President Address*  

THE DEFINITION OF CLINICAL CHEMISTRY AND OF A CLINICAL CHEMIST has plagued this organization in general and its membership committee in particular. Like our friends in the medical profession, we do many things; we interest ourselves in diverse fields, we operate in many a pattern. But, unlike our medical friends, we got this way with no single, common unifying experience. All physicians have gone to medical school for 4 years and have received a degree in medicine; at least, they have done so since Abraham Flexner's ideas bore fruit. At one time a physician could qualify himself to practice by apprenticing to a successful practitioner, by attending a medical school, or by buying a diploma from a mill. Who can say that a man cannot become a great physician under the preceptorship of a competent mentor? But who also would not say that the quality of medical practice has been raised by requiring a formal, fundamental 4-year training in the theory and practice of medicine?

In clinical chemistry today are men who have demonstrated a high degree of competence with little formal training in the specialty. Is this, however, to say that the general caliber of clinical chemistry would not be improved by prescribing a course of training which would be prerequisite to the practice of our profession?

Approaching the problem from the fait accompli of what some of the members of our organization are doing, we find great variety: teaching biochemistry to medical students, pursuing biochemical or medical research, directing a commercial chemistry or hospital laboratory, working as a technician in such a laboratory, sleuthing scientifically in a police laboratory, and developing or producing new drugs. Those of us who work in a hospital or other clinical laboratory may feel that we are really the clinical chemists. Perhaps we are in the place of most direct and obvious assistance to the physician in the care of the patient. However, the clinical chemists in all the other areas are also

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helping directly to maintain and improve human health, and I know of no way and no reason to draw a line to include some of these and exclude others. If I appear to slight these other groups in my further remarks it is simply because it is the chemist in the clinical laboratory whom most people associate with the term "clinical chemist" and about whom the greatest degree of controversy and concern has arisen.

There are two aspects to the definition of a clinical chemist: first, what he does and, second, the level at which he does it. What does he do? He finds out whether a particular chemical compound in which a physician is interested is present in a particular tissue, secretion, or excretion of the body; or he finds out how much of a particular compound is present. He may do these things personally or he may supervise their being done by a technician or technologist; in either case he is responsible for the method used, the care taken, and the accuracy of the result. The difference between a clinical chemist and a fruit cannery chemist, then, is that one determines how much sugar is in the syrup of a can of raspberries and the other determines how much sugar is in the blood of a human being. Both of these determinations may affect the well-being of some person, but surely no reasonable man would say that in making either determination was the chemist practicing medicine. A physician might make use of the former determination to plan a diet for a patient; he might use the latter to decide whether the patient has renal glycosuria. The physician would then be practicing medicine. He would need no knowledge of how the determinations were made; he would not be practicing chemistry. The first aspect of the definition of a clinical chemist is, then, that he obtains by chemical means factual knowledge useful to a physician in the practice of medicine.

At what level does a clinical chemist operate? Almost anyone can be taught to test his own urine for glucose; this, however, qualifies him even less as a clinical chemist than does his decision (based on that test) as to how much insulin to take makes him a physician. The practice of a profession involves not merely going through certain motions, but of understanding what is going on and why the motions are necessary, and what would happen if the motions were slightly varied. Herein lies the difference between the chemist and the chemical technician. The technician follows instructions which have been evolved by the chemist. The technician may have learned some of the consequences of his failure to follow the instructions properly, but he still lacks the broad understanding of what is going on, of what interferences may invalidate the test, of the possible consequences of minor variations in reagent, procedure, or apparatus, and of how to avoid or get out of trouble.

The clinical chemist needs to be well grounded in three subspecialties: first, analytical chemistry which with the enormous recent growth of physico-chemical and electronic procedures and instruments, is no easy task; second, organic chemistry, because most of his determinations are of organic com-
pounds and a myriad of potential interfering organic compounds are present; and third, biochemistry, which is necessary to give meaning to the analytical work of the clinical chemist. From the latter he sees where the various components fit and can understand the significance of what he does. It enables him to become the colleague of the physician in suggesting determinations that might be of value in elucidating derangements in a system which the physician suspects of malfunction.

How is a clinical chemist to attain all this? First, he must become a chemist. In my position, I see many graduates who come to us for positions or for admission to graduate work and who consider themselves chemists because they have had 3 years of chemistry—general, analytical, and organic. This constitutes a good beginning, but I would not consider a man a professionally trained chemist unless he was also grounded in physical chemistry and had had some advanced work in analytical and organic chemistry. For a career in clinical chemistry, he should also have an acquaintance with biology and electronics. After his baccalaureate training, he should take a doctorate degree in biochemistry in a medical school department. This would serve three purposes: first, to give him the biochemical knowledge he needs; second, to give him an introduction to clinical medicine as an art and as a science and an acquaintance with its traditions and its practitioners; and third, to give him a foundation in research.

This last point—research—brings up another important aspect in rounding out a clinical chemist. No man can afford to so immerse himself in the day-by-day activities of his profession that he does nothing toward advancing it. The research activities open to him are wide in both type and extent. He should follow his own interests in developing them. If he is responsible for an active clinical chemistry service, he should not allow his research interests to divert him from his primary mission of service, any more than he should do no research at all. Among us are men who have gone to each extreme. The nature of the research is of less moment than the fact that some investigative work is being done, whether fundamental biochemical investigation, methodologic research, or clinical research in cooperation with the physicians.

A final component of the duties of a clinical chemist—often overlooked—is teaching. Some of us are associated with educational institutions and have formal teaching responsibilities, others are part of a school for medical technologists, and some have scheduled conferences with resident physicians. But all of us, even without these formalized activities, have teaching responsibilities, particularly toward our technicians and toward the physicians with whom we work.

In summary then, a clinical chemist is a person well grounded in chemistry, with graduate work in biochemistry, and with some knowledge of biologic and medical science. In the practice of his profession, his chief mission is service, but teaching and research must not be neglected.
How have some other people looked at us? Most physicians, including most pathologists, have demonstrated their respect for and acceptance of the Ph.D. scientist, particularly in clinical chemistry and microbiology. However, there have been those who have attempted to correct the undesirable fact that some laboratories are being operated by inadequately trained or improperly motivated persons by declaring the performance of laboratory examinations to be the practice of medicine. A more logical approach would be to set up some procedure for evaluating the qualifications of those desiring to direct a laboratory. This threat to the status of nonphysician scientists has contributed to the shortage of qualified personnel. We must increase our efforts to protect the public by increasing the reliability of clinical laboratory work and by making secure the right of all competent scientists to practice their professions. We must recruit, we must raise our standards, we must ensure maintenance of competence. The clinical pathologists have met this need for continuing education by providing workshops to give their people an acquaintance with new tests and techniques. I am not sure that this is the answer for our group. Presumably our fundamental training gives us the background to keep up with the advances in our field, and we can train our own chemical technicians to use the continually improving tests and techniques. However, there is a large group that can benefit from such workshops and conferences, and we should be offering more of them. In his presidential address to the American Society of Clinical Pathologists last November, Harry P. Smith, in concluding a scholarly history of clinical pathology, gave some arguments against the practice of having Ph.D. scientists in supervisory positions in clinical laboratories, which could equally well be turned against those with M.D.'s. If a man with a Ph.D. is trained for research, so one with an M.D. is trained for practice. Either must also be specially trained for clinical laboratory work. The Ph.D. scientists in clinical chemistry have favored legislation restricting operation of clinical laboratories to competent scientists, whether holders of a Ph.D., M.D., or other. Neither degree alone is evidence of such competence. If most holders of a Ph.D. prefer academic type of activity, most with an M.D. prefer practice; only a small percentage of either group is interested in clinical laboratory work. The assignment of service function to a Ph.D. scientist does not mean that the physician is shirking his responsibility for knowing everything; it is merely acknowledgment that no one man can know all fields well, and that each field should be served by one who knows it.

Finally, another problem remains to be faced. What of the individuals presently operating in clinical chemistry, but not meeting the requirements which I have outlined? I think we must—as Dr. Gast suggested in Atlantic City last spring—set up means of recognizing the competence of these people by establishing a registry for technical workers in clinical chemistry. Persons meeting the high requirements which I have described for a clinical chemist should be eligible for certification by the American Board of Clinical Chem-
istry and thus for fellowship in the AACC. Next would come a group who, at
the present stage of our development, should still be considered to be clinical
chemists: those meeting the abbreviated definition of first being adequately
trained chemists and of then having had clinical laboratory experience. These
should be eligible for membership in AACC. Those not meeting these require-
ments could be registered by the AACC as clinical chemistry technician or
 technologist, depending on their training and on the degree of understanding
(not merely knowledge) of the field. These three categories could well be
covered by licensure bills in each state, the register being maintained for those
states without a licensure act. Registration or licensure would indicate com-
pliance with minimum requirements. Certification would designate those with
more extensive training and with demonstrated ability.

This is the eleventh annual meeting of our society. Our coming of age is
testified to by this, a successful second annual meeting independent of any
other organization. I feel, and others have expressed to me, that the time
has come for us to tighten our own standards for membership. Let us truly
be an association of clinical chemists, as the American Chemical Society some
years ago became a society of chemists and as the American Medical Associa-
tion is an association of physicians. To this end I propose that we eliminate
the class of associate members. Those currently in that group would become
part of the general membership. We are grateful to our many associate mem-
ers; they have helped us to attain our present stature. Let us do all we can to
help them grow with us, but full qualification as a clinical chemist should be
required for any new member of the American Association of Clinical Chem-
ists.

FERRIN B. MORELAND

ANNUAL MEETING, 1959

The Annual meeting of the AACC
was held in Cleveland, Friday, Au-
gust 29, 1959. The membership heard
the report of the Executive Commit-
tee and considerable comment was
elicted by discussion of membership
requirements and of the problem of
Association finances. Some concern
was expressed with the requirements
for membership, especially those for
Associate membership. Since this mat-
ter is being studied by a Committee,
no Executive recommendation was
made and the matter was therefore
left open until a well-studied policy
could be formulated. John G. Rein-
hold reported on the progress of his
attempts to secure charter plane serv-
ice for the International Congress to
be held in Edinburgh, Scotland, next
summer. He reported that interest
has been high and it appears quite
likely that there will be sufficient reservations in hand to secure a chartered airplane. Anyone interested in this arrangement is urged to contact Dr. Reinhold promptly.

The most active discussion centered on the question of membership dues. Although the Executive Committee recommendation was in favor of no change at this time, the vote in the Committee was extremely close. A motion from the floor was introduced overriding the Executive Committee recommendation and speaking in favor of a $5.00 increase in all categories of membership. After considerable discussion, the motion was modified to call for a $2.50 increase in all categories. This motion was adopted by a majority of the members present, and the Treasurer shall be so instructed.

The Secretary made a strong plea for local section news for publication in The Clinical Chemist. Publication deadlines will be sent to each section representative for transmission to their respective section secretaries.

The meeting adjourned with a vote of commendation to the Cleveland section for their efforts in organizing a highly successful meeting.

MINUTES OF THE MEETING OF THE AACC EXECUTIVE COMMITTEE

The meeting of the Executive Committee on August 26, 1959, was called to order by Ferrin Moreland, President. Those present were A. Hainline for O. H. Gaebler; H. D. Appleton for M. Kaser; J. G. Reinhold for L. Dotti; R. Bowman, Texas Section; J. W. Price, Cleveland; E. A. Campbell, Michigan; W. R. Bergren, Southern California; M. Reiner, Washington-Baltimore-Richmond; D. Seligson, Connecticut; M. Golub, Boston. Invited guests of the Executive Committee included Dr. S. H. Jackson. Owing to the unfortunate illness of Margaret Kaser, Treasurer, only an abbreviated treasurer's report was available. Dr. Reinhold reported for the Committee on Legislation. A model licensure bill was submitted to the Pennsylvania Department of Health, but not in time for consideration by the Legislature. There is still some objection to the entire conception of licensure; this objection stems from segments of the medical profession and from certain other nonmedical groups. Dr. Reinhold also reported that the American Society for Medical Technologists is now a member of the Intersociety Committee. The Committee report concluded with a strong suggestion that adequate legal counsel should be retained and that a legal aid fund should be established. These proposals were accepted by the Executive Committee and are now the subject of study. The president appointed John Polli to represent AACC on the Joint AMA Committee.

Dr. Seligson reported for the Methods and Standards Committee. He mentioned again the serious difficulty of getting adequate reports of checks on methods proposed for publication. Volume III of Standard Methods is being held up only by an incomplete
return of reports from the volunteer checkers. The Committee hopes to pursue this matter quite vigorously in the next few months. He also proposed a subcommittee to establish and characterize in considerable detail certain biochemical standards. Those interested in establishing this project are asked to contact Dr. Seligson.

Harold D. Appleton reported for the Editorial Board of the Journal. The subscription list continues to grow. The number of journals now distributed show a ten per cent increase over the number for 1958. Negotiations are in process to increase the size of the Journal for the coming year. The increase will be effected by an increased number of pages and by a slight decrease in type size. This should result in roughly a one-third increase available text. The Editorial Board made a strong plea for papers of general research interest as well as for papers describing methods. The question of Association rights to papers presented at meetings was discussed. Most Societies reserve publication rights for any papers submitted to their meetings. The Editorial Board urged adoption of this policy. This policy is now under study by the Executive Committee and a decision is expected shortly. The Editorial Board was authorized to draw funds from the Treasury for payment of preprinted abstracts for the Annual Meeting. There was no report from the Membership Committee. The question of membership classification standards for admission was the subject of lengthy and serious discussion. There was considerable disagreement concerning the present standards for membership. It was moved, seconded and passed, that the problem be tabled for further discussion, at the local section level. The Executive Committee will make a continuing study of this problem by mail during the forthcoming year. There was no report on the Committee to promote Board certification.

Dr. Jackson presented the position of the Canadian Society concerning the 1960 joint American-Canadian meeting. Following the discussion of the possible dates, it was moved, seconded, and passed, that the 1960 Annual Meeting of this Association be held jointly with the Canadian Society of Clinical Chemistry, August 29-31, in Montreal, Canada. Dr. Eleanor Halpur will represent the Canadian Society in formulating plans and arrangements for this meeting.

Dr. Friedman announced that a National Congress of Clinical Chemistry has been approved in 1963. The Congress will be held in Detroit, Michigan under the joint auspices of the American-Canadian Societies. The Michigan section will be in charge of local arrangements for the Congress.

It was moved, seconded and passed, that a Finance Committee of three members be appointed to advise the Treasurer on the financial affairs of this Association. The Finance Committee was also authorized to make a long-term study of our financial structure and to set up separate accounting arrangements for funds to be used in the advancement of the profession. The Committee appointed included
M. Kaser (Chairman), R. S. Melville, and R. L. Dryer. It was also advised that local section rebates be based on the records of the National Treasurer as of June 30 in any fiscal year. It was moved, seconded and passed that a recommendation be made to the membership holding dues at the present level for the year 1960.

The Executive Committee, on behalf of the entire membership, gave a rising vote of thanks to the Cleveland Section for their efforts in organizing the annual meeting.

ROBERT L. DRYER  
National Secretary

**ITEMS OF GENERAL INTEREST**

The members may be interested to know of the formation of a new specialty Board, to be known as the American Board of Bio-Analysts. The purpose of this Board is to certify as diplomats those qualified in one of the thirteen sciences pertinent to bioanalysis. Biochemistry is listed by the sponsors of the Board as one of the pertinent sciences. Members of this Association who have at least a baccalaureate degree in Chemistry or who have a strong background in Chemistry may be interested in the activities of this Board. Certification without examination is being offered until February 1, 1960. Those interested should contact Dr. W. H. Krieguer, 525 Volta Avenue, Bladensburg, Maryland. We have no further information concerning the sponsors of this Board and the Society therefore cannot take an official position with respect to its activities at this time.

**COMMITTEE APPOINTMENTS**

The following committee appointments have been made for the present year. In each case the first name listed is the name of the Chairman.

**Membership:** Adrian Hainline, Jr., Peace Paubionsky  
Membership definition: Donald G. Remp

Bischoff Award Canvassing: Joseph H. Roe  
Legislation: John G. Reinhold  
Promotion of certification: Robert L. Dryer  
Tellers: Gladys J. Downey, John B. McKinley

Methods and Standards: David Seligson  
Finance: Margaret Kaser, Robert L. Dryer, Robert Melville  
Employment Service: Joseph Routh

Ethics: W. B. Mason  
Representatives: Intersociety Committee for Sciences Related to Health: Max Friedman  
To the AAAS: Albert Sobel

The Nominating Committee has officially informed the National Secretary of the following slate of candidates for the coming year. For President-Elect, David Seligson, New Haven, Connecticut. For Member at Large of the Executive Committee (three-year term) Walter Golden, Stamford, Connecticut.

**AAAS MEETING**

CHICAGO, ILL. – DEC. 26, 27

Two sessions of papers of interest to clinical chemists will be organized
at the AAAS meeting to be held in Chicago, December 26 and 27. There will also be a symposium on lipid metabolism and atherosclerosis. The symposium will be concluded by a question and answer period. These programs have been arranged under the auspices of several members of the Chicago Section, headed by Alvin Dubin. The complete program appears at the end of this section.

REPORTS FROM THE SECTIONS

Southern California

The Section meeting held June 9, 1959 included an informal discussion between Dr. Emmett Reilly, Pathologist of the Orange County Hospital, and the section members present. The discussion dealt with professional relations between physicians and clinical chemists. The meeting emphasized again the Section's aim to obtain better understanding and working relationships between these two groups. The fall session was opened by a meeting held September 15 at which Dr. Henry E. Weimer of the University of California Medical School spoke on the topic of Serum Glycoproteins in Health and Disease. The October meeting was devoted to a discussion of Clearing Mechanisms in Serum Lipemia. This talk was given by Dr. Hyman Engelberg of the Cedars of Lebanon Hospital.

Upstate New York

A Section meeting was held September 25, at which Dr. Max Chilcote discussed briefly the problems of Filter Paper Electrophoresis. The discussion was slanted toward those with previous experience in this field. He also showed results obtained by a starch-gel technique. At the same meeting, Dr. Newton Ressler of Wayne County General Hospital discussed the Applications of Ultraviolet Photometry to Electrophoresis.

Cleveland Section

The Section meeting was held October 6, 1959, at Western Reserve University. The Eleventh Annual Meeting was discussed with particular reference being made to the effectiveness of the committees. Recommendations for the improved planning of future meetings were made. It was agreed to collect written reports from committees and incorporate these recommendations to be made available for future use for planners of coming annual meetings.

CLINICAL CHEMISTRY SESSION ON SCIENTIFIC PROGRAM
AAAS MEETING AT CHICAGO, ILL.

SESSION 1
December 26, 1959 - 2:00 P.M.
Moderator: CHIADAO CHEN, Department of Biochemistry, Northwestern University Medical School, Chicago, Ill.

1. Column Separation of White Cells, JAMES E. GARVIN, Department of Biochemistry, Northwestern University Medical School, Chicago, Ill.

2. A Rapid Method for the Determination of Urea in Blood and Urine,
JACOB M. LEVINE, RAUL LEON, ALVIN DUBIN, and FREDERICK STEIGMANN, Hektoen Institute for Medical Research of the Cook County Hospital, Chicago, Ill.


4. The Specificity of Glucose Oxidase, ERNEST C. ADAMS, JR., RAYMOND L. MAST, and ALFRED H. FREE, Ames Research Laboratory, Elkhart, Ind.

5. The Determination of Galactose in Blood, GLORIA MALINOWSKI, LORETTA EASON, and LLOYD E. THOMAS, Laboratories of the Good Samaritan Hospital, Portland, Oregon.

6. The Determination of Ascorbic Acid in Blood, ESTELLE R. HAUSMAN SHER and ALVIN DUBIN, Municipal Tuberculosis Sanitarium, Chicago, Ill., and the Hektoen Institute for Medical Research of the Cook County Hospital, Chicago, Ill.

7. Electrophoretic and Chemical Serum Protein Determinations in Experimental Tuberculosis, BEN C. SHER and ALVIN DUBIN, Municipal Tuberculosis Sanitarium, Chicago, Ill., and the Hektoen Institute for Medical Research of the Cook County Hospital, Chicago, Ill.

8. Cyanogum Gel as an Electrophoresis Medium for Hemoglobins, SAMUEL RAYMOND and YI JU WANG, Pepper Laboratory, Hospital of the University of Pennsylvania, Philadelphia, Pa.


10. Serum Protein Bound Iodine in the Evaluation of Normal and Abnormal Thyroid Function, ELIZABETH S. PRAYATNER, Department of Surgery, University of Chicago, Chicago, Ill.

11. The Status and Interrelations of Venous Blood Principal Electrolytes in Health and in Disease, VLADIMIR M. SYCHEFF, French Hospital, San Francisco, Calif.


13. A Study of Certain Aspects of Acute Oral Iron Intoxication, WAYNE G. ROHSE, C. R. KEMP, and HAROLD ALBERT, Department of Biochemistry, Rockford Memorial Hospital, Rockford, Ill., and Department of Physiology, College of Medicine, State University of Iowa, Iowa City, Iowa.

SESSION II

December 27, 1959 – 9:00 A.M.

Symposium

Diet, serum lipids, lipid metabolism, and atherosclerosis.

Moderator: DR. JEREMIAH STAMLER

Director, Heart Disease Control Program. Assistant Professor of Medicine, Northwestern University School of Medicine.

Introductory Remarks: DR. J. STAMLER.
Dr. J. T. Miller, Research Chemist, Department of Nutrition, Abbott Laboratories: Role of Diet.

Dr. Clarence Cohn, Director of Biochemistry Department, Medical Research Institute, Michael Reese Medical Center: Influence of Meal Frequency and Meal Size.

Dr. Saul T. Baker, Assistant Professor of Medicine, Chicago Medical School; Associate Professor of Medicine, Cook County Graduate School of Medicine. Research Associate, Hektoen Institute for Medical Research of Cook County Hospital: Role of Immunological Mechanism and Lipoprotein Lipase.

Dr. Ivan D. Frantz, Jr., Professor of Medicine, University of Minnesota Medical School: Intermediary Metabolism of Cholesterol.

Brief introductory remarks will be followed by cross question and answer discussion including questions from the floor.

SESSION III
December 27, 1959 - 1:45 P.M.

Moderator: Martin E. Hanke, Department of Biochemistry, University of Chicago Medical School, Chicago, Illinois.


15. Routine Determination of Total CO₂ and Bicarbonate in Blood Using the pCO₂ Electrode, James Petzold, Harold Feinberg, and Louis N. Katz, Cardiovascular Department, Medical Research Institute, Michael Reese Hospital, Chicago, Ill.


18. Changes in the Absorption Spectra and Electrophoretic Mobility of Human Serum Lipoproteins upon Storage, E. W. Bermes, Jr., and H. J. McDonald, Departments of Biochemistry, Hektoen Institute for Medical Research, Cook County Hospital and Stritch School of Medicine, Loyola University, Chicago 12, Ill.


20. The Effect of Fats and Other Dietary Factors on Sensitivity to Insulin Action, Michael Somogyi, The Jewish Hospital, St. Louis, Mo.

21. The Role of "Pancreatic Hormone" in the Treatment of Hypercholesteremia and Decreased Glucose Tolerance, Norbert W. Tietz, and Norma L. Murphy, Mount Sinai Hospital, Chicago, Ill., and Reed Memorial Hospital, Richmond, Ind.

22. Blood Lipid and Protein Studies in Juvenile Diabetes Mellitus,
23. Colorimetric Determination of 0-Methyl Transferase, HARRY GOLDENBERG and DANIEL L. WHITE, Department of Biochemistry, Hillside Hospital, Glen Oaks, N. Y.

24. Chromatographic Studies of Chlorpromazine Metabolism in Man, HARRY GOLDENBERG and VIVIAN FISHERMAN, Department of Biochemistry, Hillside Hospital, Glen Oaks, N. Y.

25. Turbidimetric Determination of Serum Potassium with the Auto-Analyser, RUTH LOUGHEAD, Department of Medicine, University of Chicago, Ill.

26. A Microscopic Technique for the Estimation of Biological Age, LEONTINE GOLDSCHMIDT, Creedmoor Institute for Psychobiologic Studies, Creedmoor State Hospital, Queens Village, Long Island, N. Y.