Plate A, Fig. 1 of Lohnis’s review offers a graphic representation of the life cycle of \textit{B. azotobacter}. Some years later Arthur Henrici would evaluate this image as follows:

“\textit{Lohnis’ complicated diagram is absolutely unintelligible ... the diagram which he presents to show these constant relations, with its numerous arrows connecting each type with many others, and with double points indicating their reversibility, leaves one without any clear notion of regularity, but rather with the idea, in vogue in Naegli’s day, that any bacterial type may develop in a haphazard way from any other.”}
In addition to Evans’s Address, two other 1928 publications addressed the life cycle/pleomorphism issue. In The Newer Knowledge of Bacteriology Philip Hadley rails against the regnant Koch/Cohn strict monomorphist concept of the bacteria as simplistic and scientifically blinkered. One of his suggestions for areas needing further research is whether “the filterable forms of bacteria [i.e., the viruses] may not represent one or more definite units (cyclostages) in the reproductive history of the species.”
In Morphologic Variation and the Rate of Growth of Bacteria, also in 1928, Arthur Henrici worked to resolve some of the dispute:

*In this work I shall show that, contrary to the orthodox teaching, the cells of bacteria are constantly changing in size and form and structure; but that instead of these changes occurring in a haphazard or meaningless fashion, or instead of being phases in a rather vague and complex life cycle, they occur with great regularity and are governed by simple laws which, after more data have been accumulated and analyzed, may probably be very precisely formulated.*
In 1930 Evans was selected as one of the two U. S. delegates to the First International Congress of Microbiology in Paris; the other delegate was Robert Buchanan of Iowa State University, another past president of SAB. One of the issues to be addressed by the organizers going forward was the standardization of bacterial nomenclature, the need for which was reinforced by the titles of papers in the section on Veterinary Medicine a full ten years after Meyer and Shaw had proposed the genus *Brucella* for the Bang and Bruce microorganisms.
At the Second International Congress in 1936 Evans again represented the U. S. At both Congresses Evans was invited to small social functions which included some of the major figures in the science at the time, who knew and approved of her work. In addition, at the 1936 meeting her boss George McCoy arranged for her to arrive early to consult with two scientists: Frederick Griffith (below, left), concerning the streptococci (though he would later be remembered primarily for pneumococcal transformation); and Sir Weldon Dalrymple-Champneys, who would dedicate his 1960 monograph on brucellosis to “All patients past and present with undiagnosed undulant fever.” At the time of their meeting Evans had been suffering from the chronic form of the disease for 14 years.
After the Second Congress Evans flew to Delft and was afforded a walking tour of the city by Albert Jan Kluyver (left) and Cornelis B. van Niel, who was visiting his old mentor at the time.
Later in her career Evans also worked on phage typing of the Streptococci.

"A very interesting development has been the discovery of a bacteriophage for streptococci by Clark and Clark (1927). Since then the existence of streptococcal bacteriophages has been confirmed by a number of workers. The most extensive investigation has been made by Evans (1934 and 1936). She had demonstrated a specificity of various races and it seems very probable that they may be easily and successfully used in the identification of certain streptococci and also that they may be of very considerable importance in the development of a natural system of classification."

William D. Frost and Mildred Englebrecht, 1940
This photograph of Evans (left) with Rebecca Lancefield at the 1964 ASM meeting captures the first two women Presidents of the Society, both of whom worked on elucidating the tangled relationships among the streptococci.
Telling the Story of Alice Evans

Some Sources
In September 1929 Paul de Kruif published a lengthy article on Evans in the Ladies Home Journal.
A reworked version of the *LHJ* piece became one of the chapters in de Kruif’s 1932 collection, *Men Against Death*. (Evans was the only woman included.) In it he characterized Evans during her early years in Washington, working on the fresh milk project:

This bleak characterization gained greater exposure when it was included in an article on Evans in *Current Biography* in 1943 and in the entry on her in *American National Biography* (1999.)
After her retirement in 1945 Evans remained interested in the threat posed by brucellosis, serving as honorary president of the Inter-American Committee on Brucellosis until 1957. In 1946 she co-authored this pamphlet for the National Society for Crippled Children and Adults.
PASTEURIZATION OF MILK PROTECTS CHILDREN AND ADULTS. The milk which the farmer sells to the dairy is pasteurized before distribution. But unfortunately the farmer retails raw milk for the use of his family. Result—the family which gets its milk from the dairy is protected, while one of the farmer’s children is infected with brucellosis.

butter, and cheese, was cheap as compared with possible consequences.

Elimination of Brucellosis from Herds

But after Jim Rothway had disposed of the milk-borne Brucella to his satisfaction, he was still faced both with the occupational aspect of its acquisition, and with the economic loss due to abortion and sterility in cattle.

"Since we can’t abolish meat-handling as an occupation," he reasoned, "we can only reduce brucellosis as an occupational disease by eliminating it so far as possible from the cows, pigs, goats, and sheep."

Up to the end of 1944, about 88 million cattle were tested for brucellosis. At first about ten per cent of the cattle reacted positively. But as the program proceeded this figure was reduced to about five per cent. Attempts to eliminate this infection have taken two forms. One is slaughtering the infected animals, the other is the preventive use of a vaccine in young calves.

But in 1934, when a movement got under way to reduce the number of animals in the country, it was pointed out by students of the brucellosis problem that if live stock were to be eliminated it was the practical thing to try to eliminate diseased animals. As a consequence of this, a program was instituted similar to that of the anti-tuberculosis...
A 1961 article in the *Journal of the American Medical Women’s Association* continued the campaign for better diagnosis of the chronic form of the disease, from which she suffered for many years.
In her 80s, Evans prepared a memoir of 106 pages (including bibliography and index) followed up a few years later with 52 more pages of personal anecdotes, e.g., of her travel to the International Congresses.
“Shannon, a fictitious character in A. J. Cronin’s novel Shannon’s Way (1948) studied this problem [i.e., relation of B. abortus and M. melitensis] successfully, and was ready to publish his results when a friend told him that an American woman had recently published the facts that he had labored so hard to discover. The news crushed him, as was befitting in a novel.”

Alice Evans, Memoirs 1963
After receiving a copy of the 1963 memoir, Elizabeth O’Hern visited Evans for an interview. Her interest in women scientists grew, and the result was Profiles of Pioneer Women Scientists (1985), with chapters on twenty women, including Evans.
In 1993 Virginia Law Burns published this biography for young readers.
To celebrate a joint meeting between the American Society for Microbiology and the Society for General Microbiology in 1995, SGM commissioned artist Mark Duffin to prepare an image of Mt. Rushmore with four prominent American microbiologists replacing the presidents. From left to right: Alice Evans, David Bergey, Oswald Avery and Selman Waksman.
Alice Catherine Evans Papers. Cornell University Library, Division of Rare and Manuscript Collections: Collection #2552.
http://rmc.library.cornell.edu/EAD/htmldocs/RMM02552.html


