

JFR COMMENTS

A PROSPECTIVE VIEW OF MICROPALAEONTOLOGY

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Ron Martin's letter in the October 1995 issue of the Journal inspired these thoughts for me. Like so much else at the moment, micropaleontology is a subject in transition. Being a part of one of the more "practical" or applied sciences, our transitions are closely tied to economic events. Hence, what we experience may be part of what some experts see as shrinking opportunity for enjoyable and profitable jobs as automation and corporate search for efficiency take their toll on a white collar population.

As I understand it, our field developed as an interesting area of natural history during the 18th and 19th centuries, and it was even once fashionable for people to keep a microscope with mounted slides on view in their drawing rooms as a conversation piece. However, larger scale growth of our science came only after the pioneering work of Joseph Cushman showed that foraminifera could mark time in sediment cores and sequences.

The result of early pioneer work with foraminiferal taxonomy and stratigraphy was a generation of paleo-workers geared to biostratigraphy and correlation. Other aspects of foraminiferal research were considered secondary to the time-marker objective. This was true into the early 1980's when my own limited education in biostratigraphy caused me considerable worry at the beginning of my university academic career. Now, unfortunately, the need for biostratigraphic information by industry has greatly diminished, and the private sector has streamlined its work so that consultants handle most of it. This means that most of what is done is routine, mechanical, and that the great research and development groups of the past are gone or reorganized.

In the 1850's, William Gladstone (British chancellor of the exchequer) visited Michael Faraday's laboratory of electricity and magnetism and remarked, "This is all very interesting, but what good is it?". Luckily for physics, Faraday had a clever answer. Now, in a similar way we might ask "What do we do that is more than interesting natural history?" A prime question for our practical, process oriented times. The answer we give makes the difference between a narrow field populated by a small band of die-hard enthusiasts, and a broader field actively connected to the 21st century scientific enterprise.

What we can offer falls into two broad categories. These are: (1) the recognition and description of fundamental patterns in the behavior of life that we humans need to know so that we can survive on this planet, and (2) the development of models, based on our understanding of processes, that will allow us to predict, or reconstruct, aspects of an environmental system. The first is an educational function based on natural history; the second is the aspect of our science of most interest to the "applied" world, and is the aspect that has the greatest impact on other scientific disciplines.

The question now is, where are we with respect to the two categories I have just listed? I suggest to the Cushman Foundation and to the editorial board of the Journal of Foraminiferal Research that thought be given to symposia and special issues of the Journal that focus on the following:

(1) What fundamental patterns of life can we describe with the foraminiferal record? What unique information do the foraminifera provide? How is their record different from that of other groups of organisms? What have we learned from the foraminifera and what major questions remain unsolved? Where can we go in this field and what technical advances are on the horizon that will influence our efforts?

(2) What predictive models do we have based on foraminifera? What aspects of the environment can we monitor or reconstruct? What degree of confidence can we have in our models? What processes do we need to understand better to improve our models? What scientific, social and industrial activities would benefit from our models? What information can we extract from foraminifera that is unique and not captured by biologists or geochemists wandering about with their portable field laboratories? What technical advances are likely to influence our efforts and what technical advances do we want to help our work?

I believe focusing on these questions could serve as a guide for foraminiferal micropaleontology at the end of the millennium and provide us with an overview similar to that developed in National Academy of Science reports. This will give us not a retrospective, but a prospective outlook on our field as we enter the 21st century.

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