

Book Reviews

most of these works will continue to look like variations on the Platonic archetype: the Sotheby's catalogue.

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TIMOTHY LENOIR, *The strategy of life. Teleology and mechanics in nineteenth-century German biology*, Dordrecht, D. Reidel, 1982, 8vo, pp. xii, 314, illus., Dfl.135.00.

A survey of early nineteenth-century German biology is long overdue, and Lenoir's study of the transition from intuitive *Naturphilosophie* to the empirical morphology of the Göttingen school is incisive and important. Lenoir counters older prejudices of the sterility of contemporary science, showing the richness of the "teleomechanist" tradition which grew in reaction to *Naturphilosophie*. He cuts through cruder mechanist/vitalist dichotomies to analyse the changing relationship between embryogenesis, organic unity, and developmental forces. His compass is from the 1790s to 1840s, from Kant's prescriptive unification of teleology and mechanics to Helmholtz's rejection of vitalism. Lenoir details the successive elaborations of the morphological programme by Blumenbach, Kiemeyer, Meckel, von Baer, and Müller—physiologists who accepted an emergent vital force, a concept clarified in the 1830s by Berzelius's theory of catalysis. He highlights the powerful effect Cuvier's work had on members of this group, how they adapted French palaeobiological discoveries to their teleomechanist paradigm, and how von Baer's new embryology—with its homological correlates—came to provide the unifying theme. In the 1840s, functional morphology was finally stripped of the *Lebenskraft* or vital force by Müller's students Helmholtz and DuBois-Reymond (for which they were branded "scum" by the loyal Virchow). But in so doing, these new reductionists did prepare the ground for Darwinism.

This is a bookish non-social study (an application of Lakatos's formulation of the research programme), and Lenoir keeps close to the original texts, thus providing a useful source of primary information on German science. It is essential for anyone interested in the interaction of functional morphology, embryogenesis, and organic chemistry prior to 1850, and provides a fitting complement to Frederick Gregory's study of the later period in *Scientific materialism in nineteenth-century Germany* (1977).

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T. CLIFFORD ALLBUTT, *Notes on the composition of scientific papers*, London, Keynes Press (British Medical Association), 1984, 8vo, pp. 161, £35.00.

"Try to begin with some glimpse into the heart of the matter."

"Do not end anyhow, let your leave taking be easy, gracious and impressive in proportion to the theme."

Sir Clifford Allbutt (1836–1925) will be best remembered as an essayist. This essay is all about the use and abuse of language. It is a classic of medical literature and may be picked up or put down at will, or opened at any chapter for illumination. It has been my practice to recommend this text to young doctors embarking on a research project. There is a hint of Montaigne in style and approach, and there is little doubt that Allbutt, had he not chosen medicine as his primary career, would have made original and lasting contributions to literature. He specifically asks us to go to literature and art to appreciate the fusion of form and content, and is a persuasive advocate of language, truth, and logic.

Allbutt uses language as a living thing, the instrument of clear thought, and recognizes that some of his restrictions on language have been modified by usage. He is a stern grammarian by instinct, whose advice on the ordering of periods, sentences, and paragraphs is exemplary; of the twentieth rather than the nineteenth century, so *that* he is able to admit *that* many a bad sentence is grammatically correct ("Keep down your *thats*: they multiply like lower organisms"). Unfortunately, the English educational system has declined and it is doubtful if

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his statement "Whether Greek is compulsory or not, Latin cannot be omitted from a good education" would receive other than partial support. He would have mourned the eclipse of King James I's version of the Bible by modern translations.

This essay is of broad interest and can be recommended to all medical practitioners. It could be profitably entered into the already overcrowded undergraduate curriculum, agreeably displacing certain arbitrary, transient fashions in theories of education, including the Hydra of "multiple choice". Clear writing demands clear thinking. The more difficult the concept the more cautious, careful, and ordered the conclusion should be. In this sense, Allbutt's *Notes on the composition of scientific papers* is a good bench book, disposing of pomposity, inherited misconceptions, and nonsense. He would rather have one good, clean paper than five counterfeits, and there is a lesson in this for the research "industry" of today.

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HERVE BARREAU *et al.* (editors), *L'explication dans les sciences de la vie*, Paris, Centre National de la Recherche Scientifique, 1983, 8vo, pp. 258, Fr.90.00 (paperback).

This collection of essays explores whether modes of explanation other than physico-chemical reductionism can retain their relevance, while better accounting for both the uniqueness of the living and for biology's quest for scientific status. Of particular interest in Section 1 ('Molecular and Theoretical Biology') is René Thom's 'Dynamique globale et morphologie locale chez les êtres vivants'. It advocates a new paradigm—dynamic structuralism—as incompatible and superior to the currently dominant paradigm of molecular biology on the grounds that the new paradigm's mathematical formalism better accounts for the problem of the stability of biological form. Thom pleads for more theory while underestimating the scientific community's objections to his new paradigm, objections grounded in its lack of experimental control.

Section 2 ('Theoretical Biology and the Theory of Evolution') includes Jacques Roger's well-argued 'Biologie du fonctionnement et biologie de l'évolution' in which he develops Ernst Mayr's idea of an epistemological gap between "functional biology", i.e. experimental physiology and its later offshoots such as biochemistry, biophysics, and molecular biology; and "evolutionary biology" as epitomized in the synthetic theory of evolution. Essentially, Roger accepts Mayr's insistence on two types of biological causality and hence two types of biological epistemology: one associated with evolutionary theory which explains by telling history and the other associated with functional biology which explains processes by recourse to physico-chemical laws while decomposing the complexity of biological phenomena.

The collection concludes with Alexandre Petrovic's 'Types d'explication dans les sciences biomédicales et en médecine', a survey of medicine's dualist epistemology, oscillating between biomedical propositions grounded in criteria of truth and clinical procedures founded on criteria of effectiveness. He illustrates this survey with examples from surgery, endocrinal and cancer-related pathology, eventually discussing computer-based modelling techniques in modern medical decision-making.

Though the collection is useful in refocusing attention on the epistemological uniqueness of biomedical sciences, it falls short of explaining it. This limitation stems from the authors' confinement to neo-empiricist philosophy of science but also from their parallel entrapment in their own disciplinary ethos. Finally, the lack of familiarity with the relevant literature, in either French or English, of all but one author (J. Roger), further devalues the collection's potential use as a resource on biomedical explanation.

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JOHN PARASCANDOLA and ELIZABETH KEENEY, *Sources in the history of American pharmacology*, Madison, Wis., American Institute of the History of Pharmacy, 1983, 4to, pp. 59, [no price stated] (paperback).

This publication is an offshoot of work which led to the publication of *Archival sources for the history of biochemistry and molecular biology* (Bearman and Edsall, 1980). It has three