

EARTH SCIENCES HISTORY

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SYMPOSIUM ON THE HISTORY OF OCEANOGRAPHY

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THE HISTORIAN OF SCIENCE AND OCEANOGRAPHY AFTER TWENTY YEARS

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ABSTRACT

A little more than twenty years ago, at the First International Congress of History of Oceanography in Monaco, the American historian of science Harold Burstyn attempted to place the history of oceanography in context within the history of science. He pointed out that history of science used as a working principle the increasing quantification of science, and that it was moving toward "extemalist" studies of the social and political contexts in which science developed. Oceanography, according to Burstyn, was among the first examples of "big science" and was likely to prove important to historians attempting to link scientific development with its social context. He envisioned two tasks for the historian of oceanography, to develop detailed histories of the science itself, and to explore its response to social, political, financial and cultural forces.

After three more congresses of the history of oceanography, the proliferation of publications, even the birth of a newsletter of the history of oceanography, it still largely remains true that (slightly edited) the field suffers from "lack of focus, publications of all offerings regardless of merit, and conjunction of scientists . . . and historians and philosophers of science, assembled without any methodological unit or rules of procedure". But all is not lost. Major books have helped to focus attention on interesting historical problems as well as achievements; outstanding work has been published, or is in progress, on marine geophysics, oceanographic institutions, exploration, national science, and the historical relationship of oceanography to its sister fields such as geography and marine biology. Bibliographies have begun to appear, easing the toil of starting new research, and regular contact, formal and informal is increasing among historians of oceanography.

Nonetheless, the history of oceanography is still in a primitive state. We need more internal histories of oceanography's subdisciplines, critical biographies of its practitioners, studies of its institutions in their full contexts, work on differences in national styles, and a thorough examination of its professionalization. Few would now agree that the only canon of the history of oceanography is the increasing quantification of science, but this hybrid discipline remains, as Burstyn perceptively stated, "the most fruitful combination possible of 'internal' and 'external' problems in the history of science".

CRISIS AND COMPROMISE: THE FOUNDATION OF MARINE STATIONS IN BRITAIN DURING THE LATE 19TH CENTURY

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ABSTRACT

This paper looks at the attempts to found marine stations in Britain during the late 19th century and seeks to show how a fuller understanding of these events, and their success or failure, can be gained by looking both at the scientific background to the movement and at the broadly similar problems that faced their founders. The survival of early marine stations depended largely on how successfully they balanced scientific objectives with the applied work which was the price of government support. Those stations that continued into the twentieth century did so mostly by abandoning pure research in marine zoology and by concentrating on fisheries problems; only these attracted the grants essential for their survival. This was a turn of events unforeseen when the foundation of marine stations was discussed in the 1870's but ideas changed rapidly in the early 1880's when it became apparent that progress could be made only by accepting a different orientation. This paper looks at how official policy towards science in Britain affected oceanography and other aspects of marine science during the late 19th century, and how scientists hoped that the foundation of marine stations would fulfil both a scientific and a practical need for institutional bases for marine research. However, competition for scarce resources created tension and rivalry between institutions from which few escaped unscathed. The underlying reasons for such problems cannot generally be dealt with extensively in the histories of individual stations but they contribute much to our understanding of how such institutions developed in the late 19th and early 20th centuries. The paper concludes with a brief review of individual stations, particularly those in Scotland.

OCEANOGRAPHY'S DOUBLE LIFE'

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ABSTRACT

The history of oceanography is currently divided into periods which are bracketed by famous voyages of discovery and exploration. This division scheme makes oceanography look very much like the history of geography. On the other hand, analysis of the development of oceanographic ideas and theories suggests a quite alternate periodic scheme more compatible with the currently employed divisions of the history of geophysics and meteorology. The origins and implications of this bifurcation are discussed, with suggestions for research which might help oceanography toward a more ample acknowledgement of this "double life."

EDWARD ORTON: PIONEER IN PETROLEUM GEOLOGY

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ABSTRACT

Petroleum geology had its beginning in the nineteenth century. One of its leading adherents was Edward Orton of New York and Ohio. He left to that science an important body of writing, especially on the oil fields of the Cincinnati Arch province. His thought included an elaboration of the anticlinal theory. One of his classic works was *The Trenton Limestone as a Source of Petroleum and Inflammable Gas in Ohio and Indiana* (1889). That treatise and others too placed Orton in the forefront of petroleum geology in its formative period.

HISTORICAL DINOSAURS: EPISODES IN DISCOVERY AND RESTORATION

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ABSTRACT

Inspired by the approaching sesquicentennial year of the Dinosauria, a classification term created by Sir Richard Owen in 1841 originally corresponding to three extinct genera of enormous, terrestrial British Mesozoic reptiles, the author created miniature models of several dinosaur genera. Sculptures commemorating historically significant restorative stages in paleontological understanding for five genera (*Iguanodon*, *Megalosaurus*, *Hadrosaurus*, *Stegosaurus*, and *Chasmosaurus*) were constructed to emphasize the theme of 'evolving' ideas concerning dinosaur representations. The stories behind the scientific derivation and 'evolution' of these forms illustrate several interesting episodes in the history of dinosaur paleontology.