Book Reviews

The Life History of a National Academy

The Anatomy of a Scientific Institution. The Paris Academy of Science, 1666–1803. ROGER HAHN. University of California Press, Berkeley, 1971. xiv, 433 pp. + plates. $12.

Of the two major national institutions which dominated science from the latter part of the 17th to the early years of the 19th century, detailed historical studies in English have been available only for the Royal Society of London. Indeed there has been no full-length history, in any language, of the Parisian Royal Academy of Sciences for the last 80 years. For that reason alone, any study of the length of this one would have been welcomed, but Hahn has not given us just any study; within its self-imposed limitations we have here a model of what an institutional history can be.

Institutional histories may seem the most obvious response to recent popular pressures for the study of the sciences in their social context, but if the available documentation is at all detailed (and the range and quantity of sources used by Hahn are staggering), a complete, balanced history of a major society over any substantial period is well-nigh impossible. One can treat of a society's achievements, or of its internal organization and membership, or of its immediate relationships and interactions with the community of which it is a part; one cannot treat of all three in a single work unless one is to emulate those many-volumed compilations of a century ago, which remain invaluable source books but which no one ever reads.

Hahn, who has been working on this topic at least since his doctoral dissertation nearly ten years ago, has taken the last of these three options. Although he discusses both achievements and organization, these are ancillary to his major emphasis on the Paris Academy as a social institution. His story essentially begins in 1666, with the transformation of private, voluntary gatherings into a state-supported, formalized society; it ends, practically, with Napoleon's structural reorganization of the Institut National in 1803, completing the take-over of a learned society by the state. More fundamentally, however, the whole of the text implicitly, and two-thirds of it explicitly, reflects the customary preoccupation of French historians with the French Revolution. For the dominant theme of Hahn's institutional study is the way in which the organization and operation of the Academy inevitably led to its revolutionary dissolution, while the nature of French society as inevitably led to the Thermidorean reconstitution of the Academy in an even more bureaucratic form.

Using the actionist sociology of Talcott Parsons and his school, Hahn has marshalled his arguments effectively, and in his hands the story has the quality of Greek tragedy. From the moment that Colbert achieved the centralization of scientific authority in an Academy responsive to the state—and what other mode of organization was possible in the age of Louis XIV?—the seeds of the Academy's greatness and of its ultimate functional destruction were sown. French science became professionalized; the Academy acquired prestige and authority, as an arm of the state, over scientific publications and education and became a final court of appeals in the realm of technology, with effective control of patents for invention. The Academy also became an elitist group of intellectuals whose conscious sense of superiority irritated the external community. In two of the best chapters of the book, Hahn shows how the very successes of the Academy, contributing to the growth of science, and the changing demands of society rendered the Academy increasingly vulnerable to attack, for all its halting attempts at self-reform. With the Revolution, the attacks were successful and the Academy was dissolved. During an interim period, science demonstrated its crucial role in a modern state while the French demonstrated their incapacity for informal, ad hoc responses to social problems. The Academy was reconstituted as a class of the Institut National and the process by which the scientific organization became functionally incapable of doing creative work as it became increasingly prestigious and powerful was completed.

The theme is a controversial one, and no doubt there will be further arguments regarding it. One aspect, at least, will need more examination, and that involves a comparison with national scientific societies that evolved to a similar honorific fossilization without the particular social pressures that acted on the Parisian Academy. Nonetheless, Hahn's work is a major contribution to our understanding of the social functioning of scientists and their organizations and might well serve as a warning to modern enthusiasts for a technocratic meritocracy. And for those whose interests in the Academy are more traditional, Hahn provides a series of appendices constituting references for a continuing series of researches—including a list of manuscript resources for historians of other French institutions and bibliographic data on 224 of the 325 working academicians appointed or elected during Hahn's period of study, again including manuscript materials when located. Finally, the book is well designed and produced, the bibliography is detailed, the index useful, and the notes where they belong, at the foot of the page.

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Cultural Analysis

Ethnohistory in Southwestern Alaska and the Southern Yukon. Method and Content. MARGARET LANTIS, Ed. University Press of Kentucky, Lexington, 1970. viii, 312 pp., illus. $9.75. Studies in Anthropology, No. 7.

This volume reflects the rising emphasis on one of the several ancillary fields of ethnology that are tending to replace traditional ethnography. It also

evinces a certain modernity in that the majority of the papers are written by women. The book is divided into two parts. The first consists of five quite different papers with an editorial comment containing the following summation of their content: "We have been told how a body of fieldwork developed (by VanStone), how fieldwork by cooperating subdisciplines was done (Ackerman), how evidence was interpreted to show tradition in nonmaterial culture rather than the material segment of culture to which archaeologists apply the concept of 'tradition' (Townsend), and how ethnohistoric evidence was interpreted to show a cultural style, in this case a style of local oral history (McClellan)."

The collecting of these papers came about because of a symposium, and some of them were apparently produced by demand. The quality is uneven, as is usual in such cases. James VanStone's methodological perspective is especially deserving of attention, however, and Catharine McClellan's "Indian stories about the first whites in America" represents an approach to the historical tales of preliterate peoples that is novel and should not be missed.

The second and larger part of the volume consists of a study of the social system of the Aleut as it existed from 1750 to 1810 insofar as data can be derived from the early historical sources. "Aleut," as some readers may not remember, is the name of the aboriginal inhabitants of the Alaska Peninsula, which stretches out southwesterly toward Asia for approximately a thousand miles. The tragic history of the Aleut provides one more example of the destruction of an aboriginal people suddenly brought into contact with aliens of superior power bent on material enrichment. Margaret Lantis has analyzed the published sources to provide a long-needed and very readable summary of the social culture of these extraordinary and historically significant native Americans. It is only intended as praise to regret that a comparable summary of the records concerning the material culture and religion of these people could not have been included to provide a complete reconstruction of Aleut ethnography.

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The Question of Additives

Metabolic Aspects of Food Safety. Based on the Second Nuffield Conference, 1969. FRANCIS J. C. ROE, Ed. Academic Press, New York, 1971. xxiv, 612 pp., illus. $22.

Many people have long been concerned with the possible adverse effects on human health of the many substances used for preservation, texture, color, and flavor of processed foods. Color, texture, and flavor may not be nutritionally important, but without some means of food preservation it would be difficult to provide adequate protein, fats, and calories to large populations living in crowded areas and impossible to provide the wide choice of foods found in modern chain stores and supermarkets. At present, more than 2500 substances have been declared reasonably safe as food additions for a variety of purposes; some are derived from basic foodstuffs and some are of synthetic origin.

Suspicion that not all additives may be safe in terms of health has not been confined to food faddists or "health food" addicts. It also occurred to the Food Safety Committee of the Nuffield Foundation, which in 1960, upon deciding that there was a basic need for new and more relevant methods for testing food constituents, additives, and contaminants for toxicity and a need for research workers trained in multiple disciplines to develop such tests, undertook a program to fill those needs.

The proceedings of the Foundation's first food safety conference resulted in an excellent book, *Pathology of Laboratory Rats and Mice* (E. Cotchin and F. J. C. Roe, Eds., Blackwell, 1967), which provided a basis for assessing normal variations in tissues. The present volume contains the proceedings of the second conference. In it, 20 papers are presented and discussed by 48 participants, from universities, government, and industry, of whom 10 came from countries other than Great Britain. Many disciplines are represented, including biochemistry, toxicology, pathology, microbiology, pharmacology, physiology, medicine, and oncology.

There are five chapters on the gastrointestinal tract, two on renal function, four on tumors and carcinogens, and three on the liver. The remainder deal with such aspects of the subject as metabolic pathways, enzyme induction, age, protein metabolism, and organ weights. The problem is carefully and thoughtfully outlined by the late Alastair Frazer, to whom the book is dedicated.

There are a great many useful and interesting data, and one is given much to think about. Some contributors tend to stray a bit from the subject by discussing drugs, pesticides, and known toxicants or by offering rather nonspecific tests which do not distinguish toxicity from disease. The ideas that food additives could react with food adversely, be converted into toxic metabolites, alter or destroy micronutrients, or modify responses to other environmental contaminants or toxicants, such as drugs, are advanced and considered.

In general, food additives as presently tested and used were cleared of suspicion by the participants. As J. M. Barnes put it, "every time any interesting toxic effect was mentioned, the agent concerned was a drug or pesticide and not a food additive." He hopes it will be seen that "food additives do not constitute a very serious toxic hazard because of the way in which they are selected and tested."

This book should be a valuable addition to the libraries of both applied and basic scientists interested in toxicology, in food preservation and processing, or in the possible toxicity of additives. As usual in conferences such as this, more questions are asked than answered.

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Soluble Bacterial Antigens

Microbial Toxins. SAMUEL J. AJL, SOLOMON KADIS, and THOMAS C. MONTIE, Eds. Vols. 1, 2A, and 3, Bacterial Protein Toxins. Vol. 1, xxii, 522 pp., illus., $23. Vol. 2A, xx, 412 pp., illus., $22. Vol. 3, xx, 548 pp., illus., $27. Academic Press, New York, 1970–71.

These three volumes are to be followed by three more volumes, two on bacterial endotoxins and one on algal and fungal toxins. The names of the editors are rotated in the first three volumes, all of which deal with bacterial protein toxins.

To summarize briefly: The list of crystalline protein toxins is enlarging.