

astounding impact of drug treatments for neurological and especially psychiatric disease, and the avenues that they opened for new experimental investigations into brain structure and function.

All the history of neuroscience works mentioned above have their particular strengths, and weaknesses, and the present book is no worse, but also no better. It will no doubt find a home in libraries and reference collections, where it will complement, and be complemented by, other texts, but it unlikely to appeal to the individual purchaser.

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Christopher Lawrence and George Weisz (eds), *Greater than the parts: holism in biomedicine, 1920–1950*, Oxford University Press, 1998, pp. xiii, 366, £55.00 (0-19-510904-X).

Since the late nineteenth century, holism, in medicine as in the sciences, has been an oppositional movement, reacting against the trend toward mechanist-reductionism and specialization. By studying “medical holism”, therefore, we gain a richer understanding of the rise of scientific medicine and its reception in various quarters of the medical community. Lawrence and Weisz have put together an unusually coherent collection of high quality essays on an important topic.

For one thing, the volume spans an admirable range of places and subject matters. The essays cover not only Britain and the United States but Germany, France, and Poland. And they focus upon both clinical medicine (including psychosomatic and social medicine) and medical sciences (bacteriology, pathology, physiology, neurology, immunology, neurophysiology). The collection opens with a general introduction by the editors which will be useful for teaching, and Charles Rosenberg contributes a thoughtful conclusion, reflecting upon the varieties of medical holism and their proponents, and placing interwar holism in a

broad historical context continuing up to the present.

So what is “medical holism”? The editors have opted to demarcate the terrain very broadly, and one comes away with a strong sense of the diversity of holisms. There are many ways to categorize such diversity, depending on one’s purposes, but one way is to distinguish four different levels of organization with which holists have been concerned. At the lowest level, some holists have addressed the *functioning of particular organs or organ systems*, arguing that the relations between the parts are interactive or non-additive. This can be seen in Anne Harrington’s essay on the neurological theory of Kurt Goldstein, or Allan Young’s on Walter Cannon and homeostasis. On the level of *the body as a whole* we find other holists calling for an integrated knowledge of the body (sometimes including the mind) to be wielded by a class of medical generalists in order to counteract specialization. Examples are to be found in Chris Lawrence’s and Stephen Jacyna’s portraits of elite London clinicians or Steve Sturdy’s sketch of George Newman’s programme of medical reforms. Moving up a level, we find many holists advocating *constitutionalist theories* of disease which shifted attention away from the microbe alone toward the relationship between host organism and microbe. Such theories were to be found, for example, among clinicians, pathologists, bacteriologists and immunologists in Germany, France, Poland and the United States (cf. the essays by Cay-Rüdiger Prüll, Ilana Löwy, Peter Keating, Sarah Tracy and Andrew Mendelsohn). And at the highest level of aggregation we find holists looking beyond the body and its material environment to emphasize the impact of *psychological and social contexts* upon health. This can be seen in Theodore Brown’s essay on George Canby Robinson or Jack Pressman’s account of the Rockefeller Foundation’s support for “psychobiology”. Finally, each of these forms of medical holism might—or might not—be hitched to a more general metaphysical or ideological programme.

Book Reviews

Several of the authors point out that while the origins of medical holism (as an oppositional movement) go back to the late nineteenth century, it attracted particular attention between the world wars. Although surprisingly few of them attempt to explain this renaissance, in aggregate these essays none the less tell us quite a lot about the conditions which fostered interwar holism. To begin with, the usual characterization of German holism—that it was mainly rooted in right-wing communitarian ideologies—is highly misleading. As Harrington's essay shows, Kurt Goldstein was on the liberal-left, and he was not alone. (Nor was holism elsewhere tied to communitarianism; in Britain, elite London clinicians championed an individualist political order.) Moreover, it is clear that the ideologized holism common in Germany was not typical of holisms elsewhere. In France and the United States, as Weisz and Brown make clear, holists largely stuck to medical evidence, without appropriating either general anti-reductionist arguments from biology or cultural criticism from the political arena. Nor were most medical holists in most countries concerned to link their arguments to wider anti-science movements.

If we are to account for the intensification of interwar holism, it is probably important to specify which kind of holism is to be explained. If we consider constitutionalist theories, for example, several authors suggest that one reason why they flourished in so many countries is that they could draw support, not only from the limited therapeutic successes of scientific medicine, but also from findings in immunology or eugenics which suggested that "soil" was as important as "seed". This argument is stated most forcefully by Mendelsohn, who argues that bacteriologists' experience of the peculiar properties of epidemics during and after the war made it very difficult to sustain the older view that the germ was all-important in disease. On the other hand, if we want to explain the ubiquity of clinicians' calls for an integrated knowledge of the body, then the prime candidate would seem to be Lawrence's thesis that clinicians' holism

was a response to the threatened reorganization of medical work after 1918.

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Scott H Podolsky, Alfred I Tauber, *The generation of diversity: clonal selection theory and the rise of molecular immunology*, Cambridge, Mass., and London, Harvard University Press, 1997, pp. x, 508, £49.95 (0-674-77181-8).

Several recent studies have shown the central role of techniques, instruments, reagents and experimental systems in the "molecularization of biology and medicine", first by focusing on the structure of proteins, then on the structure of nucleic acids (DNA and RNA). *The generation of diversity* is a fascinating account of how exactly this change took place in immunology. The book's main strength—telling a very detailed story of a transformation of a single domain of scientific inquiry—is probably also its most important drawback. Although Podolsky and Tauber systematically attempt to clarify and simplify the scientific problems they discuss, some of the chapters of their book may be unaccessible for a non-expert, a problem difficult to avoid when one deals with complicated scientific issues.

The generation of diversity focuses on debates about mechanisms which generate the diversity of antibodies. Briefly, the "dogma" of molecular biology has affirmed that an information concerning the synthesis of proteins flows exclusively from the nucleus (DNA) to the cytoplasm (synthesis of proteins), not the other way round. How can one account then for the fact that the body can produce specific antibodies (that is, protein molecules) which specifically react with a vast array of external antigens: not only pathogenic microorganisms, but also foreign proteins and even molecules produced in the laboratory? The answer for this puzzle was provided by the