

WHY SCIENTIFIC NAMES?

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(Editor's Note:—An article on certain anomalies in connection with the common names for animals appeared in the August, 1939 issue of FIELD MUSEUM NEWS. That the system of scientific names is much more orderly is made evident by Mr. Schmidt.)

The technical names that abound in the publications addressed by scientists to their colleagues form one of the barriers between the professional scientist and the public, and one of the hindrances to the popular diffusion of the current developments in scientific research. While many technical names have entered the language and become current, so that *Azalea* and *Geranium*, and even *Hippopotamus*, are used by the layman without effort, this happy linguistic success is all too rare. A large proportion of old-fashioned museum labels bore scientific names only, and must have prevented, rather than promoted, any constructively educational effect.

The functional use of most such terms is obscure to the beginner, who is likely to exaggerate their importance. The fact is that a scientific name or term should never be memorized as such. When a student engages on actual work in the classification of species with specimens on hand, or in first hand studies of anatomy, he presently finds that it is easier to know the name or anatomical term in question than not, and he is likely to find that he has learned all those that he really used without apparent effort. The affectation of overuse of technical terms, sometimes even without adequate understanding of their meaning, is then unlikely.

ANALYSIS SIMPLIFIES NAMES

The amateur is likely to be so much frightened by a long scientific name that he becomes the victim of a sort of mental paralysis, so that he is totally unable to pronounce it, or, if asked to reproduce it, to spell it. If the amateur could only know how little agreement there is on the pronunciation of Latin terms among the most technical scientists, he might be relieved of some of his fright, for he could scarcely do worse himself by simply pronouncing as spelled. The analysis of technical names usually reduces them to words or syllables which are at least in some measure familiar in non-scientific English, and with the acquisition of a few Greek roots, whose meaning is often clear enough without the slightest knowledge of Greek, the difficulties of spelling also tend to disappear. There are, of course, unhappy exceptions, and the simple *Rana sylvatica* for the wood frog has a horrid counterpart in *Rana warschewitschii*, a Central American frog named for a Russian explorer, or in such elongate forms as *Microstomatichthys oborus bashforddeani* for a small African fish. However, even the worst of zoological and botanical names are outdone in length by

the compound chains of terms of the anatomists and chemists.

THE REASONS FOR SCIENTIFIC NAMES

The scientific names of plants and animals have several extremely useful functions. They were necessary in the first place to bring order out of a chaos of vernacular names for the kinds of animals and plants. Such names differ from country to country and from place to place in the same country for a single kind, or species. A chaos almost as bad grew out of the first cumbersome attempts at scientific description of these species. Some means of simple classification was necessary also to group the forms that could be seen to be related, much as the members of a family of human beings are distinguished by their given names and grouped by the surname.

The need for names, and the need for a simple method of grouping the species named, are both met by using two names, a generic name for the larger group and a specific one for each of its members. This practice rests on proposals formulated by the Swedish scientist Linnaeus, whose work on plants and animals took shape in successive editions of his *Systema Naturae*. The tenth edition of this work, published in 1758, has been adopted as the starting point for all scientific nomenclature of animals, while botanists begin their system with Linnaeus' *Species Plantarum* (1753). Thus, *Homo sapiens* is Linnaeus' name for man, and *Lilium canadense* for the wild yellow lily of northeastern North America. "Homo" and "Lilium" are names for considerable groups

of species, of which *sapiens* and *canadense* are examples. Linnaeus' relatively simple invention of a binomial nomenclature opened the world to botanical and zoological exploration, since the names made possible the description of plants and animals hitherto unknown, and these descriptions and names, when published, became a permanent body of knowledge. The generic names could easily be grouped, according to their natural relations, into families, the families into larger groups or orders, the orders into classes, and the classes into the major divisions of the Animal and Plant kingdoms. Thus, to use another familiar example, the lion was referred to by Linnaeus as *Felis leo*, the tiger as *Felis tigris*, and the genus *Felis* is now associated with other types to form the family *Felidae*; the family *Felidae* is grouped with the numerous other families of mainly carnivorous animals to form the order *Carnivora*; the *Carnivora* are one of the orders of the class *Mammalia*; and this in turn is one of the major divisions of the phylum *Chordata*. Thus, in reverse order, we have:

Kingdom—Animalia (all animals, contrasted with Plant and Mineral Kingdoms)

Phylum—Chordata (the backbone animals and their allies)

Class—Mammalia (the animals that suckle their young)

Order—Carnivora (the flesh eating mammals)

Family—Felidae (the cat-like mammals)

Genus—*Felis* (the true cats)

Species—*leo* (the lion)

The classification of Man's own species is as follows:

Kingdom—Animalia

Phylum—Chordata

Class—Mammalia

Order—Primates (named by Linnaeus for their apparent importance)

Family—Hominidae (man and his direct allies)

Genus—*Homo* (modern man)

Species—*sapiens* (named, probably in good faith, for his supposed intelligence)

The possibility of arranging animals by means of a natural classification in groups of ascending or descending rank afforded an immediate stimulus to comparative anatomy, which rapidly developed into an independent science, and which established the arrangement of the higher groups. As a by-product of this classification, it became possible to identify the species of animals already named, and thus to go on with the study and naming of those not yet described.

NAMES FOR NEW SPECIES

The use of Latin for the Linnaean names was natural enough, since it was the scholarly language of Linnaeus' day, and since it had the advantage, which it still possesses, of being an international medium. The immediate result of the success of the binomial system was to establish a permanent international nomenclature for plants and animals. Since this involved the use of the first names proposed, descriptive botany and zoology acquire some of the aspects of a game—a game played on an international scale, in which the privilege and honor of

THIS MONTH AT THE MUSEUM

From various schedules which will be found in this issue of FIELD MUSEUM NEWS, it will be seen that there are special events arranged for the entertainment and instruction of Museum visitors every day during April. On Saturdays, in the morning there will be the Raymond Foundation motion picture programs for children, and in the afternoon the illustrated lectures on science and travel for adults, both presented in the James Simpson Theatre. On Sunday afternoons there will be the lectures and tours conducted by Mr. Paul G. Dallwig, the Layman Lecturer. Daily from Monday to Friday inclusive there will be presented guide-lecture tours conducted by members of the Museum staff.

In addition, the message of science is being sent into the homes by Field Museum radio programs on Thursday and Saturday afternoons by NBC.

proposing a new name is the prize. At first merely following Linnaeus' work as a model, more and more complicated rules were developed as the number of names increased. These rules have now been formulated into an "International Code of Nomenclature." The game of proposing new names for plants and animals still goes on, but with the number of described and named animals approaching a million, it has passed largely into the hands of specialists on particular groups. Many students of insects (by far the largest group of animals in number of species) confine their studies to a single order, or even a single family.

The addition of the describer's name as an essential part of the name, sanctioned by the codes of nomenclature, was doubtless intended originally as an aid to the finding of the original description. It must be admitted by any candid taxonomist, however, that this practice has had an insidious appeal to the vanity of botanists and zoologists engaged in the labor of describing "species new to science."

Whatever our opinion may be of those botanists and zoologists in whose hands the game of naming has become an end in itself, instead of a tool for the advancement of their respective sciences, Linnaeus' invention of binomial nomenclature, judged by its results in the body of knowledge accumulated and by its continuing usefulness, was a major event in the history of biology. We are still engaged in the botanical and zoological exploration of the world; and the more synthetic sciences, such as comparative anatomy, physiology, and ecology, are helpless without an orderly and permanent classification of their material.

In recent years the emphasis in university departments of biology has been more and more on the synthetic and more experimental aspects of both botany and zoology; and research in the descriptive branches, which rests largely on the accumulation of collected specimens, comes to be pursued mainly in museums. The reference collections in Field Museum, numbering hundreds of thousands of specimens, form the basis of the scientific knowledge that lies behind the planning of the exhibition halls. These still growing collections are used for reference by the scientific staff, which is charged with their care, with promoting their growth, and with the researches that fulfill the Museum's most fundamental aim—the increase and diffusion of knowledge.

Museum Exhibit at Rotary Exposition

Field Museum will be represented by a special exhibit at the Rotary Business Exposition to be held at the Hotel Sherman, April 9 to 12, under the auspices of the Rotary Club of Chicago. The exposition will be open daily from 12:30 to 10:30 P.M. Two tickets of admission are enclosed with this issue of FIELD MUSEUM NEWS.

A RARE CROCODILE IS RECEIVED FROM MR. LEON MANDEL

Although Field Museum's exhibition halls have only five of the twenty-four living species of crocodilians on display, this group is much better represented in the reference collection, where skulls and skins, or specimens in alcohol, of twenty-one forms may be examined or studied. The missing forms

the sponsor of the recent Mandel Caribbean Expedition. This specimen, received alive by the Museum, will furnish the basis of a model for exhibition, and an equally valued skin and skeleton for study purposes.

The name, *Crocodylus rhombifer* Cuvier, illustrates the subject of Mr. Schmidt's



Photograph courtesy of The Chicago Tribune

Crocodylus rhombifer, from Cuba

Mr. Leon Mandel (left), donor of important specimen for Museum collection, and Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, examine rare crocodile after its arrival, still alive, in the taxidermy shop. It will be reproduced in cellulose-acetate for exhibition, and the original skin will be preserved for the study collection.

include a dwarf crocodile from the heart of Africa, the gigantic species of the Orinoco, and one of the small caimans of the Amazon.

The missing species had included also the now rare Cuban crocodile (*Crocodylus rhombifer* Cuvier), which is found only in certain inland swamps in Cuba, until a specimen was secured in March by Mr. Leon Mandel,

article, "Why Scientific Names?" on page 4. *Crocodylus* represents the genus to which the animal belongs; *rhombifer* names the species, referring to the rhomb-shaped area on the snout which characterizes this crocodile (*rhombifer*—Latin for "rhomb-bearing"); Cuvier is the describer of the species, Baron G. L. C. F. D. Cuvier, famous French naturalist.

SUNDAY LAYMAN LECTURES IN APRIL—"THE ROMANCE OF DIAMONDS"

"The Romance of Diamonds from Mine to Man" is the subject of the Sunday afternoon tours to be conducted during April by Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum. Illustrating his talk with the exhibits in the Gem Room (H. N. Higinbotham Hall) and other halls in the Department of Geology, Mr. Dallwig will dramatize not only the stories of the discovery, mining, cutting, and distribution of diamonds, but also the tales of hate, love, greed, and often murder which surround the history of many of the world's most famous diamonds. As the tours on

each of the four Sundays of the month are limited to 100 adults (*children cannot be accommodated*), the Museum is compelled to require that reservations be made in advance by mail or telephone (Wabash 9410). The lectures begin promptly at 2 P.M., and end at 4:30. A half-hour intermission is provided midway in the tours, so that members of the parties who wish to do so may obtain refreshments in the Cafeteria, where special tables are reserved.

In May Mr. Dallwig's topic will be "The Parade of the Races," based on the Races of Mankind sculptures by Malvina Hoffman.



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