Happy Birthday, Dr. Rogers!
Lore A. Rogers, A Rare Species

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TO

LORE ALFORD ROGERS

In recognition of his quarter-century service in the advancement of knowledge, embracing important contributions in pure science as well as its applications to industry, and because he embodies in the highest degree their ideal of untiring devotion and unswerving loyalty alike to his work and to his fellow workers—this volume is dedicated, with admiration and affection, by those who have been privileged to serve under his leadership.

Thus reads the dedication of Fundamentals of Dairy Science, first published in 1928 and written by, appropriately, “Associates of Rogers.” It again seems appropriate to pay tribute to Dr. Rogers, 24th president of the Society (1922), as he reaches his 100th birthday and to examine with the wisdom of hindsight his impact as a scientist as well as to reflect a bit on his 32 years of active retirement. This article is not intended to be a detailed chronology of his achievements. Rather it is designed to honor him for those achievements by looking at a few of them and reflecting on the total man whose life still has something pertinent to say.

A scientist may gain recognition in several ways: by his leadership of others, through his personal research achievements, sometimes by his involvement in the “scientific affairs” of his chosen field, or, occasionally, in new fields of endeavor after retirement. Dr. Rogers is one of those rare individuals who achieved prominence in all areas.

Early Life. Born 7 February 1875 in Patten, Maine, where his father was both farmer and lumberman, Lore Rogers’ earliest recollections include visits from age five onward to logging camps in the Penobscot country of Maine. His interest in the biological world was strengthened by his mother’s strong interest in the world of nature about her. His father’s efforts to “improve the growth of local crops” through leadership of the local agricultural society undoubtedly contributed to the inquisitive mind that has been Lore Rogers’ trademark throughout these first 100 years.

His love of the outdoors did not include an abiding interest in the chores of farming, however. “I would be put to work running the hay rake, but would leave it and be (found) studying the slate in the well.”

At the University of Maine he became interested in the new science of bacteriology, although only one course was available and “it wasn’t much of a course.” After graduation in 1896, he spent the winter as a clerk in his father’s lumbering operations and the following spring on log drives down the Penobscot. In the fall of 1897, however, the “new science” took charge of the new scientist and off he went to the University of Wisconsin for graduate study.

In 1899 Rogers accepted a position with the New York Experiment Station, Geneva, being paid “room and board only” for his first year. In 1902 he joined the U.S. Department of Agriculture in Washington to
begin 40 years of active investigation in the fledgling field of dairy bacteriology.

**Research leadership.** Among his many achievements, Dr. Rogers’ ability to lead others was probably most distinctive. His was not the simple extension of his own research through the minds and hands of others, but the development of an environment in which the creativity of others could be developed and expressed. Within the constraints of civil service he sought out young people with potential as independent scientists.

Byron Webb, recently retired Chief of the Dairy Products Laboratory, USDA, states it this way: “Rogers was looking for originality, initiative and drive. When he got good people he did all he could to induce them to stay, but did not hesitate to encourage some of his best scientists to take promising jobs elsewhere.”

The scientific climate was not always conducive to some of the fundamental studies found under his leadership. An unintended compliment was paid him by a nameless administrator who commented, “who does Rogers think he is, hiring all these theoretical people?”

Who were “these people”? The “Associates of Rogers” included 31 persons who contributed to the first and/or second edition of *Fundamentals*. All of them were competent researchers and all could be cited as evidence of his leadership. In the interest of brevity only a few of them will be mentioned as illustrative of this point.

Among the most theoretical investigations fostered in this group was the classical research of William Mansfield Clark on the determination of hydrogen ion concentration and its application in biology. Although these studies were expanded by him when he moved to Johns Hopkins, most of the basic work was carried out under the aegis of Rogers. This research has led to an appreciation by scientist and layman alike of the importance of pH and is often cited as a prime example of the value of abstract research in solving industrial problems.

Alice C. Evans (2), world renowned for her research on brucellosis and first woman president of ASM (1928), in response to a query about her early association with Rogers wrote the following:

> It was not until the day before my arrival in Washington that I found out that the high officials of the Bureau of Animal Industry did not want women on their staff. This was before the Woman Suffrage Amendment was added to the Constitution. Despite the inauspicious circumstances of my arrival, I found the Dairy Division a good place to work. Dr. Rogers seemed not to share the antagonisms of the higher officials toward women scientists.

Space will not permit citing all Dr. Evans’ comments, but excerpts from her letter indicate that at age 93 her recollections of those years are still vivid.

Wisely, Dr. Rogers gave only general directions to his research leaders, leaving them free to follow the leads that their own observations detected.... the spirit of the place was stimulating.

And then, regarding her research on brucellosis and the resentment it stimulated in some segments of the dairy industry:

> ... nevertheless, no restraint was placed upon me; all my needs were cheerfully supplied. ... Dr. Rogers must have been responsible for smoothing the way for prompt approval for publication of my reports.

William C. Frazier, for many years Chairman of the Department of Bacteriology at the University of Wisconsin, spent the first 10 years of his career as a dairy bacteriologist under Dr. Rogers. Excerpting a letter from him:

> ... although he (Rogers) might mention general projects for research he seldom made suggestions in regard to the research itself. Nevertheless, he was most particular about how results were written for publication and had an editorial committee that really worked over each and every manuscript.

Dr. Frazier further commented: “Dr. Rogers was a typically inventive Maine Yankee, who would contrive gadgets at the least suggestion, and who had his office next door to the machine shop for good reason.”
He developed sophisticated gadgets from rudimentary ideas and in an era of limited budgets and poor availability of equipment from commercial sources, he kept the incubators, humidifiers, cheese curing boxes, and other equipment running accurately and dependably for others to use.

Among other “alumni” of the Dairy Research Laboratories was James Sherman, long-time editor of the Journal of Bacteriology and for many years Chairman of the Department of Bacteriology and Dairy Industry at Cornell. The Rogers and Sherman families maintained a close personal relationship in addition to their professional ties.

Every mycologist is aware of Charles Thom’s studies on the taxonomy and industrial applications of fungi. His first 10 years in the USDA were spent as an associate of Rogers. W. R. Albus, who later was a physician in Chicago, C. E. Gray, who continued his dairy products research at Golden State Creameries, S. H. Ayers, who went to the Glass Container Institute, Anne Benton, Professor at Vassar, and C. S. Mudge, professor of Dairy bacteriology at California, all began their professional careers with Rogers.

Other well-known scientists under his leadership who remained with USDA included G. E. Holm, later Chief of the Dairy Division, E. S. Meigs, who organized the first dairy cattle nutrition research in USDA at Beltsville as a branch responsible to Rogers, H. R. Curran (spores), R. W. Tittler (lactobacilli), E. O. Whittier (dairy by-products), A. M. Hartman (vitamins), and numerous others. Byron Webb had it both ways with a 9-year break as Associate Director and Director of Research for National Dairy Products Corporation (Seafrost) before returning as Laboratory Chief.

Floyd Kurtz, a recent retiree from USDA, describes Rogers in another way.

Rogers was a man of few words, but what he said was pertinent and interesting. I would say that integrity and a low-key sense of humor were his outstanding characteristics.

Although direct and occasionally demanding, Dr. Rogers took a personal interest in his associates. Among the few of his peers who are still around, there are fond memories of the “bean-hole-bean” suppers (a Maine lumbercamp speciality), and the trips in his old second-hand car to the experimental creamery in Grove City, Pa. On one of these trips a not unusual “car failure” occurred. Rogers told his passengers (Frazier, Webb, and a Japanese visitor) to sit under a tree and rest. He produced a small case containing six or eight books of detective stories for his passengers to read while he worked. Such delays were expected and provided for.

Many people who have retired from an active research situation become less and less willing to credit others with a share of the accomplishments as the years pass. This is certainly understandable and is accepted by all of us. Let me quote, though, from a letter written by Dr. Rogers—written in this, his 100th year—in response to a request for his reflections on his years with USDA.

I will contribute to this effort by some sketch of my work in Washington which will show that my reputation was built on the work of my associates and that I contributed very little.

That is what leadership is all about.

Research accomplishments. As indicated above, Dr. Rogers did not “ride herd” on his associates, and neither did he claim credit through joint authorship on their manuscripts. The group ranged in size over the years from three to 20 professional scientists, but, unless he had a direct and continuing involvement in the research, his name did not appear as an author. The well-known studies of W. M. Clark, A. C. Evans, J. M. Sherman, Ayers, and Johnson, etc. all were published without his visible imprint. Yet, in his 40 years Rogers was the author or co-author of almost 100 scientific papers plus several patents and popular articles. Keeping in mind the base of knowledge and working tools of 40 to 70 years ago, his research included both pure science and applied problems, which he attacked with equal vigor.

The immediacy of Rogers’ scientific im-
pact is indicated in an article by Whittier on
dairy research in USDA (8).

The Dairy Division was established by Con-
gress in 1895 and authorized to collect and
disseminate information relating to the dairy
industry of the United States. That was pre-
cisely and exclusively what it did until 1902
when L. A. Rogers became an employee of
the Division.

This did not mean he began work in a
new laboratory in Washington; there was
none. His initial assignment was to improve
the keeping quality of butter. This work was
begun in cooperation with C. E. Gray in bor-
rowed facilities at Iowa State, followed by
several experimental churnings at the Uni-
versity of Wisconsin. It was extended in a
tent at a cooperative creamery in upstate
Wisconsin, and later in Minnesota, and com-
pleted in the kitchen and woodshed of an old
house in Washington, the first USDA Dairy
Research Laboratory. This work extended
over several years and is best summarized in
the citation Dr. Rogers received as the first
recipient of the Borden Award in Dairy
Manufacturing presented by the American
Dairy Science Association in 1937.

His discovery that butter made from paste-
urized sweet cream had better keeping quality
than butter made from sour, ripened cream
has revolutionized the theory and practice of
butter manufacture and has saved the industry
millions of dollars.

The key word here may be “theory,”
although it certainly was not abstract rea-
soning. Rogers’ approach was not a simple
empirical one of trial and error, although it
involved a lot of that; there were extensive
studies of the microbial flora.

How meager a conception I had of the nature
of the problem may be gathered from the fact
that much time and effort were spent in study-
ing the flora of the pastures.

However, in a time when specific bacteria
were being constantly revealed as the causes
of diseases in man and animals and of spe-
cific flavor defects in foods and feed, it took
a perceptive and open mind for a bacteriolo-
gist to show that the microbial involvement
was only indirect. It gradually became clear
that the defect commonly referred to as
“fishy flavor” was due, not to bacteria, but
to chemical changes in which oxidation
accelerated by acid (produced by bacteria)
and metal salts played the important role.

During the course of a visit by the author
with Dr. Rogers in 1970, Dr. Rogers asked
what we were working on in the USDA
Dairy Products Lab. I answered that we
had a major effort on whey utilization. His
comment, made with genuine interest but
with a slightly bemused smile, was that they
had worked on the problem 30 years ago.
He was charitable; his first published report
on it was 48 years previously.

His Borden Award citation lists numerous
other contributions made on sour milk
products, condensed milk, cheese, and pow-
dered milk. To quote again,

In short the contributions which Rogers had
made to the dairy industry are legion. There
is not a branch of our industry that has not
felt the helping hand of his genius.

In addition to his many studies on applied
problems in dairy bacteriology, Dr. Rogers’
interest in sorting out microbial relationships
in those problems involved him early in
laboratory studies of the gas-forming bac-
teria. (He once referred to this as “pure”
bacteriology, although he disliked the term
because it implied that bacteriology that had
application was impure or corrupt.) Sev-
eral papers evolved which contributed sig-
nificantly to classification within the coli-
aerogenes group.

His studies on the lactic acid fermenta-
tion, both in dairy products and as a com-
mercial source of the acid by the fermenta-
tion of whey, opened up new ground that
has been extensively cultivated since.

The astuteness of Rogers in recognizing
problems “before their time had come,” or
at least problems that have received con-
siderable attention in recent years, is readily
apparent from a perusal of a few of his other
publications. For example, his studies on
preservation of cultures (3) in 1914 was
the pioneering work on freeze-drying cul-
tures. An article on continuous culture in

ASM News
1930 (7) gives the design of a device whereby *Escherichia coli* and *Streptococcus lactis* were maintained in a reasonably steady state for 30 and 15 days, respectively. His use of successive frames of a motion picture camera to study the growth of bacterial colonies (5) was similar to the time-lapse photography of today. Not all of his research was "down to earth," however, as is shown by a study in 1936 of microorganisms in the stratosphere (6).

**Scientific affairs.** Rogers' reaction to his first meeting of the Society of American Bacteriologists (the fourth annual meeting, in 1902) was typical of the eager young scientist, even today.

I have difficulty recalling anything of particular interest to me. However, I was overwhelmed by the number of distinguished bacteriologists attending—Theobald Smith, Sedgwick, Erwin Smith, Russell, Welch, Sternberg and Park.

In 1905, when Dr. Rogers was elected to the Society, the authorized membership was increased from 100 to 125. H. J. Conn has suggested that the increase may have been made to allow the election of Rogers. In any event, his contributions to the affairs of science apart from research were considerable. He was the first Secretary of the Washington Branch of the Society (1917) and served as its vice-president and president in 1919 and 1920.

In the national society he was active on many committees, was one of the original advisory editors for the Journal of Bacteriology when it was established in 1916, and served as the Society's 24th President in 1922. His presidential address, "What Constitutes Efficiency in Research?" (4), is a classic and should be read by science administrator and bench scientist alike who believe their problems with "the organization" are new. A few excerpts may whet your appetite.

It is safe to say that the greatest difficulties which the average investigator has to overcome are not involved in his problem itself, but are those thrown in his way by man-made organizations.

The possible economies of consolidation in the name of efficiency also bothered him.

It is better to spend money for branch libraries than to have a laboratory force work for weeks or months because, through difficulty in getting books and periodicals, they are ignorant of the fact that the problem has been solved.

**And about scientific independence,**

... (for) the exceptional men, with imagination, ... the organization must afford wide latitude in the selection of problems and in the method of solving them. On the other hand, there are many men who, if left to the dictates of their own imagination, accomplish little beyond their own entertainment, while they may, under the right leadership, become good investigators.

Rogers was chairman of local arrangements at the 1924 annual meeting of the SAB. At a smoker held during the meeting, a booklet appeared entitled, "A new Genus omitted from Dr. Bergey's book." It contained a series of poems and cartoons caricaturing some of the outstanding bacteriologists of the day. One of the "species" included a cartoon of a man working an old hand churn with the following poem:

*Lactis a. rogeri*ne

*Will this fellow churn the cream?*

*No, he'll run the thing with steam.*

*Put on wheels and thing-gum-bobs,*

*gadgets, relays belts and knobs;*

*Turn the 14th knob a fraction,*

*for associative action;*

*Twist the 19th knob a bit,*

*butter will come out of it.*

**Rogers and the ATCC.** No facet of Rogers' scientific career is more important to the microbiologist of today than his involvement with the American Type Culture Collection. The recently published history of the ATCC (1) clearly documents that
fact. Rogers himself at age 98 provided much of the material for the manuscript.

A few excerpts from that history indicate his involvement.

In 1922 the SAB assumed responsibility for the collection. Lore A. Rogers, then president of SAB, moved the meager collection to Washington in a suitcase.

In 1924 a committee of the Division of Medical Sciences and of Biology and Agriculture of the National Academy of Sciences met to organize a committee to manage the collection. Charter members of the committee included L. A. Rogers as chairman. In 1925 the collection was moved to McCormick Institute in Chicago where it stayed until 1937. It was returned in that year to the Washington area and housed at the Georgetown University Medical School. With part-time scientists working intermittently (Rogers was an active participant) and Katherine Alvord as full-time secretary-manager, the collection by 1947 had outgrown the G.U. facilities.

After considerable searching the committee-in-charge rented a small two-story apartment building on M Street in Washington. It was in poor condition and required extensive remodeling. Lore Rogers and the staff of nine did most of the work themselves. ... Rogers, like Pasteur, even made the incubators ... In 1949 Lore Rogers retired as chairman of the Board, after 24 years of association with the ATCC. R. E. Buchanan wrote in 1964: ‘Had it not been for the devotion, foresight, executive ability, ingenuity, and manual dexterity of Lore Rogers. I am sure that the collection would not have survived.’

Dr. Rogers’ scientific achievements have been recognized many times. He received an Honorary Doctor of Science Degree from the University of Maryland in 1923 and from the University of Maine in 1925. As already mentioned he was the first recipient of the Borden Award in Dairy Manufacturing (1937). Rogers Hall at the University of Maine was named in his honor. He was elected an Honorary Member of ASM in 1962 and was a Director of the American Dairy Science Association for several years and received their Distinguished Service Award in 1963.

Post-retirement: the Patten years. Upon his retirement from USDA in 1942, Dr. Rogers remained in Washington until 1948, devoting most of his time to the ATCC. He and Mrs. Rogers then moved back to his boyhood home in Patten, Maine, where he had established a dairy business with his son. The laboratory was an integral part of the operation and undoubtedly it had the best qualified 'technician' of any dairy plant in the U.S. Dr. Rogers continued to do the quality control work until the business was sold about 1960. By the time he had reached the tender age of 85 he had retired again, but the lore, the folklore, of Lore Rogers had already begun.

In 1950, Rogers had become concerned about the lack of a permanent record of the lumbering industry in Maine and began recording information and gathering artifacts relating to it. After Mrs. Rogers’ death in 1953, he devoted himself wholeheartedly to the project. With his manual dexterity undiminished by years, he built working scale models of logging and sawmill operations that even today are marvels of accuracy and operation.

As mentioned earlier the Jim Sherms (Cornell) had been close friends for many years and they had many delightful visits at Shin Pond near Patten where the Rogers had a cabin. In 1958, Katherine Sherman, now a widow, was visiting in Patten, and Lore and she decided to join forces. They were married in November of that year.

Space will not permit a detailed description of the fascinating Lumberman’s Museum that has evolved, or Rogers' activities in bringing it about. It is comprised of an authentically reconstructed lumber camp and several buildings housing the most complete collection in existence of logging and lumbering equipment from Peavy cant-dogs to huge Lombard steam log-haulers, from bateaus to swing-dingles. Until his eyesight began to fail at age 95, Dr. Rogers kept every model in working order. Although
Mrs. Rogers was actively involved in secretarial duties and cataloging of the many exhibits of the museum (it was first opened in a back room of the public library), she found a niche of her own in the community. As the librarian in Patten, Katherine Rogers developed its holdings far beyond those expected in a small community. In 1973 she was presented a plaque inscribed: "in recognition of her outstanding service as librarian and contributor to the enrichment of the lives of the people of the Patten area." Mrs. Rogers passed away in October 1974.

For his efforts, Dr. Rogers and the museum have received many honors from the State, the lumber industry, and, most valued by him, from his "down east" neighbors. You will find the museum listed in guides of the area and museum directories everywhere. It is truly one of a kind and worth whatever time it requires for you to visit it. (It is open Tuesday through Sunday from June to October). "Bean-hole-bean day," the second week in August, is the highlight of the tourist season, with neighbors, politicians, and visitors alike enjoying the lumberman's delicacy. (One of the most memorable experiences my wife and I have ever had was a tour of the museum given us by Dr. Rogers in his 97th year. Although able to distinguish only lights and shadows, he took us through all the buildings, explaining each artifact, after first identifying it by touch—J.A.A.)

Dr. Rogers has officially relinquished his position as curator, but still spends part of every day at the museum. Although his sight is now gone, he can point out every exhibit and describe its use and historical significance in detail.

To the microbiologist "generation time" has a special meaning; species *Lactis a. rogersis* has given it a new dimension.

**Acknowledgment**

Many people have contributed materials for this manuscript. In addition to Dr. and Mrs. Rogers and those cited in the text were L. S. McClung, Archivist of ASM, Don Williams, Dairy Industry Supplies Association and close friend of the Rogers, and R. A. Day, Managing Editor, ASM, whose initial enthusiasm about the article encouraged more than a perfunctory treatment.

**Author's note.** Since Dr. Rogers' middle name is Alford I have been asked if we are related. In hopeful pursuit of a positive answer, I inquired of Dr. Rogers about the origin of that portion of his name. He showed me a surveyors mark in the Lumberman's Museum of an Alford for whom he was named who had been a good friend of his father while he served in the Union Army in the Civil War. Since my grandfather served in the Confederate Army, the subject was not pursued further.

**Literature Cited**

Lactis o. yogernes.

Will this fellow churn the cream?
No, he'll run the thing with steam,
Put on wheels and thing-gum-bobs,
Gadgets, relays, belts and knobs;
Turn the 14th knob a fraction,
For associative action,
Twist the 19th knob a bit.
Butter will come out of it.
A NEW GENUS OMITTED FROM DR. BERGEY'S BOOK

AS PRESENTED AT THE SMOKER OF THE SOCIETY OF AMERICAN BACTERIOLOGISTS WASHINGTON, D. C. DECEMBER 29, 1924

DRAWINGS BY ROBERT JAMES MALONE
VERSES BY WILLIAM C. FRAZIER