

## R. D. Lillie, Editor, 1953-1964

When Ralph Lillie held fast at the 1964 meeting of the Histochemical Society to his announced intention to retire from the editorship of the JOURNAL, his many friends accepted with reluctance the fact that for the Society the end of an era had come. Not only had Dr. Lillie served as editor through more than eleven years of impressive growth for the JOURNAL, but he had, beside being instrumental in bringing the JOURNAL into being, been one of the major forces in initiating the Society itself and in guiding it from its beginning.

Among Dr. Lillie's outstanding personal characteristics are an encyclopedic knowledge of staining and histochemical procedure, a disconcerting intelligence, a tremendous capacity for work, and an indomitable courage in surmounting repeated difficulties with his vision. After recovering from bilateral retinal detachments in 1949 which left him effectively with the use of only one eye, he not only played in 1951-52 the leading role with The Williams and Wilkins Company in negotiating the establishment of the JOURNAL, but served as the first Secretary of the Society from 1950 to 1955. During this time he was also administrative head of the Laboratory of Pathology of the National Institute of Arthritis and Metabolic Diseases while pursuing an outstandingly productive program of histochemical and pathological research. To review his distinguished contributions to the body of histochemical knowledge would be a major undertaking in itself. The perusal of any technical manual of histochemistry reveals how difficult it is to find an area on which his work has not impinged. His own *Histopathologic Technic* has probably been mined for its nuggets by every histochemist.

In 1956-57 he served as vice-president of the Society and as president in 1957-58, presiding over a memorable Symposium on the problems of fixation in histochemistry. 1958 began a further period of difficulties, this time due to cataracts, first of the left eye and subsequently of the right. In spite of this Dr. Lillie in no way slackened the pace of his own work nor lessened his efforts in behalf of the JOURNAL. On his retirement from the Public Health Service in 1960, he continued these activities in his new post of Research Professor of Pathology at Louisiana State University. Gradually an increasingly troublesome problem with corneal edema led him to the decision that the JOURNAL work would have to be abandoned, and this was the basis of his resignation last spring.

By 1964 Dr. Lillie had succeeded in doubling the number of contributions published each year, while the subscription level had more than tripled since 1953. As Editor, his goal was to permit any serious worker who had conscientiously considered the criticisms of his colleagues, represented by the JOURNAL's reviewers, to have his hearing in the pages of the JOURNAL. This policy has been instrumental in encouraging the early development of a number of workers regularly heard from in the pages of this and other journals. He read personally every manuscript with the care necessary for its critical evaluation, and the comments of "Reviewer #2" were frequently his. While his own abilities often made the weaknesses of papers glaringly plain to him, his comments and criticisms never betrayed impatience, but were unfailingly constructive and valuable. His retirement from the editorship has fortunately not deprived us of his counsel and experience.

The Society honors itself as well as Dr. Lillie by directing that this volume of the JOURNAL be dedicated to him in recognition of his editorship of the first twelve volumes, as well as of his many other contributions to the Society and his numerous accomplishments during the course of a career that we hope will continue for many years.

Ἀνάπνη ἐκ ὀδῶν τῶν Ἑλλήνων

J. B. LONGLEY

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## Ralph Dougall Lillie 1896-1979

Ralph Dougall Lillie died on October 5, 1979. He was surely one of the more remarkable scientists of his generation. While by no means unknown, especially to readers of *The Journal of Histochemistry and Cytochemistry*, his field was not one likely to lead him to a Nobel prize or even to membership in the National Academy of Sciences. It is fitting then that those of us who knew him best should make a special effort to preserve remembrance of the qualities that made him the person he was, and to profit by seeking to emulate him in the things that made him great.

To me the central element of his character was his lack of pretense. He was modest in dress, sometimes almost to the point of neglect. He was sociable, but not social. He related easily and without affectation with everyone from his institute director to his laboratory help, but he did often finish a straightforward statement that required a response with a broad smile and a chuckle that sometimes left those less familiar with him looking for the joke. Always available to those who sought his help, he liked to visit others for scientific conversations at free times such as lunch.

Dr. Lillie worked at a steady, even pace that accomplished immense amounts and allowed little time to escape profitable use, but always without being pressured. He always remained accessible. Few of us who worked with him were able to match him in time of arrival at the laboratory in the morning or in time of departure at night. At the NIH he would rarely be seen on the reservation at night, and then ordinarily only for a special lecture or a meeting of the junior officers' club at the Top Cottage. Yet there was overwhelming evidence that the evening was in a sense an extension of his day. If one offered him a manuscript for his opinion before sending it off for review, he was invariably ready to discuss it the next morning. Much of his editorial work during the twelve years he was Editor of this Journal was done in the same way, and so was a good deal of the reading through which he maintained an encyclopedic awareness of the subjects in which he was interested, their current aspects as well as, and indeed in particular, those only to be found in the most arcane of the classical literature. Revisions of the successive editions of the "Histopathologic Technic" received contributions in this way too.

Dr. Lillie's investigative work was carried out in an intensely methodical way derived from the practices of the pathology laboratory. The attacks on each problem, once the question to be answered had been formulated, were set out in an experimental protocol written with all the detail necessary for them to be carried out in the tissue laboratory without further instruction to the technical staff. When the prescribed

procedures had been carried out, from treatment of animals, fixing of tissues, and all conceivable useful variations of the conditions involved, the finished slides were delivered to him for study in a stack of metal trays. Dr. Lillie then examined every slide in detail, recording on tabular data sheets all the nuances of color and intensity in abbreviations that made the density of information on every sheet quite high (the substantial tables that distinguished many of his papers were distillates of such data). Every tissue block that was used in an experiment was assigned an identification number, and details of its origin were systematically recorded. In the 1950s the collection of these slides numbered many hundreds and included most tissues of the common laboratory animals fixed in most of the ways that fixation could be significantly varied. This "library" greatly reduced the time necessary to execute most protocols, and made possible an almost continuous flow of protocols from Dr. Lillie to the laboratory, and an equally copious flow of slides from the laboratory to him. The efficiency of the process was further increased by the maintenance of fifty to a hundred spare sections from many blocks already mounted on slides ready for the next protocol that would call for them. The black boxes containing them covered most of one wall in the main laboratory.

As can be seen, Dr. Lillie relied heavily on his technical staff; they responded to this with devoted conscientiousness and a sense of personal involvement in the work at hand that was an indispensable ingredient of his success. He was always fortunate in the quality of the people whom he had to assist him, many of whose training came directly from experience in his laboratory. Their contributions were often important ingredients of his work, and he was generous in recognizing this in the authorship of his papers. Prominent among these at the NIH were Alice Laskey, Jaqueline Greco Henson, and Helen Burtner. After his retirement at Louisiana State University in New Orleans, similar contributions were made by others, especially Patricia Donaldson.

The combination of unflagging application and strong supporting staff enabled Dr. Lillie to be one of the most prolific of authors. By the time of his retirement from the NIH in 1960 he had published or had in press about 230 papers, an average of over six papers a year from the time he joined the U.S. Public Health Service Hygienic Laboratory, the precursor of the NHH. In the 19 years that he worked in New Orleans following his "retirement," he published at least 93 additional papers, setting a relatively modest pace of somewhat less than five per year. In his last complete year of work, 1978, at age 82, he published eight. A list of his publications not included in the bibliography accompanying



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George Glenner's earlier biographical note (*J Histochem Cytochem* 16:3-6, 1968) follows this appreciation.<sup>1</sup>

The indispensable element making Dr. Lillie the person he was was, of course, his intellect. His manipulation of facts and ideas was always crisp and clear, but even more important was a tremendously retentive memory that appeared to be stocked with everything he had ever learned or read about. Forty years after his graduation from medical school it was my impression that he was still in full command of the details of human neuroanatomy and the phylogenetic classification of the animal kingdom to the order level, information for which he had relatively little day to day need. I remember once being told by George Gomori in emphatic tones after he and Dr. Lillie had a wide ranging discussion during a visit to Dr. Gomori's laboratory in Chicago, "That man is an encyclopedia!" Since George Gomori's claim to that distinction was substantial, there is little more that can be said on this point.

Dr. Lillie's schedule allowed relatively little time for diversions, and it is typical of those that he had that they could hardly be described as frivolous. As Glenner has noted, Dr. Lillie was a self-taught Greek scholar who delighted to display his command of the classical language both in reading and writing. His conversation was frequently spiced by apt quotations, translated only on request, from ancient authors. One habit of his that seemed at first less serious was that he usually carried in his shirt pocket a few cards on which he would, in moments of obligatory idleness or at times when the activity in his surroundings was not of sufficient consequence to hold his attention, jot down anagrams extracted from words whose mode of selection I never discovered. Although apparently unproductive, these moments conveyed the impression that they served his mind as the dancing steps and snapping feints serve a boxer about to enter the ring.

As an editor, Dr. Lillie put *The Journal of Histochemistry and Cytochemistry* firmly on the path to the eminent position it holds in the literature of science. His view of the editor's role was more that of one who saw to the maintenance of an intellectual forum than of one who guards the pages of his journal from heresy. Consequently, after authors had declined suggestions offered by reviewers or himself, papers were often published that expressed views that he was not necessarily willing to share. He concerned himself relatively little about the style of authors' writing, though he himself wrote with notable economy of expression and conciseness of meaning.

<sup>1</sup>Glenner's article is an excellent account of the details of Dr. Lillie's career to the time of its writing. The only error in it that I am aware of is that Dr. Lillie's retirement from the Public Health Service came about because Dr. Lillie had reached the then compulsory retirement age of 64, and not because of physical disability.

He was, by and large, content that an author wrote well enough to be understood, foregoing the more difficult goal of ensuring that they wrote so well that they could not be misunderstood. He did have a few fixed ideas; one of outstanding merit led to a running battle with acronyms and nonstandard abbreviations. With proprietary interest he was always alert to point out that while PAS means the periodic acid-Schiff reaction to a considerable part of the scientific public, to another and perhaps even larger part it means para-aminosalicylic acid. He also noted it would have to be used at least 150 times in an article to have a 50% chance of shortening the article by one page! Slightly more idiosyncratic was his prejudice against the hyphen, which he indulged most freely in his own writing. However, with the tendency of today's writers even to hyphenate every prefix, his wish to dispense with any hyphen not absolutely essential to good sense seems more clearly a virtue.

Dr. Lillie's most productive years as a histochemist were beset by difficulties with vision, perhaps the greatest burden that can be placed on anyone whose primary tool is the microscope. In the late forties he suffered retinal detachments in both eyes; truly effective repair was achieved in only one. In the mid-fifties a cataract in this eye required lensectomy, and while this procedure was successful, edema and a slow deterioration of the general condition of this cornea caused him not only greater difficulty with the use of the microscope, but also handicapped him in getting about safely. In this adversity, as in all things, Ethel Lillie was his great support; she accompanied him on almost all his travels. Although it was impossible not to recognize the progressive difficulties this handicap caused him, it was always apparent that there was no dimming of the light within. Finally, in 1979, the situation had progressed to the point that a corneal transplant was a necessity. This procedure was a great success and those of us who corresponded with him regularly were elated to see his signature grow steady and decisive again. In June he was at the meeting of the Biological Stain Commission in fine fettle and sporting a distinguished white beard.

In July his work was interrupted by a stroke, and a second episode on October 5th brought an end to his remarkable career. Science has lost a great resource, and to all of us who have had the privilege of knowing him, the personal loss will be a grievous and irreplaceable one.<sup>2</sup>

J. D. Longley

<sup>2</sup>Readers who may wish to honor Dr. Lillie's memory are urged to subscribe to the Ralph D. Lillie Memorial Fund. This fund will be developed to support the research efforts of young investigators in the field of histochemistry and cytochemistry. Tax exempt contributions may be sent to the treasurer of the Histochemical Society, Dr. Winston Anderson, Department of Zoology, Howard University, Washington, D.C. 20001.

## Bibliography of Dr. Ralph D. Lillie (1896-1979)

Dr. Ralph Lillie was one of the founders of this Journal and served as its first editor from 1953 through 1964. On the occasion of his retirement from the editorship, the Journal published a tribute to his extraordinary achievements by Dr. James Longley, acting-editor and long-time friend and colleague (*J Histochem Cytochem* 13:1, 1965).

In 1968, Dr. George G. Glenner, another of Dr. Lillie's closest co-workers, published a biography of Dr. Lillie which included a bibliography of his writings covering the period of 1917 to 1966 (*J Histochem Cytochem* 16:3-16, 1968).

The following list of publications completes Dr. Lillie's bibliography, continuing from 1966 to his last paper in 1979.

Paul J. Anderson  
*Editor*

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### RALPH D. LILLIE

Given a lifetime, most scientists can count at the most a reputation and acclaim in a single specialty and, in these days of superspecialization, perhaps only in a restricted subdiscipline. Dr. Ralph D. Lillie, to whom the pages of this 1968 volume of the *Journal of Histochemistry and Cytochemistry* are dedicated, has gained renown sequentially in three separate scientific fields. To those with limited interests or areas of expertise, his name connotes to one, a pioneer in metabolic diseases; to another, the author of the first classic pathologic descriptions of viral and rickettsial diseases; and to most of the present generation, one of the founders of modern histochemistry.

Dr. Lillie was born August 1, 1896, on an orange ranch in Cucamonga, San Bernardino County, California. The main landmarks of this small rural community were a winery and railroad stations on the main eastward lines on the Southern Pacific and Santa Fe railroads. His father, a physician, eventually moved the family to San Francisco where they lived in a home overlooking the old United States mint. On Wednesday, April 18, 1906, came the great earthquake and the fire which devastated most of the city, burning among other things, the record of Dr. Lillie's future wife's birth. He saw much more of the fire than his mother knew, being 9½, active and well acquainted with the city. The fire burned off the southeast corner of the block in which he lived, but was stopped by dynamiting houses so that his own house escaped. It had fallen into its own basement and its chimneys had collapsed, so that the Lillie family was forced to cook on the street for some 6-8 weeks.

When the emergency came to a close, his father relocated his practice in Monterey and his son entered the fifth grade and attended local schools, absorbing 2 years of Latin, 2 of Spanish and 1 of chemistry and 1 of German. The latter course necessitated memorizing *Die Lorelei*, a recitation of which 51 years later impressed many of his German colleagues on his trip to the Rhineland during the last Histochemical Congress. Stanford University followed and his introduction to research by Frank M. McFarland, Professor of Histology. Dr. Lillie did his doctor's thesis under him "On the early histogenesis of the blood in *Bufo halophilus* Baird and Girard," which gained

him the offer of a 4-year fellowship in the University of Chicago Medical School.

In the fall of 1916 he was elected to Phi Beta Kappa and in June 1917 obtained his A.B. degree from Stanford University. Because of an accelerated program offered at Stanford, which would have permitted his graduation in medicine 2 years earlier than if he would have taken the University of Chicago fellowship, Dr. Lillie enrolled in the Stanford School of Medicine in the fall of 1917. Here he came under the influence of William Ophüls, Dean and Professor of Pathology and a disciple of Johannes Orth in Göttingen. This contact actually determined the field of his future career.

In the fall of 1918 the influenza pandemic came to San Francisco and he personally acquired the infection. When he returned to school several weeks later, the Senior Class had been adjourned and its members dispersed to the hospitals as student interns. Dr. Lillie went to the San Francisco Hospital and was shortly pulled off the wards and assigned to autopsy duty. The hospital had been converted into an influenza hospital and expanded so that a 25-bed ward filled its solarium and carried 40 patients; there were 120 admissions and 40 deaths a day. The autopsy service was not idle, and he served both Stanford and California services.

During this period, he met his present wife, Ethel Christensen, a student nurse and daughter of an Army medical officer. They were married in May 1920.

Following the end of the senior year, Dr. Lillie chose the San Francisco Hospital for his internship and during this time Dr. Ophüls offered him a place in pathology for the ensuing year. That summer he passed his state board examinations and was interviewed by a visiting recruiting team from the Public Health Service. Instead of accepting the place in pathology offered him, he went into practice with his father in Monterey, but soon put in his application to the Public Health Service and was promptly commissioned in the Reserve as an Assistant Surgeon. On October 25, 1920, he was sent to a new veterans hospital in old Indian school buildings in Tacoma, Washington. The following year, he was commissioned in the regular corps of the service.

Assignments followed at the San Francisco Quarantine Station, at the outpatient relief station in Seattle, at the United States Marine Hospital, Stapleton, Staten Island, New York, where he wrote his only clinical paper, a contribution to the ancient and now neglected art of the physical diagnosis of chest conditions by percussion and auscultation, and in 1924-1925 at the Immigration station at Ellis Island, New York.

In the spring of 1925 Dr. Lillie went to Washington for his promotion examination and expressed his desire to return to laboratory medicine. On July 1, he was relieved from Ellis Island and assigned to the Hygienic Laboratory in Washington, the source from which has sprung the National Institutes of Health.

His first year there was spent as an assistant to Dr. Joseph Goldberger in nutrition. A group of rats receiving autoclaved yeast which prevented blacktongue and pellagra were dying of vitamin B deficiency and he tried, during Goldberger's absence from Washington, the effect of a minute quantity of a vitamin B concentrate. The effect was startling and it demonstrated the duality of the complex by separating B<sub>1</sub>, the antineuritic factor, from the rest.

In the summer of 1926, Dr. Lillie was assigned to the pathology department to assist Dr. Gleason C. Lake, who was at that time disabled by an attack of undulant fever. Aside from clinical notes and case reports, Dr. Lillie's first publications in pathologic research were on a series of cases of so-called climatic bubo which were then being treated surgically, and some studies on experimental vaccinia of rabbits done with Dr. Charles Armstrong. Studies followed on experimental typhus and spotted fever with Dr. Rolla E. Dyer and his group, studies on the pathology of human and animal psittacosis in conjunction with virologic studies by Armstrong and studies with Dr. Edward Francis on the pathology of human and animal tularemia. These studies on pathology and especially on the pathogenesis of infectious diseases continued through some 20 years into the period of the second world war, and were mingled with cooperative studies on toxicologic and experimental physiologic conditions in cooperation with Drs. Maurice I. Smith, Sanford M. Rosenthal and Charles Wright in pharmacology. One of these studies on the genesis of the liver cirrhosis of selenium intoxication with Smith led directly into a series of studies on the protein and choline deficiency cirrhosis of rats with Drs. William H.

Sebrell and Floyd S. Daft in which his associates L. L. Ashburn and K. M. Endicott also participated. From these studies were derived the classic description of ceroid and the coining of this term by Dr. Lillie.

The effect of the European war of 1939-1945 on the availability of certain dyestuffs widely used in pathology led to a series of studies on connective tissue stains, fat stains and, perhaps of the most immediate importance, on the Giemsa stain for blood and malarial parasites. The last, initiated by Dr. M. Roe and Aimée Wilcox on behalf of workers in field malaria diagnosis, very promptly brought a knowledge of the necessary constituents of a good thick film malarial stain (1940), but 3 years' further work was required to arrive at a reliable production method for the key constituent, azure B eosinate. This last Dr. Lillie has regarded as a major contribution which has received attention only from a small group of professional malariologists. One of the major effects, however, was indirect. It forced him into the use of organic chemical synthesis and manipulation as part of the task of the pathologist, and laid the ground for future studies in histochemistry. His efforts in histochemistry before 1946 had been rather rudimentary, although one rather detailed study on the acid solubility or, rather, relative acid resistance of hemosiderin iron in formol-fixed tissue had been done (1939). He was also one of the first to use the vacuum oven for infiltration of paraffin blocks. The real impetus for his future work in histochemistry came from the decision to prepare a manual of histopathologic technique. Actually, prodded by the age of the eighth (1924) edition of Mallory and Wright and the untimely passing of G. Schmorl, he had written a few chapters late in 1937 and early in 1938, and had laid them aside with vast relief when Mallory's 1938 book appeared. But in 1945 the situation had changed. The 1938 Mallory was outdated and Dr. Mallory's sons appeared to have no inclination to revise the book. This time Dr. Lillie went through with the task of writing a manual in histologic technique, gleaning heavily from A. Bolles Lee, E. V. Cowdry, G. Schmorl, B. Romeis and Mallory, as well as utilizing his own war-engendered experiments. One of the things which had to be compared was the relative efficiency of the Bauer and Best methods for glycogen. This led directly to the independent discovery, at the suggestion of Claude S. Hudson, of the substitution of periodic acid for chromic acid

in the Bauer re-evaluating KMnO<sub>4</sub> in glycol reaction about 1953.

The manual was the first to see the light of title *Histopathologic Technique and Practical Methods* in 1965. Dr. Lillie's manual was one of the classic of the histologic literature, the third edition in 1965. Dr. Lillie's manual was the International Symposium for 1948 propose as the first of chemical and to present which he had met and permanganate metachromatic symposium at heavily attended following spring the Biological Society succeeded to Dr. it happened Dempsey and and the subject of the success and discussed organizing a symposium of anatomists, cytologists, to meet the moment of Society and Dr. through a long and to pose whether they

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About 1951 and desirability and the job was see what could arrangements Company of justify a contri

in the Bauer reaction, and a series of papers evaluating  $\text{KMnO}_4$ ,  $\text{HIO}_4$  and  $\text{CrO}_3$  as oxidants in glycol reactions, these studies extending to about 1953.

The manual which Dr. Lillie envisioned finally saw the light of day in 1947 as a book with the title *Histopathologic Technic* and received acclaim as one of the classic texts in the armamentarium of the histologist and histochemist. A revised third edition under the title of *Histopathologic Technic and Practical Histochemistry* appeared in 1965. Dr. Lillie's succession to the Presidency of the International Association of Medical Museums for 1948 gave him the opportunity to propose as the symposium subject "The application of chemical methods in pathologic histology" and to present the studies on the various mucins which he had made in 1947 with periodic, chromic and permanganate-Schiff technics, as well as metachromatic and other staining methods. The symposium at Jefferson Medical College was heavily attended and excited much interest. The following spring, at the Philadelphia meeting of the Biological Stain Commission on which he had succeeded to Dr. F. B. Mallory's seat as a trustee, it happened that Charles Leblond, Edward Dempsey and he were seated together at lunch and the subject of histochemistry arose. He spoke of the success of the 1948 meeting of the IAMM, and discussed the possibility and desirability of organizing a symposium in histochemistry for anatomists, cytologists, pathologists and other groups, to meet in the spring of 1950. This was the moment of conception of the Histochemical Society and Dr. Lillie was privileged to see it through a long and somewhat arduous gestation, and to pose the question to the groups as to whether they wanted to continue the assemblies.

After the 1948 meeting, his interest in carbohydrate reactions continued for a period, but soon the statement in chemical literature that organic peracids converted olefinic linkages to glycol groups led to the performic and peracetic Schiff reaction (1952) and to the use of these reagents and bromine for the cysteic acid oxidation of cystine and cysteine.

About 1951, there was talk about the necessity and desirability of a journal for the new society and the job was formally imposed on Dr. Lillie to see what could be done. By May or June 1952 arrangements with The Williams & Wilkins Company of Baltimore were far enough along to justify a contract and January 1953 was set as the

first publication date. As Secretary of the Society Dr. Lillie became Editor-in-Chief of the *Journal of Histochemistry and Cytochemistry* because, as he said, no one else wanted it. He learned to be an editor the hard way, but soon mastered the intricacies of editorship. The first paper to the *Journal* was submitted by David Glick, Dr. Lillie put in the second himself and Novikoff, Weiss and Fawcett and Seligman's group supplied the remaining three papers which made up the first issue. Lillie's, Gomori's, Rinehart's and Mudd's groups supplied the four papers of the March issue. Thereafter papers were never lacking. Dr. Lillie's approach to editorship was one of great liberalism and nonconforming papers were found as desirable and as publishable as conforming ones, so the *Journal* never became the repository of the viewpoint of a single person or group. Dr. Lillie held the job as Editor-in-Chief until 1964, when he retired as the result of visual difficulties following retinopexies on both eyes for myopic detachments in 1948-1949 and an ensuing cataract extraction in 1958, resulting in corneal edema. In 1960, Dr. Lillie also retired from the United States Public Health Service for physical disability.

Between the period of his ascension to the chair of Editor-in-Chief of the *Journal* until the time of his retirement, his histochemical research continued with papers on the ferric ferricyanide reaction, melanin, lipofuscin, aromatic amino acid reactions, methylation and saponification methods, and the nature of arylamine combinations with tissue aldehydes. Studies on acylations as histochemical procedures directed at phenols, amines, alcohols and aldehydes and studies of melanosis and pseudomelanosis in relation to intestinal iron uptake and storage and, finally, studies on the histochemistry of bile pigments and hematoidin were pursued. In 1958 the Association of Military Surgeons of the United States gave him the first Sustaining Members Award for research in pathology, and in 1956 he was on loan to the World Health Organization to lecture on histochemical procedures in Santiago de Chile, Buenos Aires, Montevideo, Riberão Preto and São Paulo.

As a result of the severe corneal edema suffered following his cataract operation, Dr. Lillie was unable to attend the First International Congress for Histochemistry and Cytochemistry, but in 1964, as the United States Vice-President, he attended the Second International Congress in

Frankfurt-am-Main, one of the highlights of a long and illustrious career.

These are the facts of a career, but what of the man, of the personality behind the voluminous bibliography and the prodigious and encyclopedic memory? As I look at my favorite picture of Dr. Lillie, the pixieish quality of an inveterate iconoclast shines forth, his historical perspective much too omnipresent to permit him self-recrimination or self-indulgence. His insatiable desire for knowledge never ends but continues throughout his waking day. Mrs. Lillie first brought him an elementary Greek grammar to occupy him during an enforced sick leave for what later was found to be splenic flexure syndrome in 1940, from which he always said that she taught him Greek. Later he indulged himself in the translation of Greek authors and writing apocryphal Greek tales during his convalescence from his several operations. He always enjoyed popping the bubbles of pomposity as he would quote the reference and cite the pagination of an author who first applied that "new" histochemical reaction in 1897. Dr. Lillie's knowledge of chemistry, as that of Greek, was primarily self-taught. He has always enjoyed disarming his professional chemical colleagues with incisive knowledge of inorganic chemical reactions, and much to his own amusement would retaliate, when pressed upon for more information about a chemical reaction, that "I am not a Ph.D. in chemistry." To many workers reviewing his papers the tables utilized in his manuscripts are somewhat formidable. These represent the meticulous scientific approach of the author, whose chemical and histochemical protocols demanded a step by step individual variation of his controls in order to define the limitations of the reactions under study. He frequently has been a stimulus by irritation to his fellow workers and colleagues, for he often introduced a subject to an audience not as a teacher to a student, but as a peer to peers. The basics of the subject were assumed and the discussion would frequently be limited to the

nuances. Thus his conversations were, to many, a challenge to gain comprehension of the basics so that they might partake of the more sophisticated revelations.

Although his interest in enzymology and enzyme histochemistry was never paramount, it is of historical interest, an insight into the breadth of the man, that he described in 1953 the selective cytolysis and later karyolysis of neutrophil leukocytes which occurred in blood films fixed in alcohol—perhaps the first description of autolytic digestion derivative from what are now described as "lysosomes." As a pathologist preeminent in his field, he distrusted statistics and adjured his colleagues to throw away statistics when dealing with a specific case and its diagnosis. That Dr. Lillie enjoyed most the stimulus that he provided to disciplines other than his own, he would not deny. One of his greatest pleasures has been the chemical confirmation of the existence of a methylated sulfate ester based on his initial histochemical observations.

Although overtly a conservative, Dr. Lillie has always been a liberal at heart, and preferred to give autonomy to those who worked in his laboratory rather than to direct their research to his own ends. His positive approach to living has been omnipresent. In this day of depersonalization and conformity, it is a pleasure to have still actively in our midst a personality whose earthy humor and intellectual diversity mark him as an individual among men. It would be remiss in this dedicatory introduction not to mention one of the pillars that has represented the foundation of Dr. Lillie's achievements. It is, thus, to Mrs. Lillie, whose sympathetic presence, awareness and understanding have made the scientific achievements of Dr. Lillie more facile, that the honors of this dedicatory volume are also addressed.

In sum, it is to the stature of a man and to the pleasure of his company that we dedicate with our esteem and affection the 1968 volume of the *Journal of Histochemistry and Cytochemistry*.

GEORGE G. GLENNER

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