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Comments on Bernard O. Dodge

G. W. Beadle

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Comments on Bernard O. Dodge

Abstract

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Comments on Bernard O. Dodge

George W. Beadle

It is possible that the ancestors of the Dodge and Beadle lines may have been associated in a grotesque manner some three centuries ago. I am told a relative of Dodge was burned as a witch at Salem. About that time a cousin of mine, eight times removed, owned Beadle's Tavern in Salem where it is documented that alleged witches were taken for interrogation. Was the Dodge relative brought there? I prefer to think not.

My own personal knowledge of Bernard O. Dodge began during the 1928-29 academic year at Cornell University where I was then a graduate student. As a visiting seminar speaker, Dodge presented his results on the cytogenetics of Neurospora in which he found second division segregations for alleles concerned with presence or absence of conidia. How could that be when all the textbooks said the first meiotic division was reductional and the second equational?

In our advanced genetics courses and seminars many of us had become familiar with the work of Bridges and Anderson showing that crossing over occurs in the four-strand stage, and hence that a crossover between the centromere and the segregating pair of alleles would give just the observed result. That was pretty heady stuff -- mere graduate students pointing out to a real pro how his results could be so readily and logically explained.

I was again exposed to Neurospora in the early thirties as a postdoctoral fellow at the California Institute of Technology where the Lindegrens were so successfully extending and elaborating on Dodge's work.

Neurospora returned once again to my scientific life when in 1940 Edward Tatum and I were finding the going rough in our attempts to work out the genetic-biochemical relations of eye-pigment relations in Drosophila. As I sat one day in Tatum's comparative biochemistry lecture it suddenly came to me that it would be much more efficient to produce mutants concerned with known biochemical reactions than to fathom the chemistry of genetically known characters such as eye-pigment synthesis in Drosophila. It was immediately obvious that Neurospora was a logical organism for such an approach, for Nils Fries had by then shown that many other filamentous fungi were capable of synthesizing such building blocks as amino acids and vitamins in culture media of defined chemical composition.

We called on Dodge and the Lindegrens for Neurospora stocks and soon discovered these would grow on a known medium consisting of inorganic salts, a carbon source, plus biotin which had just become commercially available as a concentrate. We were soon on our way toward producing scores of mutant types that could be defined in terms of the chemical reactions in which they were deficient.

It is of interest to note that F.A.C.A. Went, father of the plant physiologist Frits W. Went, came close to discovering vitamins at the turn of the century. Then in Java, he investigated growth requirements of Neurospora and found that the addition of one of the sugars, raffinose if I recall correctly, to Neurospora grown on a medium of known chemical composition increased growth far out of proportion to the sugar added. It is now quite clear that the sugar used contained traces of biotin.