimulated by studies of the serum lipids, feeling that in view of the association lipids have with proteins, the lipids would probably migrate in an electric field as well.

In the technique, a strip of moderately heavy paper is used, each end being immersed in a vessel containing a veronal buffer of pH 8.6. Between the two cells, a potential of 1000 v. D.C. is applied. The serum to be studied is applied to one end of the strip, and following the run, color development is carried out in much the same manner as conventional paper chromatography. In Dr. Rosenberg's studies, the proteins were stained by the method of Durrum and the lipids with Sudan IV. The Schultz test, which is a modified Lieberman-Burchard reaction, was used to detect cholesterol. The latter could also be eluted from the paper and determined chemically. He stated that no really satisfactory method exists for demonstrating phospholipids, the histological method of Smith-Dietrich being inadequate. Labeled phospholipid phosphorus offers possibilities in this direction, however. The speaker described some of his observations with paper electrophoresis which included many studies of pathological sera. Albumin, which normally migrates fastest, was found to be lacking in nephrotic syndromes, for instance. In normal serum the speed of migration, in descending order, appears to be: albumin, alpha globulin, beta globulin, and gamma globulin; cholesterol appears in the beta globulin region. Quantitation appears to be possible by several techniques. Elution of the bands and subsequent colorimetric measurement, or rendering them transparent and measuring their density with a densitometer, are two he offered.

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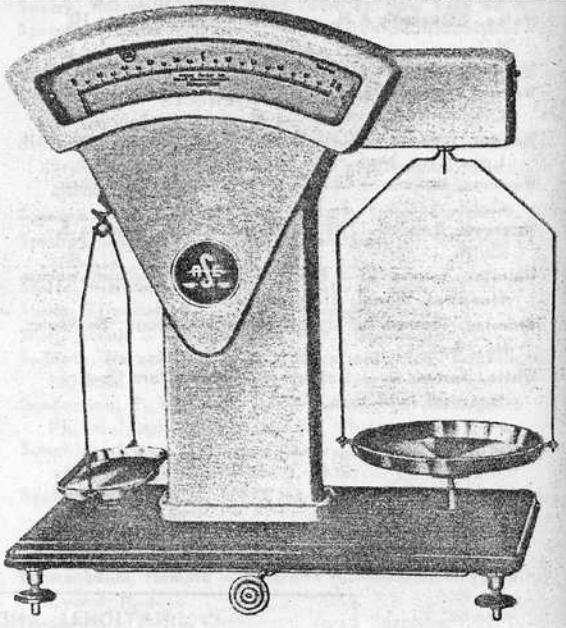

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