

Karl F. Meyer : the scientist dedicated to service

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Objekttyp: **Article**

Zeitschrift: **Bulletin der Schweizerischen Akademie der Medizinischen Wissenschaften = Bulletin de l'Académie Suisse des Sciences Medicales = Bollettino dell' Accademia Svizzera delle Scienze Mediche**

Band (Jahr): **33 (1977)**

PDF erstellt am: **02.05.2024**

Persistenter Link: <https://doi.org/10.5169/seals-308121>

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KARL F. MEYER

THE SCIENTIST DEDICATED TO SERVICE

JULIUS SCHACHTER

It is fitting that a symposium in honor of Karl F. Meyer be held in Basel, the city where he was born in 1884. Despite a career of more than 60 years away from his native country, Meyer remained Swiss. He espoused his adopted country, but never forgot his origins. He never lost his accent. And everyone he came in contact with knew he was Swiss. He often reminisced, particularly about mountain climbing, and in San Francisco, favored visitors who were guests at the famous dinners that Meyer hosted at his club, always joined him in a final toast with the obligatory bottle of Kirschwasser.

Meyer left Basel to continue his education in Zurich, and then in Munich and Bern. Throughout his period he was heavily influenced by the teachings and philosophy of Dr. H. Zangger. Zangger was a physiologist whose interests led him into the fields now called preventive medicine, industrial medicine, and forensic medicine. It is clear that their discussions heavily influenced the direction that Meyer's career took.

In 1908 Meyer went to South Africa where he worked at the Institute directed by Arnold Theiler. What a clash of personalities that must have been! After a few years he went West, first, in 1910 to Pennsylvania, and then in 1913 to San Francisco, where he continued his scientific career at the University of California and the George Williams Hooper Foundation until he died in 1974, vigorous of mind and active in research up to the last.

Karl Meyer received many honors during his lifetime, and many words extolling his achievements were written upon his death. It is likely that he influenced more microbiologic and epidemiologic fields than any other scientist of his time. I shall not review his accomplishments, for much has already been written about them, and much more will be written - when the histories of plague (1 - 7), botulism (8 - 16), psittacosis (17 - 23), brucellosis (24 - 27), arbovirus infections (28), coccidioidomycosis (29), mussel poisoning (30 - 31), leptospirosis (32 - 33) and certain other diseases are written, Meyer's place will be prominent in each. Neither will I discuss the legends that have arisen concerning his autopsying an elephant while he was dressed in formal attire, nor the delightful story concerning the acquisition of

the horse head that led to the isolation of the virus causing Western equine encephalitis. These are well known. Rather, I should like to discuss the Meyer who was my Professor and colleague for the last 14 years of his life, and share my personal impressions of Meyer as a man as well as Meyer the scientist.

My first contact with him was in 1960, when in purely chronological terms he could have been described as an elderly gentleman of 76 years. However, it was difficult to think of K.F. in terms of his age. He really could never be characterized as old by those who knew him. His enthusiasm for the future was boundless. At his passing, he had approximately 10 manuscripts in preparation. I remember two months before he died, he gave a lecture on "Public Health in California" to our second-year medical school class. I had asked him to please try and keep the lecture to one hour because Meyer's lectures often adhered to no time limit. He lectured on a subject until he finished what he had to say, and if it took three or four or more hours he blamed it on those who prepared the schedules saying he simply needed the time to cover the material. In this instance, honoring my special request he went only 10 minutes over the hour. As we were leaving the lecture hall, after an extraordinarily well-received lecture (one could have heard the proverbial pin drop), he said, "Next year you have to give me the whole afternoon. I cannot cover this territory in just an hour." Unfortunately next year never came.

In that particular lecture he had started his discussion in 1920, and had never gotten to 1930. However, Meyer never lived in the past; he used it, his great experience, the almost encyclopedic recall, to apply in the present and to help plan for the future. Indeed, if there was any single feature that characterized Meyer and his career it could be embodied in the word "preparation". Yes, the memory was remarkable, the experiences were broad, but K.F. prepared diligently for every undertaking. In fact, despite the hundreds of lectures he must have given on plague over the years, he would refuse to accept any short notice request to give a talk, insisting that he needed more time to prepare - and he used that time to prepare. He was extremely fond of Pasteur's quote about the "prepared mind", and indeed his was. For example, when botulism became an important public health problem in California and Meyer's advice was sought, he was ready. I recently went through some of the older Hooper Foundation papers, and much to my surprise found complete sets of reprints and bibliographies on anaerobic bacteriology which much predated the Hooper research commitment to botulism. Meyer had already studied the subject and when the problem arose, he was ready to seize the opportunity to research the field.

The word "opportunity" is also a key one in describing Meyer because he was an opportunist

in the most positive sense of the word. When a problem arose, Meyer attacked it. His method of attack was to go into the field to investigate – first at a distance to get an overall picture, then more closely. Only then would he bring specimens back to the laboratory, work on them, and try to develop solutions for the problem. Once a solution was achieved, the problem was not dropped; he took the solution back into the field to see that it worked, and to make sure a new set of problems had not been created.

Note, I mentioned Meyer's approach when a problem arose. Meyer had a very definite picture of the role of a research institute. He felt that a research institute in a medical school environment should focus specifically on research problems that were beyond the abilities of hospital or public health laboratories. The research institute should supplement and complement the public health and diagnostic laboratory. And this indeed was the role that Meyer's Hooper Foundation played for close to 50 years. When public health problems arose, Meyer's teams met the problems. Although he was clearly the guiding force, Meyer was fortunate in having many gifted and dedicated collaborators. Meyer was certainly a fine scientist, and supported basic research, but he felt that his research institute should also be committed to problems of public health, and solutions to these problems should benefit the community.

Thus in the early 1920's the Hooper Foundation made a very strong definite commitment to developing safe methods for canning foods because of the threat of botulism (8 – 13). These studies were classic not only in a scientific sense, but because they demonstrated the role of a research institute in providing benefit to an industry and to the community. The expertise developed in dealing with botulism was then applied to another form of food poisoning, mussel poisoning (30 – 31). Again, a highly organized systematic approach to a problem yielded not only basic information but resulted in practical methods for dealing with the situation, with great benefit to the community. Once the solution to a problem had become routine, the situation was passed on to the public health officials and Meyer and the Hooper Foundation withdrew, to play a consulting role.

Brucellosis was approached in this same way (25), as was the investigation of epizootic encephalomyelitis in horses that led to the isolation of the virus of Western equine encephalitis (28).

When psittacosis occurred in the pandemic of 1929 – 30, Meyer's efforts were not aimed simply at understanding the infectious process in the human or avian host, but at understanding the ecology of the infection (19). The ability to develop psittacosis-free flocks by painstaking screening procedures prior to the availability of chemotherapeutic modalities is

another classic example of a research problem with very practical implications and benefits to both the community and to an industry.

His plague studies also emphasized an ecological approach (3). Meyer was a biologist, a true generalist, a rare type of scientist in today's highly specialized world. But it was this ability to generalize that allowed him to develop an ecological perspective of host-parasite relations years before ecology became a password. And this perspective led to the refined concepts of latent infections, zoonoses, and heterogeneous infection chains that are probably Meyer's major theoretic contributions (3, 19, 34 - 37).

Certainly one of Meyer's strongest qualities was his ability to channel his energies into attacking the problem. A man possessed of a high energy level and able to focus closely on specific problems, he expected the same dedication from his coworkers. Thus, during the years when I was a student of Meyer's I could receive phone calls at all hours of the night from him informing me that one of my animals looked sick and I better get up to the laboratory and do something about it. Apparently it was his habit to stop off at the laboratory before he went home from any engagement.

Occasionally when I would be working late at night in the old Hooper building, perhaps performing an autopsy, I would have the feeling that someone was looking at me (a feeling I am sure everyone has had when they are alone in an otherwise empty building). You always sheepishly look around, knowing you will see an empty room. My room usually contained K. F. Meyer. Obviously I would subconsciously hear him approach, or hear him reach into the box of chocolates that was usually in the laboratory. Then he would come over and make a few comments about the animal, point out some particular lesion.

I purposely mention doing an animal autopsy because it was a regular task. All animals in Meyer's Hooper Foundation were autopsied before they were discarded, and all dead animals had to be autopsied to determine the cause of death. Meyer had gone through many battles between scientific community and the antivivisectionists (38). He felt a very strong commitment to humane care and handling of experimental animals. Indeed, one year, I made a mistake in an experiment and killed some animals needlessly. I suddenly found that my name had changed from Schachter to "Murderer". For months when Karl Meyer wanted to see me he would tell someone to send the murderer up, and if no messenger was handy he would simply shout in that booming voice, "Murderer! Murderer!" and I knew who he wanted. At the very least, I learned my lesson about experimental animals.

Not only would Meyer call the staff at home about a problem, but if you worked at the Hooper Foundation it was impossible to go to a meeting and be out of Karl Meyer's reach.

No matter where I might be, I would receive telegrams and phone calls with a message, a question, or some suggestion that K. F. had to make. I remember one instance in the early 1960's when I was in New Orleans on the second day of a five-day meeting. I was paged at breakfast to receive a telegram which said: "Had discussions with Albert Sabin yesterday. He had some interesting ideas. Meet him in Cincinnati tomorrow." Of course, I went.

Meyer was never easy on graduate students, and I suspect that I was fortunate in coming along when he had mellowed. Our *modus operandi* for differing experimental approaches was simple. Meyer always let me do the experiments my way - as long as I also did them his way. Successful experiments had to be repeated again and again. If the experiments failed, but had been performed correctly, K. F. would say they "didn't talk". He would lean back and say, "Now this is the fun of it. Here is the challenge."

Meyer was a man of dignity and courtesy. Even when I was a lowly graduate student he always introduced me as his "colleague". This courtesy was extended at all levels and I have in various countries met photographers, philatelists, even waiters and maitre d's in restaurants who upon learning that I was from San Francisco, asked me if I knew Doctor Meyer, and would I please send regards to him for them. Obviously this was not a response to a stern Geheimrat.

Meyer's ability to relate to these many different people reflected the diversity of his interests. He recognized the need for an escape from professional pressures. He often commented that after a really bad day he would spend an hour or so working on the stamps and disinfected covers and then go to bed and "sleep like a baby". Characteristically, Meyer's hobby became a field of study, and he published hundreds of (uncatalogued) articles on medicine on stamps, and disinfection of the mail (39).

The enthusiasm and application that Meyer showed in his professional career were also expressed in a great appetite for life's pleasures. In the spring he seemed to get reports straight from the farms on the progress of the first asparagus of the season. He would later discuss with great gusto the quality of the year's crop. Similar enthusiasm was shown for a recently discovered restaurant, wildflower display, or a new film that did a better job of showing the texture of redwood bark or the colors of the wild flowers.

Karl Meyer was truly a man for all seasons. Claude Dolman has called him a "Merchant of Light, Mystery-Man, Pioneer, and Compiler" (39)*. All of us have had our lives enriched by his presence. Some of us have been privileged to work with him, others to study under him. All have learned from him. What we regret most is that we have no more like him.

* "For the severall Employments and offices of our Fellowes; We have Twelve that Sayle into Forraine Countries... Who brings us the Bookes, and Abstracts, and Patternes of Experiments of all other Parts. These we call Merchants of Light... We have Three that Collect the Experiments of all Mechanicall Arts; and also of Liberall Sciences; And also of Practises which are not Brought into Arts. These we call Mystery-Men. We have Three that try New Experiments, such as themselves thinke good. These we call Pioneers. We have Three that Draw the Experiments of the Former... into Titles, and Tables, to give the better light, for the drawing of Observations and Axiomes out of them. These we call Compilers..."

(Lord Verulam, Viscount St. Alban, New Atlantis 1635)

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KARL FRIEDRICH MEYER

May 19, 1884 - April 27, 1974

Education

| | |
|---------------------------|--|
| Degrees: | A. B. - University of Zurich, 1905 D. V. M. - University of Zurich, 1909 Ph.D. - University of Zurich, 1924 |
| Honorary Degrees: | M. D. - College of Medical Evangelists, Los Angeles, 1936 Dr. Med., h.c. - University of Zurich, 1937 L. L. D. - University of Southern California, 1946 D. V. M., h.c. - University of Zurich, 1949 Dr. Med., h.c. - University of Basel, 1952 D. V. M., h.c. - Tierärztliche Hochschule, Hanover, 1953 L. L. D., h.c. - University of California, 1958 D. Sc. - University of Ohio, 1958 D. Sc. - University of Pennsylvania, 1959 |
| Universities Attended: | University of Basel, 1902 University of Zurich, 1902-1905; 1922-1923 University of Munich, 1905-1906 University of Bern, 1906-1908 Institute for Infectious Diseases, Bern, 1907-1908 |

Professional Appointments

Pathologist, Transvaal Department of Agriculture, Onderstepoort, Union of South Africa, 1908-1910

Assistant Professor of Pathology and Bacteriology, School of Veterinary Medicine, University of Pennsylvania, 1910-1911

Professor of Pathology and Bacteriology, School of Veterinary Medicine, University of Pennsylvania, 1911-1913

Director, Laboratory and Experimental Farm, Pennsylvania Livestock Sanitary Board, Philadelphia, 1911-1913

University of California:

Associate Professor of Bacteriology and Protozoology, 1913-1914

Professor of Bacteriology and Protozoology, 1914-1915

Associate Professor of Tropical Medicine, George Williams Hooper Foundation for Medical Research, 1915-1924

Acting Director, George Williams Hooper Foundation for Medical Research, 1921-1924

Director, George Williams Hooper Foundation for Medical Research, 1924-1954

Professor of Bacteriology, 1924-1948

Director, Laboratory for Research in the Canning Industries, 1926-1930

Director, Public Health Curricula, 1936-1939

Professor of Experimental Pathology, 1948-1954

Director Emeritus, George Williams Hooper Foundation for Medical Research, 1954-1974

Professor Emeritus of Experimental Pathology, 1954-1974

Consultancies

Consultant in Bacteriology, Board of Public Health, State of California
General Consultant, Board of Public Health, State of California, 1948-1974
Consultant on Public Health, Southern Pacific Railway, 1920-1974
Chief Consultant, California State Department of Public Health, 1927-1947
Consultant in Bacteriology, Department of Health, City and County of San Francisco, 1935-1945
Consultant to the Board of Health, Chicago, 1939-1950
Consultant on Epidemic Diseases, Secretary of War, 1942-1945, 1948
Consultant to Department of Clinical Laboratories, Mount Zion Hospital, San Francisco
Consultant on Tropical Medicine, Secretary of War, 1942
Consulting Bacteriologist, Langley Porter Clinic, San Francisco
Consultant, Office of The Surgeon General, Medical Research and Development Board (appointed 1951-1974)
Member, National Advisory Health Council, 1940-1950
Member, Study Section on Microbiology and Immunology, Grants Division, United States Public Health Service
Scientific Advisory Board of Consultants to the Armed Forces Institute of Pathology, 1952-1974
Consultant to the Communicable Disease Center, United States Public Health Service, Atlanta, Georgia, 1949-1974
Senior Civilian Consultant on Clinical Pathology (appointed by The Surgeon General, 1953-1974)

Committees, Board, Commissions

National Research Council, various committees
Committee on Sylvatic Plague, American Public Health Association
World's Fair Advisory Commission, 1939
Commission on Virus Research, National Foundation for Infantile Paralysis, 1938-1948
Commission on Epidemics and Public Health, National Foundation for Infantile Paralysis, 1938-1948
National Advisory Health Council, National Institutes of Health, United States Public Health Service, 1941-1945; 1946-1974
Commission on Tropical Diseases, 1942-1945
Respiratory Disease Advisory Council, California Board of Public Health, 1943
Army Epidemiological Board, 1946-1948
Commission on Immunization, Committee on Plague, Armed Forces Epidemiological Board, 1949-1974
Board of Trustees, Langley Porter Clinic, 1945-1974
Committee on Medical Research and Therapy, American Trudeau Society, Medical Section of the National Tuberculosis Association, 1953-1954
Committee on Social Research, National Tuberculosis Association, 1952-1974
Expert Advisory Panel on Plague, World Health Organization, 1949-1974
Expert Advisory Panel on Zoonoses, World Health Organization, 1952-1974
Temporary Advisor, Technical Discussion Group, World Health Organization, 1954-1974
Inter-American Society of Microbiology Committee, Society of American Bacteriologists, 1952-1974
Advisory Committee, Armed Forces Medical Library, 1952-1974
Medical Advisory Committee, Research Foundation

Committee on Army Medical Library, National Research Council, 1951-1974
Chairman, Standing Committee on Public Health and Medical Science, 9th Pacific Science Congress, 1957; 10th Pacific Science Congress, 1961

Memberships

Society of American Bacteriologists (Council; Vice President, 1934; President, 1935)
American Public Health Association, Western Branch (Council; President, 1942)
American Association of Immunologists (Council; President, 1940)
American Society of Tropical Medicine (Charter Member; Vice President, 1918, 1937)
Northern California Public Health Association (2nd Vice President, 1930)
American Academy of Tropical Medicine (Charter Member; Council, 1945-1948)
American Association of Medical Milk Commissioners (President, 1929)
American Association of Pathologists and Bacteriologists, 1911-1974
American Veterinary Medical Association, 1911-1974
Pathological Society of Philadelphia, 1911-1974
Society for Experimental Biology and Medicine, 1915-1974
American Society for Experimental Pathology
American Therapeutic Society, 1924-1926
Société Helvétique des Sciences Naturelles, 1924-1974
American Epidemiological Society, 1936-1974
Asociacion Fronteriza Mexico Estadounidense de Salubridad Publica (Charter Member)
Inter-American Society for Microbiology
National Society for Medical Research
California Academy of Medicine
Institute of Food Technologists
California Academy of Science
New York Academy of Science, 1939-1974
National Academy of Science, 1940-1974
American Academy of Arts and Sciences
American Philatelic Society
Sigma Xi
Delta Omega
Phi Sigma
Alpha Omega Alpha

Honorary Memberships

Los Angeles Surgical Society, 1922
National Association of Sanitariums, Inc., 1939-1974
Sigma Kappa Theta, 1940-1974
Swiss Academy of Medical Sciences
Alumni Association, College of Medical Evangelists, Los Angeles
San Francisco County Medical Society, 1951-1974
American Trudeau Society, Medical Section, National Tuberculosis Association, 1953-1974
Harvey Society, 1939-1974
Institute of American Poultry Industries
International Epidemiological Association
American Society for Microbiology
Infectious Diseases Society

Fellowships

American Association for the Advancement of Science, 1920-1974
American Academy of Arts and Sciences, 1935-1974
American Public Health Association, 1935-1974
National Academy of Sciences, 1940-1974
Associate Fellow, Academy of Pediatrics, 1941-1974
New York Academy of Sciences, 1941-1974

Honorary Fellowships

American Board of Veterinary Public Health, 1953 (Awarded at the XV International Veterinary Congress, Stockholm, Sweden)

Awards and Honors

Sedgwick Memorial Medal, 1946
James D. Bruce Medal (Preventive Medicine), 1949
Officier, l'Ordre de la Santé Publique, 1946
U. S. Certificate of Merit (Conduct in Aid of the War Effort, World War II), 1948
Certificate of Appreciation, Bureau of Medicine and Surgery, United States Navy
Tribute, National Canners' Association (Prevention of botulism and development of canning techniques), 1939
Annual Prize, Outdoor Life (Conservation of natural resources), 1931
Honors, American Academy of Tuberculosis Physicians (for promoting scientific medicine and public health), 1950
Lasker Award, Albert and Mary Lasker Foundation at the meeting of the American Public Health Association, 1951
Humanitarian Award, Variety Clubs International, 1953
Borden Award, Association of American Medical Colleges, 1954
Walter Reed Medal, American Society for Tropical Medicine and Hygiene, 1956
Howard L. Ricketts Award, University of Chicago, 1960
Forty-Niners Service Award for the outstanding services to the Canning and Allied Industry, 1961
Jessie Stevenson Kovalenko Medal, National Academy of Sciences (for outstanding contributions to Medical Science as an investigator, teacher and administrator over a period of half a century) 1961
Award of the "Animal Care Panel", 1961
XII. International Veterinary Congress Prize, American Veterinary Medical Association, 1964
The 1964 Special Award, "The Goldheaded Cane", known as "The Karl F. Meyer Award", presented by the Conference of Public Health Veterinarians, Atlanta, 1964
The 1970 Bristol Award for Distinguished Achievement in Infectious Diseases, Infectious Diseases Society of America, 1970
Certificate of Recognition, American Public Health Association, 1972
Certificate of Appreciation for Patriotic Civilian Service, in recognition of years of devoted service as a consultant to the staff of the Surgeon General, Department of the Army, Washington, D.C., 1973
Certificate of Commendation in recognition of services as President of the American Association of Immunologists from 1941-1942, 1973

Selected as one of the subjects in a biographical film series "Leaders in American Medicine" made for the Medical Audiovisual Center, National Library of Medicine, Atlanta, Georgia, 1973. The film has been deposited as audiovisual history and will be available as an educational medium

Canners' League Hall of Fame Document, by the Canners' League of California, Sacramento, 1974

