April 22, 1962

## Walter M. Lauer

### Contributions to Chemistry

During his tenure on the staff of the University of Minnesota Dr. Lauer has published a total of 67 papers and patents in the chemical literature. A detailed list of Dr. Lauer's publications is provided as a part of this nomination. Dr. Lauer has made important contributions in the fields of both organic and analytical chemistry. Early in his professional career he adapted the technique of microcombustion developed by the German Nobel Prize-winner, Fritz Pregl, to a semimicro method for combustion analysis for carbon, hydrogen, and nitrogen in organic compounds (see publications 2 and 3). A semimicro procedure for organic analysis was needed in this country, where micro balances were not yet available. Dr. Lauer's semimicro procedure was quickly adopted by Harvard, Illinois, and Maryland, and the first semimicro organic analytical laboratories were soon established at these universities, as well as at the University of Minnesota. In the field of analytical chemistry, Dr. Lauer, in collaboration with Dr. I. M. Kolthoff and Dr. C. J. Sunde (see publication 4), also developed the procedure for use of dichlorofluorescein as an adsorption indicator in the titration of chloride ion with silver ion, a procedure which is still in wide use today. More recently, in collaboration with Dr. H. E. Zaugg, Dr. Lauer developed a modified and combined Grignard and quantitative hydrogenation apparatus (publication 52), which has been widely used.

In the field of organic chemistry Dr. Lauer's researches have covered a wide scope, including vinyl ethers and their rearrangement (publications 6-9), work which served as the forerunner of the Boord-Swallen synthesis of olefins; the structure of sodium bisulfite addition compounds (publications 11, 13-14, 17), work which also laid the groundwork for an understanding of the Bucherer reaction; synthesis of unsaturated fatty acids (publications 29, 37, 39), the synthesis of antimalarial drugs (publications 34-35, 47-51, 54), and naturally occurring antioxidants (patents 40-46). Particularly noteworthy is his series, which now numbers 18 papers, on the Claisen rearrangement of phenyl allyl ethers. In these papers Dr. Lauer and his students have clearly defined the scope and limits of the rearrangement, and have obtained valuable information as to its mechanism; in the same papers Dr. Lauer has reported the discovery of the abnormal Claisen rearrangement, which he has illustrated with a number of significant and key examples. Dr. Lauer has always kept well abreast, both in his lectures and in his research, of new developments in organic chemistry. His recent series of seven papers concerning hydrogen isotope substitution and exchange in benzene ring derivatives, particularly the use of electrophilic hydrogen isotope substitution as a measure of electron density in the aromatic ring, represents classical work in its field.

Dr. Lauer is a scholar and a gentleman, and his researches have been characterized by a high degree of thoroughness and novelty. Because Dr. Lauer is a rather quiet and modest individual, he is probably not so well known to scientists outside the field of organic chemistry as his researches would justify. Under Dr. Lauer's direction 11 students have obtained Master's degrees, 37 students have received Ph.D.'s, and 8 students have received postdoctoral training.

Contributions to his Profession

After two years in government service during and immediately following World War I, and a year as a research chemist in the chemical industry (at DuPont), Dr. Lauer joined the staff of the University of Minnesota in 1920, and has been a full professor in the Department of Chemistry since 1938. Dr. Lauer has been in demand as a chemical consultant, both to the federal government as an active participant in the antimalarial program during World War II and subsequently as a consultant at Oak Ridge National Laboratory, and to the chemical industry, where he has served as a consultant to the Abbott Laboratories and to the Minnesota Mining and Manufacturing Company. He has been a member of the Board of Directors of the Hormel Institute since its founding in 1942.

Dr. Lauer has held every important elective office in the Minnesota Section of the American Chemical Society, including Secretary, Treasurer, Chairman, and Councillor (two terms). He has served his local section faithfully and well. He has been a member of the American Chemical Society since 1917, and has also held important national offices in the Society, including Chairman and member of the Executive Committee of the Division of Organic Chemistry, and membership on the Board of Editors of the Journal of the American Chemical Society (two 5-year terms). Dr. Lauer has been an elected member of the University of Minnesota Senate since 1960, and is currently Chairman-Elect of the Minnesota Chapter of Sigma Xi.

Dr. Lauer has a distinguished record in organic chemical research and in devoted service to the chemical profession and to its Society. His quiet, patient, and understanding manner have made him much beloved among those who have the privilege of knowing him.