LECTURE TOURS IN JUNE

Tours of exhibits, under the guidance of staff lecturers, are conducted every afternoon at 2 o'clock, except Sundays and certain holidays. On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given, covering all departments. Special subjects are offered on Wednesdays and Fridays; a schedule of these follows:

Wed., June 4—Sun Journey—Southwest Indians (*June Ruzicka*).

Fri., June 6—Edible Wild Plants in the Chicago Region (*Marie Svoboda*).

Wed., June 11—The Races of Mankind (*Miriam Wood*).

Fri., June 13—Animals of Tropical Climates (*Lorain Farmer*).

Wed., June 18—Plants to Beverages (*Marie Svoboda*).

Fri., June 20—Your Trip to the Rockies—The Story Behind the Mountains (*Winona Hinkley*).

Wed., June 25—Denizens of the Deep (*Lorain Farmer*).

Fri., June 27—Your Trip to the Rockies—Animal Life of the Region (*Winona Hinkley*).

PLANTS AS SOURCES OF RUBBER

By LLEWELYN WILLIAMS
CURATOR OF WOOD TECHNOLOGY

The use of the milky exudation of certain plants by the natives of tropical America, and elsewhere, has been known to explorers and naturalists for centuries. History relates that when Columbus, on his first voyage to the Americas, reached the island of Hispaniola he found a group of Indians playing with balls that bounced. At the beginning of the 17th century, Pietro Martyre d'Anghiera, chaplain to the court of Ferdinand and Isabella, told how the Aztecs played with balls made "from the juice of a certain herb."

FIRST RAINCOATS

When the Spaniards arrived in Mexico, they established the practice of dipping capes into latex to waterproof them. Early explorers of the Amazon likewise reported that the primitive forest dwellers of the region prepared waterproof garments, pouches, rubber vessels, and so forth from an elastic substance of plant origin, which they called "cahuchu."

Years later, Charles-Marie de la Condamine, the French scholar and explorer, furnished descriptions of the uses and preparation of rubber, samples of the material, and details of the botanical characteristics of the trees tapped by the Indians of equatorial America.

Everyone is familar with the common milkweed, or the rubber plant frequently grown in homes—when the stem is broken, a milky juice exudes. Milk or latex is characteristic of hundreds of plants, especially those of the Spurge, Dogbane, Mulberry, Nettlewort, and Sapodilla families.

LIFE FUNCTION UNKNOWN

This latex has its origin in a system of capillary vessels or cells found in the first-formed or primary tissue of the stems, in the secondary tissue in the underlayers of the bark, and sometimes in the sapwood of the trunk and branches. Its function in the growth and life of the plant still remains unsolved. When seen under the microscope, this milky juice has the appearance of minute oily globules of variable size and chemical content, depending upon the plant from which the latex is obtained.

Though comparatively rare in temperate regions, rubber-yielding plants are exceedingly common in the tropics. Many of the largest trees in the humid forests of Central and South America, Africa, Asia, and the Malay Archipelago exude a milk-like substance when the bark is cut or damaged or when the leaves and twigs are torn or snapped. The best known are various species of *Hevea*, widely distributed in northern South America, especially in the Amazon and upper Orinoco regions; species of *Sapium*, in Brazil, Colombia, and Venezuela; Ceará rubber tree (*Manihot glaziovii*) and Mangabeira (*Hancornia speciosa*), in eastern Brazil; species of *Clitandra*, *Carpodinus*, *Landolphia*, and *Funtumia*, in Africa; and the so-called India rubber tree (*Ficus elastica*), in India, Burma, and Malaya.

RUBBER GATHERERS' CAMP

On the upper Orinoco River, Venezuela. In foreground are balls of crude rubber prepared by smoking the latex over poles. (Photo by Curator Williams.)

The most rubber and that of highest quality comes from the Pará rubber tree (*Hevea brasiliensis*), native of the Amazon valley. Late in the last century it was introduced into the Far East, where it has been so extensively propagated that until recently the Far East furnished the world's chief supply of rubber.

The method of extracting the latex and the preparation of rubber vary according to the plant. In some instances the trunk and branches are tapped; in others the entire plant is macerated. The liquid is solidified by the application of heat or the addition of such chemical agents as acetic or phosphoric acids or alum.

In the Amazon Valley and adjacent regions, rubber trees are tapped during the dry season. The tappers explore the forest and open paths to suitable trees. A vertical incision is made with a special knife up to a height of three or four feet. A lateral cut, at an angle of 45 degrees, is opened, leading to the vertical channel. Subsequent incisions are opened parallel with the original lateral cut, usually on alternate days. The latex begins to flow immediately and is caught in a receptacle fastened to the trunk. After a few hours the contents of all the cups are transferred to a larger vessel and taken to the main camp.

The next step is to convert the still liquid latex into solid rubber. A fire is lighted, using certain species of hardwoods or palm nuts, to produce a dense smoke. Latex is poured over a pole or paddle and held over the smoke. Almost instantly the heat causes the latex to dry or coagulate, forming a thin layer on the pole or paddle. More latex is added and then smoked. The process is repeated until a large ball, weighing up to 100 pounds or more, is formed. When fresh, rubber is of a golden brown color, but it gradually becomes dark, almost black, on contact with moisture or on exposure to air and sunlight.

PROCESS ON PLANTATIONS

On plantations it is customary to coagulate the liquid with chemical agents and to press the solidified mass into thin sheets, which are afterwards placed for several days in a smoke-filled chamber.

Despite considerable research and great progress made in recent years in the synthetic industry, wartime experience indicated the manifest superiority of natural rubber over synthetic substitutes in the manufacture of certain articles, especially those subject to friction or requiring endurance.

An exhibit showing trunks of several rubber-yielding trees, various types of rubber, and steps in the preparation of Pará rubber is on display in Cases 605 and 607 in Hall 28.

Museum to Be Host to Librarians

The Special Libraries Association will hold its 1947 convention at the Drake Hotel, June 9–13, and its Museum Group is scheduled to meet at Chicago Natural History Museum on June 13 at 2:30 P.M. A brief tour of the building is planned, followed by a talk by Chief Curator of Zoology Karl P. Schmidt on "Bibliographical Foundations of Museum Research" and a description of the library and its activities by Librarian Carl W. Hintz.