## LACQUERED VESSELS FROM PERU

By J. Eric Thompson
Assistant Curator of Central and South American Archaeology

Although lac resin, derived from the secretion of an insect, was unknown to the ancient inhabitants of South America, the Peruvians painted wooden vessels in a manner resembling the lacquer work of the Orient. From finds in ancient graves it is known that this technique of wood painting had been mastered in Peru before the arrival of the Spaniards, but the majority of the wooden vessels of this type that have survived were made shortly after the Spanish conquest in the sixteenth century.

A fine collection of twenty examples of this technique was recently placed on exhibition in Stanley Field Hall. The exhibit is dominated by a stool supported by two realistic lacquered jaguars. A few of the designs on the vessels represent scenes from life. One depicts a battle fought in the forest, the trees of which are conventionally represented. The Peruvians can be recognized by their clubs and their costumes, which include typical semi-circular headdresses. The enemy is attacking them with bows and arrows, weapons not used by the ancient Peruvians. It is probable that the scene represents an actual battle, for shortly before the arrival of the Spaniards the army of the Inca made an unsuccessful attempt to subdue the Chiriguanos, a tribe of Indians who inhabited the region east of the Andes, and who used the bow and arrow.

Another scene shows Peruvians armed with axes and slings, but most of the vessels are painted with geometric and floral patterns. The former are certainly of Incan origin, but the latter may possibly owe something to Spanish influences.

Two of the jars are shaped as human heads. It is probable that these, as well as the cylindrical vessels, were used to hold *chicha*, the maize beer of the ancient peoples of the Andes.

## LIQUORS MADE BY MANY PEOPLES INCLUDED IN EXHIBIT

By Llewelyn Williams
Assistant Curator of Economic Botany

Stimulating beverages produced by the fermentation of fruit juices, plant sap, or other plant material have been known for ages to mankind in all parts of the world. Palm sap drawn off into a vessel ferments almost immediately and becomes palm wine. Likewise, the juice of the Mexican century plant becomes "pulque." The juices of fruits of all kinds have the same property.

Under ordinary conditions of heat and moisture, certain ferments universally present in fruit juices act to convert solutions of sugars into alcohol. This was undoubtedly discovered very early in the history of man, probably prior to the discovery that stimulating drinks may be made also from all kinds of starchy plant material. In these the starches are first converted into sugars, and subsequently into alcohol. In regions where commercial beverages are unknown, the natives prepare fermented liquors from starchy plant material. The Indians of South America chew up and ferment cassava roots to produce "piwarri," while the inhabitants of the Peruvian Andes ferment plantains and bananas for "chicha." In the South Sea Islands the stems and roots of a pepper plant form the source of a potent beverage, "awa." Grapes were grown for the production of wine in the Near East long before the Christian era. The ancient Teutons used honey as a source of sugar from which to brew their mead. Beer is by no means modern, for the ancient Egyptians thousands of years ago were familiar with its manufacture from barley.

The stimulating or intoxicating properties of all fermented beverages are, of course, due to their alcoholic content. By fermentation alone this cannot be increased beyond a certain point, no matter how high the sugar content, as concentration of alcohol inhibits further conversion of sugar.

When a higher alcoholic content is desired it is obtained by distillation of the fermented beverage. This well-known process consists in vaporizing the liquid by boiling and subsequently reconverting the vapor into liquid by cooling in some form of condenser. The process appears to have been known even to very early experimentalists. The Chinese were familiar with it many hundreds of years before its introduction into Europe; the Arabians discovered a number of essential oils by distilling plants, plant juices, and alcohol from wine.

The plant materials employed for the production of distilled liquors are the same as in the manufacture of fermented beverages. The fermentation, however, is carried to the fullest extent and the product is distilled several times to yield a beverage with a higher alcoholic content.

An exhibit of fermented and distilled beverages from many parts of the world has been installed with vegetable food products in Hall 25, Department of Botany. In addition to the usual beverages, the exhibit includes such fermented liquors as "piwarri" from the Guianas, "chicha" from Peru, "toddy" or palm wine from India, "pulque" from Mexico, "awa" from Polynesia, and "perry" from Europe. Distilled liquors include "sake" and "arrack" from the Far East, and "tequila" from Mexico. With each there is shown some of the plant material from which the beverage is produced.

## FOSSIL FISHES

By Elmer S. Riggs
Associate Curator of Paleontology

Fossil fishes of many kinds are exhibited in the Museum collections. They are found quite commonly all over the world. Most of them are found in old sea or lake bottoms, some in old channels of streams. The natural chalk which has formed at the bottom of seas offered favorable conditions for their preservation. Such chalk-beds are found in western Kansas, in England, France, Syria and in other localities widely distributed. The chalk-beds of Kansas are the best known in North America. In them are found skeletons of fishes of many species along with those of swimming and flying reptiles. Some of these fishes, notably the great *Portheus molossus*, reached a length of twelve or fourteen feet. They lived in the old Cretaceous sea which flowed over the region now known as the Great Plains, 90 million years ago.

Another locality famous for beautifully preserved fish skeletons is the Eocene lake bed at Green River, Wyoming. The sediments which accumulated at the bottom of this lake have formed ledges of fine-grained shales. These shales are readily split into thin slabs and reveal the skeletons and body outlines of the fish beautifully preserved. By carefully cutting away the rock from about them, the skeletons of the fish are revealed in structural detail.

A fine series of these Green River fishes is exhibited in Ernest R. Graham Hall (Hall 38). They include fishes closely related to modern perch, herring and gar pike.

## JANUARY 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 January:

Week beginning December 31: Monday—Animal Groups; Tuesday—New Year's holiday—*no tour;* Wednesday—Plants and Animals of the Past; Thursday—General Tour; Friday—Asiatic Animal Life.

Week beginning January 7: Monday—Peoples of the South Seas; Tuesday—North American Trees and Wood Products; Wednesday—American Archaeology; Thursday—General Tour; Friday—Birds and Their Skeletons.

Week beginning January 14: Monday—Gems and Precious Stones; Tuesday—Interesting Plants and Their Blossoms; Wednesday—Pueblo Indians; Thursday—General Tour; Friday—Egypt and Its Art.

Week beginning January 21: Monday—Cats and Dogs; Tuesday—Uses of Fibers, Barks and Resins; Wednesday—Pewter and Jade; Thursday—General Tour; Friday—Men of the Stone Age.

Week beginning January 28: Monday—Fish and Reptiles; Tuesday—Story of Coal; Wednesday—Tibetan Exhibits; Thursday—General Tour.

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 Mrs. M. E. L. Gann—2 strings of Russian glass trade beads, Alaska; from Miss Helen B. Bennett—25 stone artifacts, Arkansas; from Mrs. Frank S. Johnson—a Chinese Mandarin coat; from Allyn D. Warren—a large carved wooden figure of Vishnu riding on Garuda, Dutch East Indies; from School of Forestry, Yale University—100 herbarium specimens, Colombia; from Professor Martin Cárdenas—85 herbarium specimens, Bolivia; from George L. Fisher—136 herbarium specimens, Texas; from Messrs. Floyd Markham, J. Mann, A. Lee, and Sharat K. Roy—21 invertebrate fossil specimens, Illinois; from The Alaska Museum—32 mineral and ore specimens, Alaska; from John A. Manley—2 limonite geodes, New Jersey; from C. A. Frazier—a diamond-back rattlesnake, Florida; from F. E. Holley—32 insects, Illinois, Indiana, and Panama; from Donald K. Watson—5 beetles, Texas; from John G. Shedd Aquarium—53 fish specimens; from Leslie Wheeler—a red-tailed hawk, Illinois; from Ben Cascard—9 beetles, California; from H. St. J. Philby—1,043 insects and allies, Arabia; from Chicago Zoological Society—2 bower birds, Illinois; from John F. Jennings—796 negatives of photographs taken on Straus-West African Expedition.

## NEW MEMBERS

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

**Associate Members**

Samuel O. Dunn, Harold Engstrom, Mrs. W. R. Hodgkinson, Mrs. Bryan Lathrop, Mrs. Walter A. Strong.

**Sustaining Members**

William D. Cox

**Annual Members**

Mrs. Walter Ayer, Mrs. Ronald A. Chinnock, Mrs. George L. Cragg, Mrs. Henry Elfborg, Dwight W. Follett, Mrs. David A. Hyman, Solomon Katz, E. B. Lanman, C. W. Noble, Dr. John R. Pontius, Mrs. R. E. Prussing, Mrs. G. William Reynolds, Charles F. Schramm, Clarence P. Scofield, Miss Dorothy Sears, Albert B. Singer, Mrs. George E. Van Hagen, N. C. Webster, Miss E. Lillian Wiersen.

A relief model of a volcanic island, illustrating the principal features of such islands, is on exhibition in Clarence Buckingham Hall (Hall 35).

The huge skeleton of a right whale, so called because it is the type whalers regard as the kind to pursue, is an interesting feature in Hall 19.

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