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## Review Of "Correspondence: Karl Ernst Von Baer [1792-1876] And Anton Dohrn [1840-1909]" By C. Groeben And J. Oppenheimer

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Review

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## HISTORY, PHILOSOPHY &amp; ETHICS

## THE BIOLOGICAL CENTURY: FRIDAY EVENING TALKS AT THE MARINE BIOLOGICAL LABORATORY.

*Edited by Robert B. Barlow, Jr., John E. Dowling, and Gerald Weissmann; with Pamela L. Clapp. The Marine Biological Laboratory, Woods Hole (Massachusetts); distributed by Harvard University Press, Cambridge (Massachusetts). \$45.00. xiv + 289 p.; ill.; index. ISBN: 0-674-07403-3. 1993.*

In eleven valuable and eminently readable essays, this volume looks at the Biological Century through the lens of the pioneering contributions of many architects of modern biology, all associated with the Marine Biological Laboratory (MBL) in Woods Hole. Based on the renowned "Friday Evening Talks" given during the centennial year of MBL in 1988, the essays also reflect the individual approach the authors (speakers) have chosen to convey their appraisal of some crucial discoveries upon which the biological revolution is based.

Appropriately, the first essay by G. Weissmann deals with the reductionist postulate that biological phenomena can be analysed in terms of physics and chemistry. "[Jacques] Loeb was the leader of the new, mechanistic school of American biology the adherents of which tried to explain the phenomena of biology by the equations of physics and not the quirky logic of vitalism" (p. 9). The centennial year of MBL in 1988 was highlighted by a dedicatory lecture in his honor. Further essays focus on the pioneering work of T. H. Morgan and A. H. Sturtevant (by J. H. Lederberg); of E. G. Conklin and F. R. Lillie on developmental biology (by J. B. Gurdon); of A. Szent-Györgyi on biochemistry (by B. Kaminer); of K. R. Porter on

cell ultrastructure (by S. Inoué); of W. J. V. Osterhout on ion permeability in membranes (by C. L. Slayman); of K. C. Cole and A. L. Hodgkin on the electrophysiology of the squid axon (by C. M. Armstrong); of S. Hecht and G. Wald on the molecular basis of vision (by M. L. Applebury); of H. E. Hartline and S. W. Kuffler on visual perception (by T. Wiesel); of C. O. Whitman and W. H. Wheeler on behavioral biology (by E. O. Wilson); and of S. F. Baird, H. Bigelow, and K. Redfield on ecology (by J. E. Hobbie and J. B. Pearce).

This volume reflects the impact of the work and ideas of the above great scientists in the Biological Century. The essays are not intended to convey an overview of a century of discoveries at MBL; some readers would have appreciated a brief indication of how the seminal discoveries were carried further by researchers at the laboratory. Still, this volume also represents a contribution to the historical record of 100 years of existence of the foremost marine biological laboratory in the USA.

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CORRESPONDENCE: KARL ERNST VON BAER [1792-1876], ANTON DOHRN [1840-1909]. *Transactions of the American Philosophical Society, Volume 83, Part 3.*

*Edited by Christiane Groeben; Introduction by Jane M. Oppenheimer; translated by Christiane Groeben and Jane M. Oppenheimer. The American Philosophical Society, Philadelphia (Pennsylvania). \$15.00 (paper). v + 156 p.; ill.; index of names. ISBN: 0-87169-833-1. 1993.*

It is a privilege to listen to intelligent scientists discussing important ideas. The scientists are Karl Ernst von Baer, discoverer of the mammalian egg,

premier comparative embryologist, and elder statesman of Russian biology (77 years old when the correspondence begins); and Anton Dohrn, 29-year-old embryologist/musician/entrepreneur, whose newly minted Habilitationsschrift concerned the embryology and phylogeny of arthropods. The ideas are those of evolution and the formation of an international facility for embryological research.

Dohrn had the grand idea of a research center at Naples, where scientists from all over the world could study embryology and evolution. He proposed to fund this institute by selling tickets to its public aquarium and subscriptions to its journal, and most importantly, by renting "Tables" to governments and organizations. These Tables were to include aquaria, equipment, and skilled technical staff. This solution worked, and numerous young American embryologists—Morgan, Wilson, Stevens, among others—met their famous European colleagues while at the Smithsonian Table or the American Women's Table. In many of these letters, Dohrn tries (successfully) to convince von Baer to lend his good name to the project and to convince the Russian government to rent Tables.

The fact that von Baer went out of his way to help this young biologist is a testament to the liberality of the great embryologist. Dohrn followed Haeckel's hypothesis that ontogeny recapitulated phylogeny, a view that von Baer ridiculed. Von Baer also did not believe Dohrn's contention that a structure in an organism could be modified for some other function in its descendants. He certainly didn't believe Dohrn's specific theory that annelids had converted their ventral structures into dorsal structures and were the ancestors of vertebrates. Von Baer wrote that he didn't doubt evolution, but that he doubted the efficacy of natural selection to produce the animal forms. Von Baer believed that more research was the answer and that Dohrn had made that possible. He wrote to Dohrn: "Be that as it may, let us not quarrel about Darwinism, etc; in any case by founding an establishment where development can be carefully studied because of the possibility of maintaining embryos alive, you have taken a step that will provide the bridle and reins for Darwin's speculations if bridle and reins are needed. If you do not find the reins in Naples, then they probably are not needed after all" (pp. 80–81).

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#### IMAGES OF SCIENCE: A HISTORY OF SCIENTIFIC ILLUSTRATION.

By Brian J. Ford. Oxford University Press, New York. \$45.00. viii + 208 p.; ill.; index. ISBN: 0-19-520983-4. 1993.

This volume is typical of the kind of book one might find at an airport bookstall or at a museum gift shop. It is tailored to satisfy the curiosity of

people who browse through a collection of naturalistic figures only once in their life and never again. From this point of view, the subtitle, *A History of Scientific Illustration*, seems a bit excessive. The text deals with the development of scientific illustration in eight chapters that cover beginnings, anatomy, zoology, botany, minerals and machinery, geography, astronomy, and microscopy. For each of these fields the exposition is chronological; philosophical, scientific, technical, and economic implications are not examined. Iconography (approximately 200 illustrations) seems to be selected on the basis of availability rather than exemplary models or any correlation with the text. Layout requirements resulted in enough disorganization to cause even specialists to lose their way. The index is excellent. It could be even better with an index of the sources of illustrations.

In the Introduction the author states that there are two main aims in scientific illustration: didactics and the recording of the state of human understanding. Though he admits that there are hidden influences and cultural pressures underlying what people choose to illustrate (p. 2), unfortunately he does not go deeply into this crucial point. Consequently he formulates hypotheses that are frankly untenable: that the mosaics of fishes in Pompei may have had a didactic use (pp. 2 and 17). For whom? Fishermen, cooks in patrician houses, or schoolboys? Or that the distortion in figures of medieval herbals may be voluntary in order to confine the knowledge of herbs to the cognoscenti (p. 97). On the other hand, the author defines the idea of *scientific icons* very well. These are illustrations copied by unscrupulous illustrators that frequently gave rise to iconographic traditions that lasted for centuries (p. 56, Dürer's rhino; p. 72, Gessner's hyena). The author may have exploited the concept of icon not only for post-Renaissance zoological illustrations but also for botanical and anatomical illustrations of the classic and medieval eras. But it seems that illustration in manuscripts was less in favor than the printed illustration, perhaps because it was better known or more accessible.

Let me note, in passing, some inaccuracy in captions. It is improperly stated that "the publication in 1531 of Otto Brunfels's *Novi Herbarii* marked a move towards a representational strand of botanical illustration" (p. 85). However, it is correctly stated that "botany took its greatest step with the publication of the *Herbarum vivae eicones* (1530–36) by Otto Brunfels" (p. 89). The caption on page 85 might more usefully have translated the Latin explanation of the figure *Viola tricolor* (*Herba Trinitatis*). Everybody realized that poor Brunfels neither knew the Dioscoride's name nor the correct current name (*H. Trinitatis* was *Anemone hepatica*, not *Viola tricolor*) but, as he says,