

INTERACTION BETWEEN MUSEUMS AND UNIVERSITIES

By Albert C. Smith

UNIVERSITY OF HAWAII, HONOLULU

It is an honor to have been invited to be the first speaker on such a happy occasion as the opening of the Bishop Museum's new research wing. One may be sure, when seven individuals are asked to prepare talks on the same general topic, and the talks have been prepared with no collusion whatever, that certain comments are going to be made more than once. If this proves to be the case, I shall consider it a privilege to make them first.

First, I should like to compare the scope of the Museum with that of the University. In general there are three principal types of museums: 1) Museums of Natural History, covering the physical and biological aspects of our world and its inhabitants, including man at least in his more primitive stages of development; 2) Museums of History and Technology, covering man's recent development and so-called civilization, his inventions, crafts, and social history; and 3) Museums of Art, covering man's various interpretations of himself and of nature in all sorts of consciously developed media. The functions of a museum deal very broadly with education at all levels, and with research; its objectives are to instruct, to broaden, perhaps even to amuse, and to extend the boundaries of knowledge in any feasible direction.

As to universities, perhaps no two are quite the same in scope, but among them they certainly span all the sciences, humanities, and arts. The functions of a university pertain both to education and to research; its activities are directed toward extending the boundaries of knowledge and toward extending the cultural horizons and potentials of its students—and perhaps of its faculty members as well.

In effect, one may say without much exaggeration that Museums and Universities cover the same areas of effort and have very similar functions. If they are so similar, their differences seem to be definable primarily in terms of methodologies, as they perform very like obligations to society. What, then, should be the extent of their interaction?

The closest degree of interaction, of course, results when the museum is a part of the university. Examples of very successful university museums come to mind. My further remarks, for reasons of personal familiarity and because of its pertinence to today's occasion, may be largely restricted to the field of natural history. In this area one is aware of the important part played by university museums at such outstanding institutions as the University of California, Harvard, the University of Michigan, and the University of Kansas. Each of these universities has a research museum—or a series of research museums—that in effect covers the entire field of natural history. It is no accident that these four universities have produced more than their share of outstanding scholars in the natural history-related aspects of science. (I can modestly make this remark, because I am not a product of any of them.) My remarks could be extended, to only a slightly lesser degree, to such universities as Stanford, Yale, Florida, Nebraska, and Illinois.

A different situation exists when the university and the museum exist in the same city but are administratively distinct organizations. This situation can also lead to the produc-

tion of outstanding scholars. One thinks of such examples as the University of Chicago (with its relationships to the Chicago Natural History Museum), Columbia (with the American Museum of Natural History and the New York Botanical Garden), the University of Hawaii (with the Bishop Museum), George Washington and other District of Columbia-Maryland universities (with the available resources of the Smithsonian Institution), and Washington University in St. Louis (with the Missouri Botanical Garden). As a product of this situation, I can testify that it is satisfactory, but for the student inferior to the first, where the museum is an integral part of the university.

I wish that I had back those innumerable hours I spent as a subway commuter between the Columbia campus and the American Museum of Natural History and the New York Botanical Garden. It is often fashionable to rationalize the expenditure of commutation time by implying that one can read or study on train or subway—that one can be thinking while driving to and from one's place of work or study. I do not belong to this school; I consider commuting, whether to and from one's residence or between diverse offices, to be an out and out folly, which civilized humans should try to avoid. For that reason alone I cannot rationalize the physical separation of museum and university, and I believe that the institutions mentioned first above, that combine these educational facilities on a single campus, have a major advantage over those, like the University of Hawaii, that have such available facilities distant even a half-hour of precious time. Perhaps as we grow older time becomes more valuable, but even for young students it is a commodity that they cannot afford to squander.

What is there about a research museum of natural history that makes its availability so indispensable to the scientist in certain fields? Primarily, of course, it is because the museum is a center of documentation. Its specimens, arranged in some logical systematic or geographic sequence, furnish the instant background of information that many lifetimes of field study could not provide. It is idle to claim, as one or two biologists have, that field study can supersede the museum collection. Field study, certainly, is an absolute requisite for the natural historian, if he is to appreciate ecological and spatial relationships among organisms. But, without the museum collection as a supplement to his own pitifully limited observations, the scientist will inevitably remain ignorant of broad relationships and even of the detailed distributional problems within his own group of organisms.

Museum collections of Recent and fossil specimens—and the larger and broader such collections are, the better—have provided scientists with the background knowledge imperative to the comprehension of two major aspects of biology: biogeography and evolution. These two aspects are the basic subject matter of systematic biology. This discipline exists not to provide organisms with names, not to furnish society with economically important floristic and faunistic lists, not to indicate what organisms are useful or harmful to man. These are purely incidental by-products of systematic biology, for which the only scientific justification—and justification for the existence of extensive and expensive collections of natural history objects—is purely and simply to extend our knowledge of biogeography and of evolution, both as to historical evolution and its mechanisms. In this direct and primary way systematic biology makes its major contribution to culture. A university training in science that does not include a cultural background in the distribution of organisms and in their evolutionary history is, in my opinion, a hollow training.

That such a scientific training is being proffered by many universities (and even by some

that have good museum facilities and do not appreciate them) is a deplorable fact. There can be no excuse if such a situation exists in Honolulu. I would not like to suppose that the University of Hawaii produces any graduates in science who are innocent of cultural knowledge outlining the chronological and spatial relationships among organisms; but if this were the case, I would view it with alarm. It would be inexcusable, because in Honolulu there exists one of the major research museums of our country, the Bernice P. Bishop Museum, preeminent in its area—the whole Pacific Basin—in the natural history aspects of biology, anthropology, and geology. It would be inexcusable for any professor in the University of Hawaii not to give his students an opportunity for first-hand acquaintance with the marvellous Pacific world through the research collections and the unrivalled specialized library of the Bishop Museum. Due to the foresight and support of a few wise citizens and of Federal granting agencies, we now have in Honolulu an institution of basic scientific culture of which we can indeed be proud. The wing opened today, providing two Museum departments with new and much needed research space, is a tribute to the comprehension of the Museum's individual supporters and to the National Science Foundation. These supporters can see beyond the petty demands of today's "economic progress." They can see that the intellectual life of a community, a state, and a region depends upon a firm basis in human culture, and they can see that a true comprehension of man's place in nature is the exclusive property of those citizens whose intellectual training has a firm basis in reality. I refer to reality in terms of time—not the time of weeks or years, but of millions of years. And in space reality means not a neighborhood, a city, or a state; it means the face of our world, and of other worlds we just begin to explore.

In the field of science that is natural history-related, the University and the Museum must work together, both for the production of basic knowledge and for the training of future scientists. Perhaps in Hawaii, with certain notable exceptions, past cooperation has not always been spectacular. But we may also hope and expect that in the future University and Museum will be inextricably bound in a common effort. To effect this liaison, we must aim at making every Museum scientist aware of his responsibility to share in the training of the University's students in scientific fields. And we must make every professor aware of the unique facility that lies only twenty minutes away from the campus. Perhaps we must first strive to convince some professors that the human species is only a small part of its world, and that today's trivia can be less exciting than the past and future of our world and our universe. If the professor can be convinced of these truisms, perhaps he can expose his students to them. The exciting world of reality, that is so wonderfully encompassed in the token research collections of a great museum, is here in Honolulu for all who come with understanding and perception to enjoy.

Gressitt: Thank you, Dr Smith. Dr J. Frances Allen of the National Science Foundation is discussant for this paper.

Allen: This is interesting because I used to be Dr Smith's assistant, and he was in my office in Washington the other day when we briefly mentioned this forthcoming occasion, in which I did not then know I would be a participant. Now even though this Museum is not on the University campus, how do you think the situation compares with that say between Lamont and Columbia? You are experienced there so perhaps you could point out how lucky the graduate students are here to have the Museum so close.

Smith: It is true that the 20 minutes separating these two campuses should not be insufferable, but at Michigan or Harvard students can drop in when they have a free hour or so, which is an advantage. From Lamont to Columbia takes an hour; it also takes about an hour from University of Maryland to the Smithsonian.

Traub: In studying biology students should be working more and more with living materials, plants and animals. Do you think then that the museum should take on the functions of zoos, aquaria and botanical gardens, so as to get more of this in one institution instead of several as in most cities?

Smith: Much university instruction is based on living plants or animals and this is entirely appropriate. But such observation could never give the student a really full view as to what exists in nature simply because of lack of time. If he is studying a genus of 500 species, he is fortunate if he sees 10 of them alive. It is the same for space—he may not even be in a center of distribution for a family. In the museum we have a concentration of the results of the field work of many individuals—the results of thousands of years work if it had been undertaken by one person. The student sees the results of all this time period brought together in species from all over the world. Students need aquaria and zoos along with museums. It is not necessary that collections of living materials and dried material be kept together, but if they can be so much the better. That is easier at a university museum. However, no zoo, aquarium or botanical garden could have as many samples of different organisms as a museum has.

Admiral Thomas: Would it be possible to have a procurement office to procure specimens?

Smith: It does not seem a very feasible way to assemble museum collections, which are built by individual collectors and by exchange relations. Museums bring together material in as many groups as possible and it is available when the student comes along. After the student comes on the scene it is too late to start assembling the material.

Gressitt: Thank you Dr Smith and Dr Allen. Our next speaker is Dr John Hendrickson, Vice-chancellor of the East-West Center, and former Professor of Zoology at the University of Malaya. Discussant will be Mr Vernon Brock, Director of the Hawaii Marine Laboratory, University of Hawaii.

THE RELATIONSHIP OF ECOLOGY TO SYSTEMATICS

By **John Hendrickson**

EAST-WEST CENTER, HONOLULU, HAWAII

As an ecologist, my interest lies in the study of the ecology of a particular group of animals in Southeast Asia. As systematics plays a vital role in the study of ecology, I must also be a systematist before I can do a good job in ecology and I have never finished the systematic part of my job. I therefore chose, for obvious reasons, the proffered subject "the relationship of ecology to systematics." I am a man of somewhat strong opinion. I know there may be many among you who will disagree with some of the conclusions I have to present here. I welcome this. I am sure that out of any discussion which might