Some important analytical questions are also ignored. How did organizational forms affect the quality of the finished work? What criteria should historians employ to weigh the intellectual significance of completed research? Did the changing social organization of knowledge affect the way people perceived and organized their ideas and investigative techniques? What were the relationships between scientific concepts and methods and the structure of the institutions housing them? Allen's essay is the only paper that confronts the last question squarely.

The history of the organization of knowledge in America may be too young to concern itself with large normative issues or to touch every inch of the territory. Internal evidence suggests as much. Components of a pattern for the institutional development of scholarship can be selected arbitrarily from several papers in the volume (with apologies to Rosenberg) to help us find where these historians of the subject are now. First, the contributors have passed the professional entrance requirement: they all appear to have the Ph.D. Nearly every one is connected to a university, most come to the subject from a broader discipline, and the group can be called an elite, though not one that tries to remove its scholarship (in Higham's words) "from common understanding and participation." The research and writing were sponsored by an honorific organization, a practice that was atypical during the 19th century. But by and large the research style chosen by the authors places them in Allen's "naturalist" tradition. Mainly, the essays are descriptive, factual, inductive, speculative. There is a reluctance to formulate hypotheses and then examine them systematically with quantitative evidence. The form of Dupree's paper is nearest to the "experimentalist" approach: he classifies functions of the National Academy and then methodically introduces evidence, including numerical data, to test how the organization performed in each category. Kevles also counts and compiles, but quantification is rare in the book. Finally, our specialists do not have a learned society of their own yet, or a society-controlled journal, though *Minerva* serves the latter's purpose.

In sum, the history of the organization of knowledge seems to be about where emerging specializations were just prior to 1920. One should not expect a youthful sub-subdiscipline to address every related moral question nagging society today, or to exhibit perfect theoretical symmetry during its pioneering years. At this stage such coherence and moral legitimacy are rather like what Veysey, writing about the annual meetings of the American Philosophical Association in earlier days, refers to as "the elusive promise . . . that they might actually bring about agreement on the nature of ultimate truth through deliberation by a committee" (p. 79).

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Magnetic Effects

Cosmical Magnetic Fields. Their Origin and Their Activity. E. N. PARKER. Clarendon (Oxford University Press), New York, 1979. xviii, 842 pp., illus. $95. International Series of Monographs on Physics.

Parker is the outstanding authority on the theory of the sun's magnetic field. In 1955 he published a crucial insight concerning the way in which the solar field is generated by a turbulent dynamo, and he has been contributing at a consistently high level ever since. Hence it is of great interest when he takes pen in hand to summarize his work. The resulting book, *Cosmical Magnetic Fields*, is a major contribution to the astrophysical literature.

Parker has a very definite point of view: he argues that except possibly for a small set of highly symmetric magnetic topologies it is impossible to permanently bind magnetic flux into stars. Thus, the magnetic fields we do observe in the sun, stars, and galaxies are ephemeral and require continual regeneration by some process. A key point is that a flux tube bearing stellar or galactic gas is lighter than its surroundings and is thus buoyed upward, ultimately to escape. Parker argues this point in the book by exploring many examples of possible equilibrium in detail.

If the field is to be regenerated, Parker argues that some type of dynamo must be at work, with differential rotation stretching meridional fields into azimuthal ones, and cyclonic turbulence twisting azimuthal fields back into meridional ones. Since the turbulence in most stars is due to thermal convection on a small scale, the newly generated meridional fields are small-scale, so that reconnection of the lines of force is necessary to regenerate the original large-scale fields. Parker explains dynamo theory and reconnection in precise mathematical detail.

I like Parker's style on the whole. Each chapter begins with a pictorial discussion of the physical problem and continues with several relevant physical models worked out mathematically; there is then a summary of the general conclusions that can be drawn from these examples.

The book is based on the equations of magnetohydrodynamics, so that many of the specifically plasma effects in cosmic magnetic fields, such as high-frequency oscillations and instabilities, are largely ignored. There is brief reference to ion-acoustic instabilities, plasma turbulence, and anomalous resistivity in relation to the necessity of rapid reconnection of lines of force in dynamo theory.

I have one complaint. At times the writing is repetitive, and at times more examples are considered than are necessary to make the point. The result is that the book is considerably longer and more expensive than it needs to be. But that is a cavil: Parker has written a book that will dominate the field. None of the other books on the subject, such as Moffatt's *Magnetic Field Generation in Electrically Conducting Fluids* (Cambridge University Press, 1978) and Cowling's *Magnetohydrodynamics* (Adam Hilger, 1976) is as deep and as comprehensive.

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Reproductive Adaptations

Reproductive Ecology of Marine Invertebrates. Papers from a symposium, Georgetown, S.C., May 1977. STEPHEN E. STANCYK, Ed. Published for the Belle W. Baruch Institute for Marine Biology and Coastal Research by University of South Carolina Press, Columbia, 1979. xxii, 284 pp., illus. $27.50. Belle W. Baruch Library in Marine Science, No. 9.

This book presents the proceedings of a very successful symposium that was dedicated to A. Giese of Stanford University, who has done pioneering work on the reproductive biology of marine invertebrates and has inspired many others to follow. The book is organized into four sections comprising 19 papers including original research reports as well as review articles. The four sections are: Egg Size and Nutrition; Recruitment, Survival and Distribution; Environmental Effects on Reproduction; and Reproductive Patterns in the Marine Environment. The book concludes with a brief but comprehensive summary by the editor.

In general the book is a useful documentation of current thought on its topic;