

MANY COLOR PLATES OF HAWKS ILLUSTRATE NEW BOOK

Field Museum has placed on sale an especially attractive book, *The Hawks of North America*, recently published by The National Association of Audubon Societies. Dr. John B. May, who has served as Director of Ornithology of the Massachusetts Department of Agriculture, and is a noted economic ornithologist and authority on birds of prey, is the author. The book is illustrated with 37 color plates by Major Allan Brooks, one of the foremost painters of birds. It contains also four black and white profile plates by Roger Tory Peterson, range maps for all species showing breeding areas and wintering limits, and flight patterns in black and white which are of practical value in identifying each species in the field.

Copies of the book may be obtained at the publication and post card counters in the Museum, at \$1.25. If you desire a copy sent by mail, send your order with check or money order for this amount, and it will be mailed to you.

ANIMALS THAT ARE EQUIPPED WITH TRAP DOORS

BY KARL P. SCHMIDT
Assistant Curator of Reptiles

The familiar sally about "crawling into a hole and pulling the hole in after oneself" comes to mind in connection with animals in which a part of the body is especially modified to close the hole or crevice in the ground in which they live or take refuge. Such hole-closing devices are found as part of the bodily structure of certain insects, a few frogs, lizards and snakes, and even (perhaps) one mammal.

Numerous frogs and toads have the top of the head developed into a bony casque. In certain South American tree frogs the head can be pulled down nearly at right angles to the body, and this is interpreted as enabling the frog to close the knot hole in which it lives. The most authentically described case illustrating this relation between habit and structure is that of a small Cuban toad which lives in short vertical burrows in the ground. It retires into its burrow backward, and the bony top of its head is bent sharply forward, effectively blocking the hole. The extreme development of spines on the tails of some lizards perhaps may function in the same way. At any rate, it is difficult to imagine a snake swallowing an Egyptian mastigure or an American spiny-tailed iguana tail foremost. Some of these lizards take refuge in cracks between rocks and can bend their tails sharply sidewise, which would effectively close a crevice.

Even more remarkable are the creatures which live in burrows in the soil and have sharply truncated or spiny tails. The most notable example is probably the burrowing snake *Uropeltis* of southern India, in which the tail terminates in a single large rugose shield at right angles to its axis and as broad as the body. It carries the rear door of its burrow with it. The pichichego, a tiny burrowing armadillo of western Argentina, has so truncated a rear, covered with a special shield, that it is apparently a mammalian example of this phenomenon.

This relation between animal structure and life in holes or burrows has been called phragmosis. It requires much further observation to establish the extent to which it occurs and to verify its usefulness. Naturalists have hitherto been so much occupied with collecting and describing the rich life of the tropics that there has been

little time for observation of habits under natural conditions or in the laboratory. This affords a fascinating field for study.

JAVANESE SCULPTURES

Ancient Javanese stone sculptures of four of the most potent deities of Indian mythology, are on exhibition in Hall G, devoted to the archaeology and ethnology of Malaysia. The statues, which date to about the beginning of the Christian era, indicate a high degree of artistic development on the part of the sculptors.

One represents Ganeca, god of wisdom and prudence, in the shape of an elephant as a symbol of sagacity. Its trunk rests in a water jar, but it has two pairs of human arms. This is one of the most popular of Indian deities, and almost every act in a Hindu's life begins with an invocation to Ganeca. The wisdom it represents is not that of knowledge, but worldly wisdom of the kind which results in financial success. Therefore it is particularly the god of the shopkeepers.

Another is the warlike and ferocious goddess Durga, to whom bloody sacrifices were offered. In another incarnation she is called Kali, "the Black One," goddess of death and destruction. Thugs murdered their victims in her honor.

The third of the gods is the Buddha Amitabha, who was the personification of light in the first century of the present era. He is believed to preside over a paradise in the west where faithful votaries will be reborn from lotus flowers to enjoy a state of eternal bliss. He was the most popular of Buddhas in the Far East.

Last is shown Civa, destroyer and creator, depicted in the garb of a Brahman ascetic, holding a trident symbolic of divine power.

Flying Reptiles

In a panel-exhibit, a yard square and carefully sealed up under glass, in Ernest R. Graham Hall (Hall 38), is the skeleton of a flying reptile. The bones are of a dark, brownish color, very thin and delicate. The body is the size of an eagle's and the wings had a similar spread. The skull is delicate, and ends in a long straight beak. The wing bones have been hollow, but now appear flattened like so many joints of reeds. There were three fingers armed with slender claws at the second joint corresponding to three fingers of the human hand; the fourth finger extended into slender bones to support a membranous wing. From this characteristic was derived the creature's name *ptero-dactyl*, or wing-finger.

Such flying reptiles lived over the inland seas of western Kansas during Cretaceous time, about one hundred million years ago. At death they fell into this old-time sea and eventually their bones were covered by the sediments gathering at the sea bottom. The Museum's specimen was found some years ago lying in a bed of natural chalk where ages of storm and rain had washed it bare.—E.S.R.

Structural Cements

Common clay, the first cement used by man for structural purposes, is still the most used of all. A collection of the various substances used for structural cement may be seen in Hall 36.

Rough diamonds from nearly all the important fields of the world, as well as several finely cut large specimens, are exhibited in H. N. Higinbotham Hall (Hall 31).

JUNE GUIDE-LECTURE TOURS

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 3 P.M., except Saturdays, Sundays, and certain holidays. Following is the schedule of subjects and dates for June:

Week beginning June 3: Monday—Chinese Art; Tuesday—General Tour; Wednesday—Hall of Plant Life; Thursday—General Tour; Friday—Ancient Burials.

Week beginning June 10: Monday—Animal Habitat Groups; Tuesday—General Tour; Wednesday—Hall of Races of Mankind; Thursday—General Tour; Friday—Fish and Reptiles.

Week beginning June 17: Monday—Amber, Turpentine and Rubber; Tuesday—General Tour; Wednesday—Prehistoric Life; Thursday—General Tour; Friday—Pewter and Jade.

Week beginning June 24: Monday—Egyptian Exhibits; Tuesday—General Tour; Wednesday—Birds; Thursday—General Tour; Friday—Geology Exhibits.

Persons wishing to participate should apply at North Entrance. Tours are free and no gratuities are to be proffered. A new schedule will appear each month in *FIELD MUSEUM NEWS*. Guide-lecturers' services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

Gifts to the Museum

Following is a list of some of the principal gifts received during the last month:

From B. A. Krukoff—25 samples of seeds and fruits, Brazil; from Howard Scott Gentry—500 herbarium specimens, Mexico; from School of Forestry, Yale University—38 herbarium specimens, Colombia; from Rev. Brother Elias—45 herbarium specimens, Colombia; from Prof. Manuel Valerio—276 herbarium specimens, Costa Rica; from Dr. T. F. Seymour—a specimen of foliated tale, Canada; from Miss Elizabeth Oliver—a specimen of pisolite, Illinois; from Stewart Springer—11 lizards, Sardinia; from Dr. Auburn E. Brower—2 butterflies, Maine; from C. Blair Coursen—44 lizards and 2 frogs, Florida; from Chicago Zoological Society—a short-headed flying phalanger, New Guinea; from Leslie Wheeler—17 hawks and 3 owls, Costa Rica and Canada.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from April 16 to May 15:

Non-Resident Life Members

John Wyatt Gregg

Associate Members

Mrs. Gustavus Babson, Dr. Ralph B. Bettman, Robert N. Golding, R. G. Hollingsworth, Mrs. Frank K. Hoover, George E. McGrath, George F. Mulligan, Mrs. Lloyd F. Neely, Miss F. A. Reffelt, Benjamin J. Rosenthal, Miss Shirley Jane Short, Floyd E. Thompson, Edward E. Voynow, Charles Weiner.

Annual Members

Comfort S. Butler, Mrs. Chester W. Chapin, Dr. Bowman Corning Crowell, Joshua D'Esposito, L. J. Drake, Lyman M. Drake, Miss E. L. Drew, Mrs. Thomas E. Duffy, Miss Ruth M. Engberg, Frank C. Huffman, Everett B. Michaels, Lorry R. Northrup, Patrick B. Prescott, Jr., William A. Rowley, E. B. Thurman, Rudolph E. Vogel, Carl J. Zipprich.

Research by Noted Paleontologist

Dr. William Berryman Scott, Professor Emeritus of Princeton University, recently spent several weeks at Field Museum, engaged in research on skeletons of fossil *Astrapotheres* in the Museum's collections. The results of his research are to be made the subject of a scientific publication. Professor Scott is the former Blair Professor of Geology and Paleontology at Princeton, and is well-known as one of the world's leading authorities in his fields of study.

Specimens showing all stages in the manufacture of lead pencils form an economic exhibit in the Department of Geology.



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