

ZOOLOGY

Not "Stuffed"

New Preparation Methods Make Museum Groups Lifelike Sculptures of Actual Scenes in Far-Off Jungle Lands

By DR. FRANK THONE

"NO, CHILDREN; the dogs are stuffed, but the Eskimos aren't. They are just wax figures."

A passerby in the American Museum of Natural History in New York overheard this unconscious tribute to the realism of modern methods of preparing exhibits, as a schoolteacher tried to keep up with the questions of her young charges, marshalled in front of a case showing an Arctic hunting scene.

The kids were hardly to blame, at that. The things they see in a well-managed museum today would be able to fool more sophisticated eyes than theirs. We have come a long way, in taxidermy, from the "stuffed owl stage" known to our grandparents.

In "Stuffed Owl" Days

Then, a taxidermist took a skin, tanned it into some semblance of softness, sewed it together like a rag doll, and proceeded to ram into it wads of excelsior or other "stuffing" until it was bulged out to something like its original size. It did not matter if the legs and neck were stiff, if the whole thing looked rather bloated, if its attitude were that of a wooden Indian—or even a wooden bench. It was a stuffed animal, and you were supposed to admire it as a work of both science and art.

As a rule, too, this sad lump of excelsior in a lion's skin was thrust shamelessly into a glass case all by itself, without so much as a handful of dry sticks to cover its confusion. At times, the "professor" would condescend to put in an autumnal oak branch, covered with withered leaves; but this was by way of concession to a rather over-finishy public taste.

Time has brought changes—and improvements. Now a lion might well feel a sense of distinction in giving his skin to be used in a museum exhibit. Even an Eskimo might, when it comes to that. For the modern museum's display cases are the abodes of living pictures rather than pathetic sarcophagi of

stiff-kneed death. The animal whose skin goes into one of them has achieved a kind of immortality, for it will stand there, poised as at a moment of climax—living, for years after its owner would have died a natural death.

The old-time museum exhibit was based on the false proverb that beauty is only skin-deep. Beauty is far deeper than that. True beauty, whether in a woman or a lioness, goes clear to the bones. Beauty is form even more than color or external texture; the skin is only beauty's container.

It is the realization of this correct philosophy of beauty that has wrought such a revolutionary improvement in museums during the past few years. Preparators now take meticulous pains to reproduce, on the mounts that are to display their skins, the exact form of the animal's lithe grace, its smooth waves of muscle, every vibrant detail that existed under its skin while it was still breathing and moving. The museum preparator is no longer an animal stuffer, he is an animal sculptor.

A visit to the preparation room of

a large museum is a visit to an artist's studio. You will find the same materials, used in much the same way, by men with the same skill. The only difference is that in the end the artist's figures continue to stand in naked stone or bronze, while the museum man's figures are finally clothed in the natural skin.

The activities of the preparation room are only the last steps in a long process. The mounting of the animal really begins before the animal is dead. Collecting expeditions are no longer made up merely of hunters who kill their specimens, remove and salt the skins, and then lead their safari back to the coast. Along with the hunters now go photographers, artists, sculptors, botanists, who study and record the animal and his environment, having all notes, pictures and models ready before ever a rifle cracks. When an animal's skin goes down to the coast nowadays, a comprehensive sample of the animal's world goes with it, to be set up as an indispensable part of the final exhibit.

All this takes time, costs money—lots of both. When an expedition returns from the field nowadays, announcing through the press that "valuable specimens of rare animals have been secured," there are very apt to be visitors



LIONS IN ALL STAGES OF DEVELOPMENT

The small models are sculptors' guides in the preparation of full-sized manikins.

coming round within a week, demanding to see the new scientific treasures. But it may be anywhere from three months to three years before the job is complete. It takes much longer to set up a museum specimen properly than it does to secure the skin and bring it home, even from the heart of Africa.

In the home workroom, the setting up of the mounts for the skins, or "manikins" as they are called, follows the same routine as that used by any sculptor. When a big statue is to be made, the sculptor first makes a little model, and from this he enlarges his final work, sometimes through an additional intermediate stage.

It is here that the field sketches and models brought back by the expedition's artists render their service. These first copies are worked over in the preparation room, revised and refined, until they can pass the exacting criticism of both artist and zoologist.

Then the full-scale model is worked out, in modelling clay. Over this a hollow mold, in sections, is built up. Into the mold are fitted light foundations of wire mesh, to hold layer upon layer of papier-maché. When this is removed from the mold, an exact replica of the clay model has been obtained, light but strong. Fitted together, with wood and wire bracing inside, this is the mannikin. Over it the skin is stretched—and your lion, or antelope, or towering giraffe stands before you, "large as life and twice as natural."

Making the Jungle

In the meantime, the artists have been at work on the setting. The back-drop of the alcove into which the animal group is to be fitted is painted with the sky and distant mountains or vista of the endless horizon of the plains. As carefully as any artist painting a landscape for its own sake, to be hung in a great gallery, the painters work, while electricians and lighting experts develop the details of the illumination to be supplied from hidden lamps and reflectors.

Then the botanists and the plant modellers move up with the materials they have been preparing. They have brought pressed specimens and photographs and watercolors of native flowers, pieces of the trees and shrubs of the country, even bushels of earth and stones. In part, these original materials may be fitted into the growing home for the mounted animals, in part they are copied to exact color and texture out of synthetic materials. Sometimes several thousand leaves have to be made, by



IN THE HEART OF THE ASIAN JUNGLE?

Not at all: these tigers are "at home" in the American Museum of Natural History.

painttaking hand labor, for a single tree.

Finally, when all is ready, the animals are moved into their setting, the great plate glass front is sealed over them, and the exhibit is ready. As you stand in the semi-obscurity of the hall, looking into the brightly illuminated reproduction of the forest, you cannot break the illusion of coming upon a sunny spot where tigers are basking, or leopards snarling over a wild peacock they have killed. Involuntarily you cannot help tensing your muscles and getting ready to jump, if one of the beasts should move in your direction.

This procedure is followed for practically all animals that have hairy or woolly skins. The naked-hided animals, like the wrinkly elephants or the plated rhinoceroses, present a different problem. Here the skin is sometimes pressed on the model while it is still plastic, to give the outlines for the final shape.

Another trick of museum technique is the manipulation of a doughy kind of celluloid, colorable in any hues desired, to make such wet and glistening surfaces as the enormous blunt muzzle of a hippopotamus. The natural skin there would look unnatural; the innocent nature-faking is truer to nature.

Reconstruction of fossil animals, which no man ever saw in the flesh, calls for sculptural skill of a quite different order. Here, the job is not to fit flesh around the bones, but to get the bones out of the stony "matrix" in which they are usually embedded. Hour after hour, month after month, the patient chiselmens must work, always following the often indistinct boundary between fossilized bone and formless

stone. They are not carving out something according to their imagination or a blueprinted pattern; they are having to carve true to a pattern always at the edge of the tool, which one false stroke might ruin.

Once they are out, the bones have to be fitted together—which is not at all an easy task, since most of them are always broken, many parts are missing, and often you cannot be sure that all the bones you have belonged to the same individual.

Once assembled, the skeleton may stand towering in its naked impressiveness, or the preparators may do one of their most effective stunts. They study the places where the muscles were once inserted on the bones, thereby achieving an estimate of how big they were and which way they ran. They build up these lost muscles out of modeling material, but only around one-half of the skeleton. A mount thus prepared looks like a whole animal when viewed from the starboard broadside, but from the port side you see the skeleton with the darkened silhouette of the body outline behind it.

The equipment of the museum workers includes not only the usual materials of the sculptor—clay, wax, plaster, papier-maché, etc.,—but also one which jewelers sometimes use: glass. At the American Museum of Natural History one of the most skillful glassblowers in the world, who with his father before him first worked in the widely known Tiffany establishment, keeps his blowpipe and shears busy modelling greatly magnified images of one-celled plants and animals and all the other

wonderful, complicated life you can see in a drop of water. Beads go for drops and bubbles, rods and tubing for strands of protoplasm, bristles and stalks. His work is so beautiful it leaves you gasping with incredulity.

Another device that has been tried with considerable success in both this country and Germany is the turning of small animals, like insects, lizards and small snakes, into models in wax by the basically simple process of slowly impregnating them with hot paraffin. While they are still warm they are bent and posed into the exact positions desired, and then the wax is permitted to

chill and stiffen. After this, the surplus wax is gently scraped and brushed away. The animals are left with their natural colors and high glitter, which they would quickly lose if they were pickled in the traditional jars of alcohol or formalin solution. If they are not exposed to unreasonably high temperatures they will keep forever; paradoxical preparations, wax models, yet the real thing.

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MUNITIONS MAKERS

Preparing ammunition for the welfare of medical science against disease, two laboratory workers dissect the spinal cord of a Rhesus monkey from which infantile paralysis vaccine is prepared. The operation is performed after the animal has been killed painlessly and must be carried out under sterile conditions.

PUBLIC HEALTH

Federal Survey of Chronic Illness to Start Oct. 15

FEDERAL study of chronic illness throughout the country is getting under way, and the house-to-house canvass in 19 states to collect information is scheduled to start Oct. 15.

The study will be directed by George St. J. Perrott, statistician of the U. S. Public Health Service. In his office workers are already busy preparing and revising charts, tables and forms for collecting data. However, the study, for which \$3,450,000 was appropriated, is really a WPA project and 90 per cent. of the personnel will be taken from the work relief rolls of the various states.

In between looking at charts and giving suggestions to his assistants, Mr. Perrott explained the reason for this gigantic health inventory.

The front is changing in man's battle against disease. Part of this is due to the advances in science. Powerful weapons are at hand with which to hold in check if not actually to demolish such old foes as yellow fever, smallpox, diphtheria and the deficiency diseases like scurvy, rickets and pernicious anemia.

Part of the change in front results from the appearance and spread of relatively new diseases such as epidemic encephalitis, infantile paralysis, influenza and dental fluorosis.

Another reason for the change in front in the disease fight, and one likely to be of increased importance in the future, is the change in age of the population.

The American people are growing older. There are more middle-aged and older persons in the country and fewer children and young adults. This means

that as a whole the population is outgrowing the childhood diseases and other ailments of an acute nature and becoming more prone to the chronic diseases which appear in middle life. Cancer, heart disease, rheumatism and disabilities resulting from industrial accidents and disease are becoming more important as health problems.

Far-sighted public health officials are alive to this changing front in disease warfare, and already are beginning preparations for the fight on these old foes whose importance is increasing year by year.

The first step, getting accurate knowledge of the enemy's strength and position, is now being taken in the WPA project directed by the U. S. Public Health Service. A gigantic health inventory of the country is to be made. This will tell how many people in America suffer from chronic illness or physical disability; the geographic distribution of such illness; how much time is lost from work as a result of these conditions; and how these illnesses and disabilities affect the capacity of the patient and his family to remain self-supporting.

Some of the information will be obtained from records of hospitals and sick benefit associations. The rest will come from the house-to-house canvasses of 750,000 families selected to be representative of the general population of various income levels. Besides chronic illness, data will be collected on physical disability, such as blindness, deafness and loss of limbs or other crippling.

The U. S. Public Health Service has

already been making an intensive study of the importance and effect of chronic ailments on the capacity of the patient and family to remain self-supporting. The new health inventory will be correlated with this study so as to obtain further data on this phase of the chronic illness problem.

From the knowledge thus acquired the federal health officials hope to attain a strategic position for a successful fight against disease at the new front.

The states selected for the inventory are Washington, Oregon, California, Utah, Minnesota, Missouri, Illinois, Michigan, Ohio, Pennsylvania, Maryland, Virginia, New York, New Jersey, Massachusetts, Georgia, Alabama, Louisiana and Texas.

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PLANT PATHOLOGY

Dutch Elm Disease Found In Indiana and Virginia

DUTCH elm disease is still a potential menace outside the zone around New York City where the major eradication efforts have to be concentrated because of the gravity of the infestation there. Two isolated outbreaks, one of nine infected trees in Indianapolis, Ind., the other of two trees in Norfolk, Va., have been reported to the U. S. Department of Agriculture. These trees have been destroyed, and scouts are hunting in their