Creating a Physical Biology. The Three-Man Paper and Early Molecular Biology. Ed. by Phillip R. Sloan and Brandon Fogel. Chicago, The University of Chicago Press, 2011. ix+319 p. Ill. \$ 35.–. ISBN 978-0-226-767783-3

Creating a Physical Biology is structured around the article *On the Nature of Gene Mutation and Gene Structure* (1935), jointly written by Nikolai Timoféeff-Ressovsky (population genetics), Karl Zimmer (experimental radiology), and Max Delbrück (theoretical physics). The aim of the volume is to make the so-called three-man paper (TMP) more widely accessible by providing an English translation. This work has been undertaken by one of the editors, Brandon Fogel, although in this as in most other respects the assistance of an international group of scholars is acknowledged. After an introduction (Phillip R. Sloan and Fogel) that provides biographical background on the authors of the TMP and informs about the then current models of the gene, the first set of papers situate the TMP in the history of physics and the rise of biophysics (William C. Summers), in the social network in which it arose, including researchers in photosynthesis (Phillip R. Sloan), as well as in the context of the relevance and fate of the target theory of the gene (Richard H. Beyler).

In the standard narratives of the history of molecular biology, the TMP – especially through its impact on Erwin Schrödinger's *What Is Life* (1944) – has come to signify a point of origin *avant la lettre*. Although a whig-historical approach to science is rejected, several contributors agree with this view for certain aspects of the TMP: the modeling of the gene as a specific molecular structure; the use of X-ray technology; the application of target theory; the physicist approach to biology; and the collaboration across disciplines. However, one point where they diverge from Schrödinger's adaption of the TMP is its degree of reductionism. It is argued that while Schrödinger would embrace a fully reductionist biophysics, the authors of the TMP held a view of life according to which biological processes could not be finally explained on the basis of quantum mechanics. In the two final chapters (preceding the TMP), Nils Roll-Hansen and Daniel J. McKaughan engage in fine-grained arguments about the issue of degrees of reductionism at play, especially with regard to Delbrück.

The volume remains strongly focused on the TMP and is therefore of interest to a limited readership who study the history of physics, biophysics, and molecular biology. Historians of biology will miss a more thorough discussion of the title, that is the bringing together of physics *and* biology. We encounter statements such as that biology became ever more dependent on chemistry and physics (Summers, 56); we learn about a context of debates between vitalism, mechanism, and holism (Sloan, 63); and we are informed that quantum mechanics was connected to embryology and cell biology (Sloan, 64); we even read that at times “all the biologists scolded all the physicists” – a remark made by Delbrück in a letter to Niels Bohr (Nov. 30, 1934, in Sloan, 70) that was followed by a depreciation of the entire caste as “never comprehend[ing] a new subtle thought [*Gedanken*] correctly”. However, one would have wished for a stronger engagement with biologists and their reactions to the new biophysics.

The emphasis on physics and in particular on Delbrück seems particularly striking in view of the fact that – as the editors note in their introduction – Timoféeff-Ressovsky contributed most to the TMP (with regard to length) and was the most well known scientist of the three. Timoféeff-Ressovsky had studied at Moscow University

and worked in the Soviet Union before he went to the Kaiser Wilhelm Institute for Brain Research in the environs of which the TMP was developed. He played an important role in introducing the synthetic theory into Germany in the late 1920s, and by the mid-30s was a leading experimental *Drosophila* geneticist. Timoféeff-Ressovsky brought Zimmer into radiation genetics after Hermann Muller stayed at his unit. Muller had pioneered the artificial induction of mutations mostly on the basis of X-radiation in the 1920s – research that was essential for a molecular theory of the gene. Similarly, although the context of Nazification is alluded to, it would deserve further treatment. Notwithstanding these justifiable limitations, the volume is of great service to a subset of the field of the history of science. While such volumes are obviously not necessarily meant to be read from the first to the last page, in view of the manageable number of contributions it would have profited from a more rigorous attention to repetitions.

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