nisms. Chapter 5 deals with the preparation of an application. It can really add little to the instructions and explanations that NIH supplies with the forms, but there are many helpful minor suggestions. Chapters 6 through 11 deal with various aspects of the review system. They will be of little direct help to an applicant but will give a newcomer to the system some idea of what will happen to his or her application once it falls into the Great Black Hole of Bethesda. Chapter 12, dealing with decision points, communications, and appeals, is understandably the shortest chapter in the book, and could be further condensed; the two pages devoted to communications and appeals might be replaced by two words: Don't bother. Chapter 13 covers special topics such as use of human and other vertebrate subjects. Chapter 14 is a long list of sources of information concerning various programs. There are five appendixes. Appendix 2 lists 69 kinds of funding mechanisms. Traditional RO1 grants in support of individual investigator-initiated projects, which have been responsible for the scientific success of the NIH extramural program, received slightly less than half of the total funding in 1991. Most of the 68 other types of grants support training, upgrading of equipment, and the like, but a few provide direct research support for which some readers might be eligible.

The success of the hierarchical Manhattan Project and NASA in meeting engineering and technological goals leads many politicians and some NIH managers to think that basic research should be organized in units larger than the research groups of individual investigators, and there is an increasing tendency to favor such projects. To a reviewer whose experience, both as a formal site visitor and as an informal observer, leads him to suspect that all program projects contain components that would never have been funded on their own and therefore consume funds that could be better spent on individual grants, it is sad to learn from appendix 2 that program project grants already (1991) receive one-fifth as much funding as all RO1 grants combined. Sadder still, the overall funding rate for RO1 applications in 1991 was 28 percent, while that for program project applications was 51 percent. The implications for those who seek support seem depressing but clear.

One potentially useful suggestion is that, since traditional RO1 support is dwindling, applicants should familiarize themselves with the multitude of special programs of the various institutes and centers. The authors advise investigators to learn about RFAs (requests for applications), PAs (program announcements), and other solicitations and new mechanisms of support by getting their names on the mailing list of the *NIH Guide for Grants and Contracts*, in which those programs are announced. Fatuous and politically inspired though some of the programs may be, an investigator might possibly find a match with his or her interests and obtain funding with little competition.

This authoritative and clearly written book should be in libraries or departmental reading rooms wherever NIH-supported research is done. Chapters 4, 5, and 14 and appendix 2 may be useful to both new and experienced applicants.

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New Ideas in the Old World

The Scientific Revolution in National Context. ROY PORTER and MIKULÁŠ TEICH, Eds. Cambridge University Press, New York, 1992. xii, 305 pp. $54.95 or £35; paper, $18.95 or £12.95.

The present volume is the third collection of essays devoted to reinterpretation of the Scientific Revolution to appear in as many years. Such a spate of synthetic publications clearly indicates that earlier prognostications heralding the expiration of the early modern period as a promising area of investigation were untimely. In recapitulating the findings of recent work in the field and in suggesting new research opportunities, the essays in this and previous volumes should restore confidence in the rich dividends that are still awaiting researchers in a period that was once thought to have been studied to death.

Porter and Teich's decision to structure the volume along national lines, and thereby highlight the interaction between the distinctive social and political characteristics of various countries and new world views generated during the era of the Scientific Revolution is, essentially, a good one. Equally promising is the group of ten leading scholars assembled to address the theme. Unfortunately, the execution of the task at hand appears to have faltered for lack of clear editorial guidance. My suspicion is that the authors were given only vague recommendations on how to define the "Scientific Revolution," what its general chronology ought to be, and where the intersection between the general and the particular might take place. Left to their own devices, the various authors proceeded either to interpret for themselves what was expected of them or to expound the same topics they usually do. The result is that the book suffers from an unevenness of quality and lack of cohesion.

With this said, it should be added that many of the individual contributions are very fine indeed. Both Laurens Brockliss and Harold Cook succeed in mixing synthesis and analysis in their discussions of, respectively, France and the Low Countries. Brockliss depicts a society that, after a long period of indifference, came increasingly to appreciate and participate in the new science. Indeed, not only did the pursuit of science become an important feature of French cultural life, the interest in experimental science became a craze after 1660 even among the fashionable Parisian elite, fomented by a host of itinerant lecturers as well as by popular books and periodical literature. This burgeoning interest in the new modes of thought in a country that remained predominantly orthodox in its catholicity was, in no small part, a consequence of the failure of a militant Counter-Reformation to exert full control over the intellectual life of the country—in contrast to what occurred in Spain, for example. Such a combination of belief and relative freedom from clerical interference explains both the theological underpinnings of Descartes's and Gassendi's rivaling versions of the mechanical philosophy and the manner in which Cartesianism, in a sanitized form, could emerge triumphant at the turn of the 18th century and take hold of the Académie des Sciences as well as the institutions of higher learning—the Jesuit colleges included.

Cook presents an equally sweeping account of the emergence in the Low Countries of a sizable and active community of individuals committed to the new science, both in and outside the universities. Cook emphasizes, correctly, the need to look beyond mathematics and the physical sciences if we are to appreciate fully the nature and scope of early modern Dutch (and European) interest in science. Natural history and the life sciences (the disciplines that then constituted "big science") attracted the most attention. The almost indiscriminate gathering of information and the attention to detail that characterized such studies, continues Cook, reflected the predilection of the society at large, as well as served as a powerful model for natural theology, which saw in this accumulation of details the best proof of the glory and wisdom of God.

The important, and not necessarily negative, role played by religion in fashioning response to the new science is emphasized even more strongly by John Henry's account of the English scene. Henry detects an inextricable link between the peculiar nature of English natural philosophy in the 17th century—partly mechanical, partly chemical, occasionally vitalistic, and always experimental—and the religious orientation of the

country after the Reformation. This correlation was a consequence of the triumph of doctrinal minimalism within the Anglican Church, where the quest for an uncontested road to salvation inspired and corresponded to the scientists' attempt to find a secure route for the generation of natural knowledge. After 1660, English scientists abandoned the conception of science as handmaiden to theology and offered instead an ideologically neutral, objective, and uncontentious means of establishing truth about the natural world that, at least implicitly, could be applied to religion as well.

Far more ambitious, but ultimately less successful, is Mario Biagioli's chapter on Italy. Loosely addressing himself to the perceptible marginalization of Italian science in the second half of the 17th century, Biagioli pays lip service to the inhibiting effects of the social and political decline of the Italian states—compared with France, England, and the Netherlands—and then turns to expand his earlier provocative interpretation of Galileo as a paragon of the Baroque courtier. Here he ventures to offer a grand interpretation of science in the age of absolutism, construed strictly in terms of power dynamics and self-fashioning images of contemporary rulers. The problem with Biagioli's highly reductionist tale of science as an affectatious courtly activity is not only that it ultimately reduces the scientists to sycophantic courtiers—concerned only with manipulating knowledge in order to secure the patronage of the absolutist prince, who, in turn, is preoccupied with little else than the spectacular—but that it is founded on highly selective scholarship. Biagioli's depiction of the Accademia del Cimento and the involvement of Prince Leopold de' Medici in its activities, for example, is at odds with much of the evidence about the Accademia. Even more problematic is the attempt to relate the model of courtly scientific etiquette to the situation in France and England. The claim that Louis XIV masterminded the foundation of the Académie des Sciences and, likewise, that his (absolutist) image guided, in the manner of an invisible hand, the work and publication program of its members is important to Biagioli's argument. Yet the fact of the matter is that Louis had nothing to do with the foundation of the Académie and, as Brockliss points out in his chapter, showed virtually no interest in its activities. Analogously, Biagioli's account of the nature of the English Royal Society is based on a selective use of secondary sources and ignores the complexities of the early years of that institution, which cannot be neatly fitted to his model.

David Goodman attributes the stagnation of scientific activity in the Iberian peninsula that occurred in the late 16th century to the inhibiting power of Catholic fanaticism. Yet he dwells only briefly, at the end of his chapter, on the reasons for this stagnation and on the partial recuperation of cultural vigor in the 18th century. Instead, the bulk of his essay is devoted to the more glamorous period before 1600, when the Islamic and Jewish heritage, together with the experience of empire, resulted in important contributions to natural history, technology, and the life sciences. William Clark presents a "postmodern" account of science in the German nations, where disunification and the traumatic experience of the Thirty Years War gave a unique emblematic expression to the scientific endeavor: Out of the ashes of the old religious and scholarly order emerged a novel instrumental and technological ideal as the basis of a new social order. Elements of Paracelsian "sympathies," Keplerian "harmonies," and Leibnizian "mutual dependencies" all combined to offer Germans "a reciprocal relation within science between the technical and the social, the material and spiritual."

In contrast with such thought-provoking essays, the two chapters devoted to Poland and Bohemia leave much to be desired. Both Jerzy Dobrzycki and Josef Smolka adopt an old-fashioned and positivist view of the Scientific Revolution, interpreting their mandate as one to seek out "modern" world views and trace the careers of great men. Failing to locate "progressive" trends, both resort to old stereotypes and blame the Counter-Reformation—and especially the Jesuits' hold over education—for their absence. Particularly disappointing is Dobrzycki's seven-page impressionistic account of science in Poland from the 16th to the 19th centuries. Smolka offers a more informative account, concentrating on the court of Rudolph II and, in particular, on the career of Johannes Marcus Marci; nevertheless, his justification for the attention to Marci—"the only person who was able to come close to the 'new science' "—is indicative of the outmoded perspective.

Paul Wood and Sven Widmalm resolve an analogous problem with respect to Scotland and Sweden by simply glossing over the 16th and 17th centuries and stretching the Scientific Revolution to include the 18th century, during which both countries made important contributions to the scientific life of Europe. Both authors stress the significance of native institutional structures to the process of intellectual maturation. Widmalm emphasizes the importance of new modes of organization and the aggressive advocacy in Sweden of the theme of "patriotic" science in generating state and local support for scientific activity, as well as the relevance of such factors to the kind of science Sweden became known for: fact-gathering and classification. For his part, Wood offers a valuable survey of the individuals and institutions that contributed to the diffusion of Newtonianism and the rise of chemistry. More generally, Wood dwells on the important place that was accorded to the natural sciences within the vibrant Scottish universities and intellectual circles of the Enlightenment.

Despite my reservations concerning the volume's lack of coherence and the unevenness of its contributions, I would recommend it for its attempt to address the interplay between the cosmopolitan nature of the scientific enterprise and specific national contexts.

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