Harvard University
Cambridge, Massachusetts
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Fall, 1975

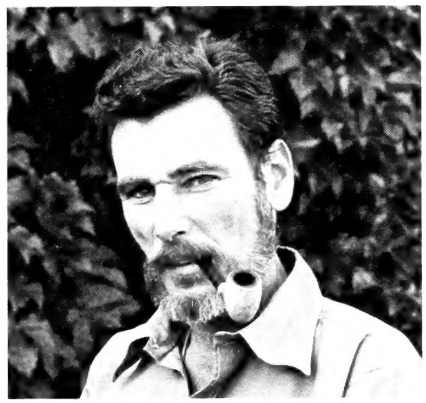
MCZ newsletter

MUSEUM OF COMPARATIVE ZOOLOGY

NEW FACES OF 1975

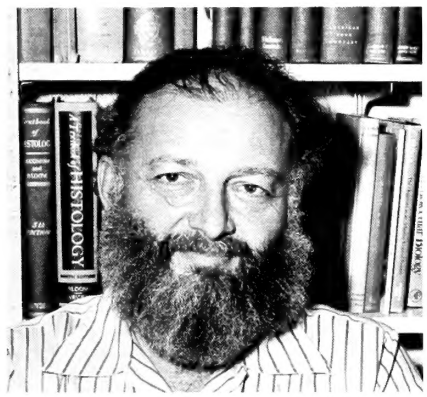
Who's *that*? Here are a few clues to the identity of some of the unfamiliar faces MCZ inhabitants will be seeing at seminars and passing in the hall this year.

David P. Crews

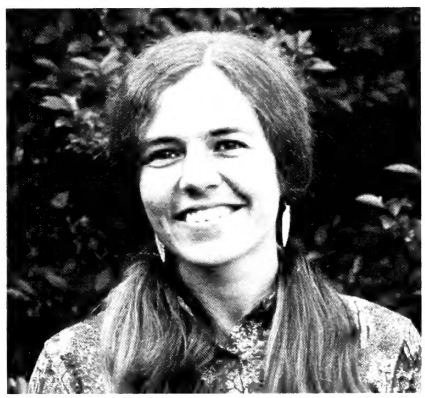


Razi Dmi'el

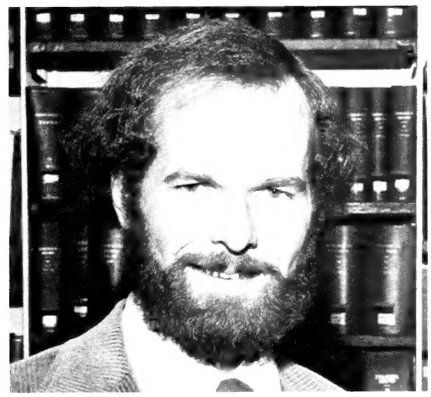
Rose E. Frisch



Richard Levins



Jane L. Menge



James J. McCarthy

Dr. David P. Crews, Research Associate in the MCZ and Tutor in Biology
Research: Interaction of internal and external environments controlling reproduction
Teaching: Biology 99hf: Physiology and Behavior

Dr. Razi Dmi'el, Professor of Biology, Tel Aviv University, spending sabbatical year here
Research: Comparative costs of locomotion
Teaching: Biology 21: (Laboratories) Structure and Physiology of the Vertebrates

Dr. Rose E. Frisch, Guggenheim Fellow on sabbatical leave from the School of Public Health
Research: Biological determinants of fecundity

Dr. Richard Levins, John Rock Professor of Population Sciences, School of Public Health; Member, Committee of Professors in Organismic and Evolutionary Biology
Research: Theoretical and experimental work in the biology of communities and populations
Teaching: Topics in Complex Systems

Dr. Jane L. Menge, Assistant Professor of Biology
Research: Marine population and community ecology
Teaching: Biology 154: Competition and Predation

Dr. James J. McCarthy, Assistant Professor of Biological Oceanography
Research: Plankton ecology
Teaching: Biology 118: Biological Oceanography

GROWTH IN BIOMEDICAL CAPABILITY CULMINATES IN MAJOR PRE-DOCTORAL TRAINING GRANT

Ten professors from three Harvard departments have received a National Research Service Award from the National Institutes of Health to train pre-doctoral students in the mechanics, physiology, and anatomy of the musculoskeletal system. The grant provides a total of $254,500 over five years to train four students in the first year and increase to a maximum of six students in the third, fourth and fifth years.

Students will receive a multidisciplinary training from Professors:

Farish A. Jenkins, Jr., program director (musculoskeletal form and function)

A.C. Walker (primate anatomy and evolution)

A.W. Crompton (musculoskeletal anatomy and control of the masticatory system in higher vertebrates)

C.R. Taylor (locomotory energetics and mechanics of the musculoskeletal system)

K.F. Liem (integrative patterns in the cephalic musculoskeletal system of teleosts)

S.J. Gould (form-function problems in evolutionary biology)

E. Henneman (organization of the nervous system for control of movement)

M.T. Kushmerick (physiology of skeletal muscle)

T.A. McMahon (biomathematical models of the musculoskeletal system)

W.H. Bossert (mathematical biology, computer simulation models)

They will have access to the specialized research facilities maintained at the MCZ, MCZ Labs, Concord Field Station, Department of Physiology (Harvard Medical School), and the Computer Facility (Harvard Science Center). The availability of such an array of instrumentation and research techniques, allowing the trainee to learn and use techniques applicable at levels from the whole organism to the muscle cell, is probably unique in the United States.

This training program has been actively developing since 1969 from which time to the present, seven of the ten professors involved were appointed. Their interests have increased to the point where they now overlap and a "critical mass" has been formed — the ideal time for the broad training of students in a variety of complementary disciplines.

TWO NEW MICROSCOPES

Now research workers at the MCZ can examine organisms inside (with the new transmission electron microscope — TEM — essentially an extension of the light microscope) and out (with the scanning electron microscope — SEM — which scans the surface).

The TEM is a brand new addition, the result of a grant to Professors K.F. Liem, R.D. Turner and R.M. Woollacott from the National Science Foundation. It is especially useful for anatomical and embryological studies of extremely small but complex organisms such as larvae of marine invertebrates.

The SEM has been in operation since February 1975, also courtesy of the National Science Foundation, and has scanned the surface of such diverse specimens as fern spores, beetles, lizard feet, seeds, foraminifera, dinoflagellates, cultured cells, spiders, mammal teeth, and priapulids.

Georgia Hsiao, laboratory technician, and the TEM

Ed Seling, operator of the SEM, at work

A member of the MCZ community has contributed these thoughts on Professor Edward O. Wilson's new book,

SOCIOBIOLOGY: THE NEW SYNTHESIS*

(Photo by Christopher Morrow)

Professor Edward O. Wilson

Over the summer a remarkable piece of scholarship appeared from the fertile pen of E.O. Wilson entitled *Sociobiology: The New Synthesis* and it has received somewhat colorful, though mostly favorable, reviews in the press. The work undertakes the ambitious task of exploring the biological basis of all social behavior in animals and establishing a set of fundamental hypotheses through which the new science of sociobiology can develop. Throughout the scientific community a number of recent scholars have looked to the now well-established disciplines of population ecology and genetics for an understanding of behavioral interactions among organisms, and with the publication of this book, Wilson is clearly establishing a very strong pace which other workers in the field will have to match.

The initial chapters establish the theoretical principles of population biology and evolution with which Wilson will weave a fabric of social mechanisms and concepts to cover a tremendous diversity of social systems from colonial invertebrates to man. Though technically difficult for the untutored, the writing in these chapters, as throughout the whole book, is clear and concise. There follow discussions of such topics as agression, territoriality, sexual roles and parental care. The book ends with chapters on the four pinnacles of social evolution: the colonial invertebrates, the social insects, non-human mammals, and man. Thus the greatest portion of the work brings together in one volume a tremendous body of natural history, much of which forms a sometimes loose, though always stimulating, fit in the synthetic coat of ideas created in early chapters.

Because Wilson has established himself as the front runner in the growing field of sociobiology, his concepts are sure to be contested by both observers and participants. He would have it no other way, and sees the work providing a set of hypotheses guiding the future growth of ideas. Critics have been particularly concerned with what they see as the too facile application of genetic concepts to the social relations of man. The work does attempt to explain such phenomena as altruistic behavior in terms of genetic survival rather than any social contract. Thus the final chapter on man will no doubt subject the remainder of the book to some myopic criticisms by scholars with different social persuasions. Yet there is nothing in the genetic theory that bars the evolution of a social contract. It is very unclear what the relationship is between human behavior, cultural tradition, and genetic determination, and Wilson argues that the concepts of genetics are more important than previously acknowledged by behavioral psychologists and sociologists. In this argument it is important to distinguish between the behavior an organism learns and the capacity to learn itself which may be more strongly determined by genes. It will be the task of neurobiology to establish the deep structure of learning. Thus *Sociobiology* would suggest that human behavior has evolved, and an understanding of this social evolution can be most profitably reached through knowledge of the diversity of social organization found in the rest of the biological world.

*(Belknap Press of Harvard University Press, 698 pp, 245 illustrations and figures, published June 25, 1975, $20.00)

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Paula Chandoha

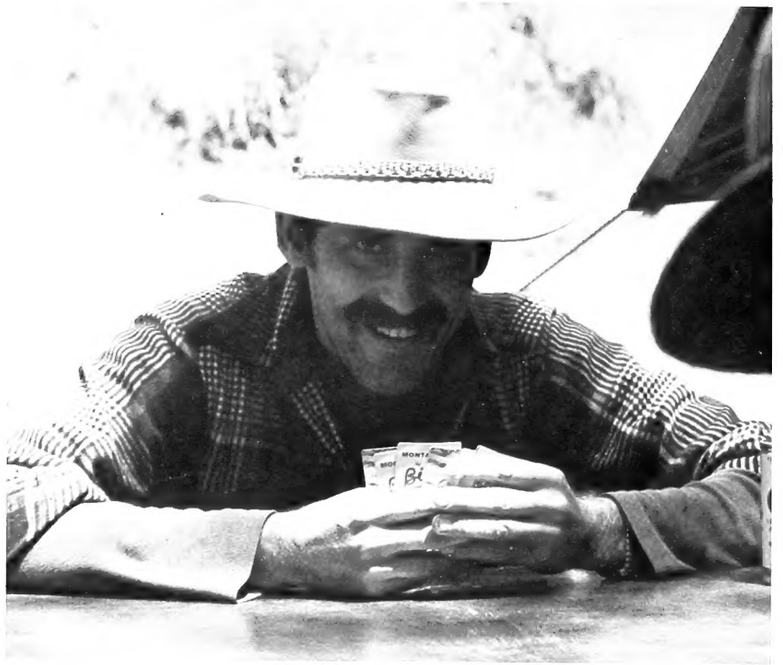
FRIENDS' TRIP PROGRAM EXPANDING IN ALL DIRECTIONS!

Colombia, the Florida Keys, Baja (twice!) and Bridger, Montana (see below) are part of the itineraries of some of the more adventurous Friends of the MCZ this year.

The dates for Dr. Raymond Paynter, Jr.'s Colombia expedition are January 19-January 30 and the itinerary includes stops in Bogotá, Leticia, Isla Santa Sophia ("Monkey Island"), Villa de Leiva, and other villages. Among the natural history to be seen are an enormous variety of exotic birds, monkeys, sloths and giant waterlilies. Dr. Paynter gave prospective travelers an enticing preview on September 30.

The trip to the Florida Keys is being planned by Rosanne Kumins and Nell Cant of the Trip Committee and definite plans will be announced soon.

The allure of the California gray whale is proving irresistible to so many curious travelers that there will be *two* MCZ expeditions to Baja in 1976 — one on January 28 to February 4, the other on March 1-8. A special invitation to subscribers to *Harvard Magazine* (October issue) has been enthusiastically accepted by devotees of natural history from all over the United States. Welcome!



Bill Amaral in typical field pose.

Rosanne Kumins and Prentiss Gauld, two Friends of the MCZ, filed this report on their visit to a vertebrate paleontology field site this past summer.

LIFE IS JUST A BROKEN AXLE

It is not easy on your car's suspension to be Friend of the MCZ. Forewarned, two of Harvard's more daring employees equipped themselves for a week's on-site visit with a tent, brand new hiking boots, a pint of sun screen, two bottles of Scotch, and a dozen packets of kleenex. They rendezvoused with Professor Farish Jenkins and his field party (Bill Amaral, Chuck Schaff, Steve Orzak, Carolyn Moseley, Professor A.W. Crompton and John Crompton) at the Texaco Station in Bridger, Montana, eagerly anticipating the joint discovery of paleontology's missing link. Instead, they found temperatures in the low 60's, rivers and streams in flood conditions, and a surfeit of cows.

They discovered that volunteer labor is always welcome. Anybody can carry 60 pound sacks of dirt and stones, sit for hours in a 48° stream sifting silt, and drive with reckless abandon a rented automobile in pursuit of a four-wheel drive MCZ jeep. Anyone, that is, with a strong back, well-insulated ankles, and a streak of irresponsibility.

As Friends they discovered their greatest asset was their absence. Indeed, while they were in town seeking lettuce, beer, English muffins (apparently unheard of west of the Mississippi), ice and 75 pounds of plaster of Paris, the professionals uncovered a wholly articulated mammalian skull — the first of its kind from the Western hemisphere.

Lest any potential tripper be deterred by this account, be assured that field life is very posh. Reveille is tempered by coffee brought to your sleeping bags, all meals are cooked to order, and the view of the snow-capped Pryor Mountains, coupled with the sense of isolation, makes being a Friend a treat.

Ex-Marine Captain turned Professor (Farish A. Jenkins, Jr.) resorts to boot camp tactics. The recruit is Rosanne Kumins, Friend of the MCZ.

Farish Jenkins examines a Mesozoic mammal skull with the aid of a hand lens. Chuck Schaff looks on.

Photos by A. W. Crompton

John Burns bids au revoir *to two colleagues, Robert Silberglied and Bert Holldobler.*

JOHN BURNS JOINS SMITHSONIAN

Dr. John M. Burns, Associate Professor of Biology and Associate Curator of Lepidoptera (butterflies) took up a new position at the Smithsonian Institution on July 1. His contributions to the life of the MCZ, both scientific and otherwise, were legion and he will be missed. John and his wife Sara were honored at a farewell party with a specially-designed MCZ chair.

Although there is no substitute for his poetic introductions to the Natural History Seminar, some of his best verse will be available soon in the form of a book titled *BioGraffiti: A Natural Selection**, a collection of funny, thoughtful, literate, graceful, pointed, ribald and outrageous light verse on matters of current biological interest, with emphasis on evolutionary, ecological and behavioral biology and on natural history. This, of course, includes sex. The poems are terse — a quality facilitated by a quantity of punning (on entire phrases as well as on words) which provides extra levels of condensed meaning. Striking use of technical terminology creates no difficulties because terms that might be troublesome are explained in the glossary. All poems are illustrated with appropriate woodcuts, engravings and so forth, carefully chosen from a wide range of old works issued mostly between 1550 and 1900.

This is not the first time that a literary work has emerged from the MCZ's butterfly collections; Vladimir Nabokov was Research Associate in Lepidoptera from 1941-1948.

*(Demeter Press of Quadrangle/The New York Times Book Company, 10 East 53rd Street, New York, N.Y. 10022. Hardbound 128 pp $5.95)

BIRD DEPARTMENT RECEIVES UNUSUAL GIFT

By Dr. Raymond A. Paynter, Jr.

Mrs. Edward J. Dimock has recently given the Bird Department the skull of a Helmeted Hornbill *(Rhinoplax vigil)*, a species found from Malaya to Borneo and Sumatra. Although a curious bird by virtue of its helmet, the species is well known and our new specimen would not have been particularly noteworthy were it not for what has been done to it.

The front of the two-inch casque, which consists of dense material resembling aged ivory, and the entire bill have been minutely and intricately carved in three dimensions (see photo). The scene depicted so elegantly is that of the founding of the Chou Dynasty in the 12th century, when Wen Wang, then a young duke, discovered Chiang Tzu-ya, a wise and virtuous man who was in exile disguised as a peasant fisherman. The two joined forces to overthrow the evil king and to conquer China, with Wen Wang becoming the first Chou king.

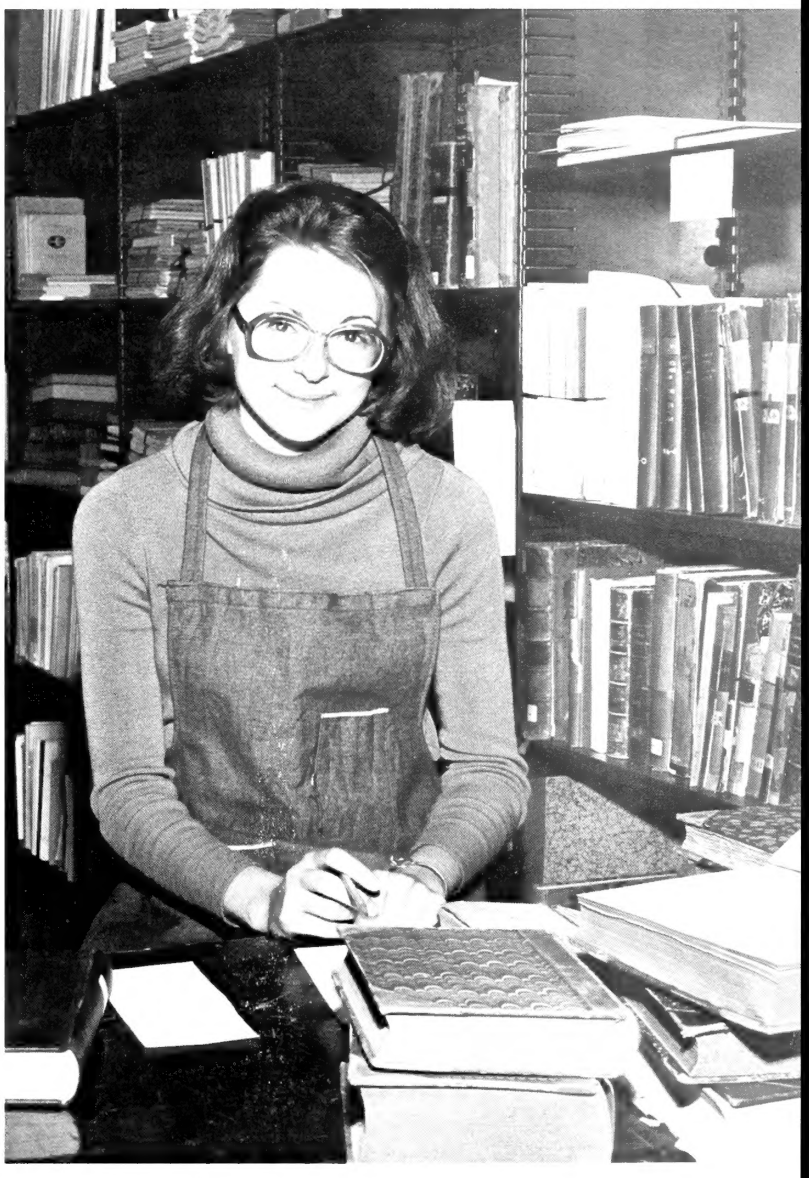
Little is known of this rare art form. The hornbill was probably imported to China from Borneo, but there is no way to be certain when. It is generally assumed that carvings *in situ* on the skull date from the 18th century, but they may be earlier, for hornbill ivory *(ho-ting)* is known to have been prized for use in smaller decorative items in the Ming Dynasty (1368-1644). While additional examples of carved hornbill skulls may be hidden in attic trunks, as was Mrs. Dimock's, there seem to be fewer than a dozen in U.S. museums, and this one is by far the most graceful and delicate.

Antique bird "ivory"

MARY KEELER GIVES OLD BOOKS IN THE MCZ LIBRARY A NEW LEASE ON LIFE

That books are not immortal is a fact of life that seldom occurs to anyone other than librarians and book dealers. Although books have been known to last for centuries despite human abuse and natural disasters, today's librarians face rampant deterioration of their "permanent" research collections.

The battle against the agents (humidity, pollution, acidity in the paper fibres) that shorten the life of the book has only recently begun. A life-prolonging aid such as air-conditioning must be considered for the MCZ Library. Meanwhile, Mary Keeler is single-handedly attempting to save many of the rare old books, including those originally in the Agassiz and de Koninck collections. Although not a fully-fledged professional, Mary is indefatigable in her efforts to acquire the necessary skills to become an accomplished book conservator. She attended a course at the Newberry Library in Chicago during the past summer to improve her understanding of the complexities involved in book preservation. The scope and seriousness of the task is only slowly being realized.



Mary Keeler

STAFF NEWS

Honors

Three MCZ staff members recently received world-wide recognition for their distinguished work:

Recently-retired Professor Ernst Mayr has been elected by the Faculty of the University of Paris to receive the degree of *Docteur honoris causa*. Dr. Mayr welcomes his retirement as a long-waited time to catch up on his writing.

Two MCZ paleontologists are the recipients of the Paleontological Society's two major awards for 1975. Dr. Frank Carpenter, Professor *Emeritus*, Fisher Professor of Natural History, has been awarded the Paleontological Society Medal for advancement of knowledge in the sciences; and Dr. Stephen J. Gould, Professor of Geology and Curator of Invertebrate Paleontology, has been awarded the Schuchert Award for distinguished paleontological research by a person under age 40. These awards were presented at the Annual Meeting of the Paleontological Society in Salt Lake City in October.

Appointment

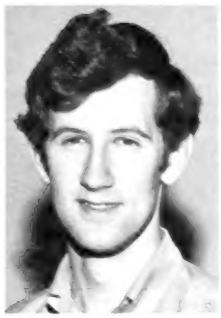
Dr. Ruth D. Turner was appointed Professor of Biology as of July 1, 1975.

In Memoriam

Miss Elizabeth Deichmann, Honorary Curator of Marine Invertebrates, died on Saturday, August 9th in her 79th year at Beverly Farms, Massachusetts. A remembrance from her colleagues will appear in the next issue of the *MCZ Newsletter*.

MCZ TO HOST SVP MEETINGS

The Annual Meeting of the Society of Vertebrate Paleontology will be held at the MCZ on November 6, 7, and 8. The three day session will be devoted to approximately 90 papers and over 200 members (including one from England and one from Africa) are expected to attend. At the annual banquet, to be held in the majestic main hall of the Busch-Reisinger Museum, Alan Walker, Associate Professor of Anthropology and Anatomy, will talk on recent discoveries of early man in East Africa.



FROM THE FIELD STATION

By William K. Newbury

The archeologist wants to know how things were in the past, the ecologist wants to know why things are the way they are now, and the landscape architect wants to change things so they will be better in the future. This past summer undergraduates, graduate students, and local residents skilled in these disciplines focused their energies on the Estabrook Woods. This mixture of disciplines and skills provided the spark for a very productive three months.

Two undergraduate archeologists with the help of a half dozen amateurs excavated two colonial house sites in the Estabrook Woods. Their aim was to provide new information on the lifestyles of the early residents. To this end they recovered a rich treasure of artifacts including musket balls, china, knives, forks and spoons, and a 1797 penny.

This summer's ecological research ranged from wasp reproduction to violet growth patterns to Discomycete flora life histories. Almost every project had a strong input from local entomologists, botanists or mycologists, and, as these projects are continued in the future, they should provide valuable new insights into the factors controlling the distribution of plants and animals.

For the first time two students from Harvard's Graduate School of Design used the Estabrook Woods for research. They developed a management model for the small woodlot owner demonstrating how he could manage his land to increase its aesthetic appeal. To implement their plans they relied heavily on the skills of local residents for both the cutting and the identification of the plant and animal species described in the project's explanatory guidebook.

On their own the local naturalists have also made significant contributions to the Field Station. One has written an authoritative field identification guide to the more than 100 tree species listed in Richard Eaton's *Flora of Concord* and also built almost single-handedly our Colleoptera collection. Another spent the summer collecting and cataloguing mosses, the first time any work has been done in that area at the Field Station. In addition, two local botanists have spent the past six months reorganizing our herbarium to make it more useful for amateurs.

Equally important as the results of the projects was the interchange between the participants. For example, everyone has the opportunity to see first-hand the techniques and the excitement of a "dig" and the archeology students, in return, got so involved in the biological research that they have enrolled in biology courses this Fall. The landscape architects' applied research introduced a new approach to the undergraduates whose previous research experience has been limited primarily to basic biological problems. The amateur naturalists, however, with their enthusiastic participation provided the most valuable lesson of the summer: scientific investigation produces just as much pleasure as it does new information.

NOW AVAILABLE: **2nd Edition**

ABOUT THE EXHIBITS

by Elizabeth and Max Hall

(56 pp) at the Museum Shop ($.75) or from the Publications Department ($1.00)

The new edition of a series of sometimes surprising "how they got there" tales about the MCZ's exhibits has just been published. The first edition was published in 1964 because Elizabeth Hall, then Manager of the Museum Shop, felt a need for a book that would introduce museum visitors to the colorful stories behind many of the exhibits. She did most of the research for the first edition and began on the second. After her death on October 28, 1974, her husband, Max Hall, completed the revised edition. New additions include accounts of the acquisition of the narwal, or sea unicorn; an astonishing turtle; the coelacanth; the paper octopus; and the glass menagerie. Elmer W. Smith has contributed six new drawings and redesigned the cover in his distinctive style.

"Fishermen are always catching the big ones and boasting about it afterward. But possibly the most sensational catch in history occurred in South Africa on December 22, 1938". The fish was a coelacanth, pictured here by Elmer W. Smith, and the remainder of the account of its remarkable discovery appears in About the Exhibits, *2nd Edition.*