CELEBRATING NATIVE INNOVATION

BY THERESA BARBARO

Engaging. Imaginative. Groundbreaking. These are some of words that come to mind when describing the new imagiNATIONS Activity Center at the National Museum of the American Indian in New York. The center's opening aligns with the annual Children's Festival on the weekend of May 19-20, engaging visitors of all ages with hands-on activities and programs related to the center's core themes.

Approximately six years in the making, the 2,000-square-foot activity center features sections highlighting the ingenuity of Indigenous peoples of the Americas in agriculture, engineering, medicine, architecture, physics and mathematics. It will not only serve the 40,000 students from kindergarten to grade 12 that visit the Museum each year, but is also accessible to the hundreds of thousands of annual visitors.

A Discovery Room offers a variety of handling objects; visitors and students will have the ability to see, touch and understand the skill and intellect used to create these items. Make and Take activities, the successful Storybook Reading program and a rotating calendar of Native presenters and educators will further illustrate the subject matter in the adjoining education workshop. The workshop will also be equipped with technology that will allow webcasting and distance learning. Throughout the center's development, six Native advisers – scientists, science educators and scholars, engineers and inventors – advised the project team, again demonstrating the influence and continuity, as well as the cultural knowledge and methodical insight of Native peoples through the present day.

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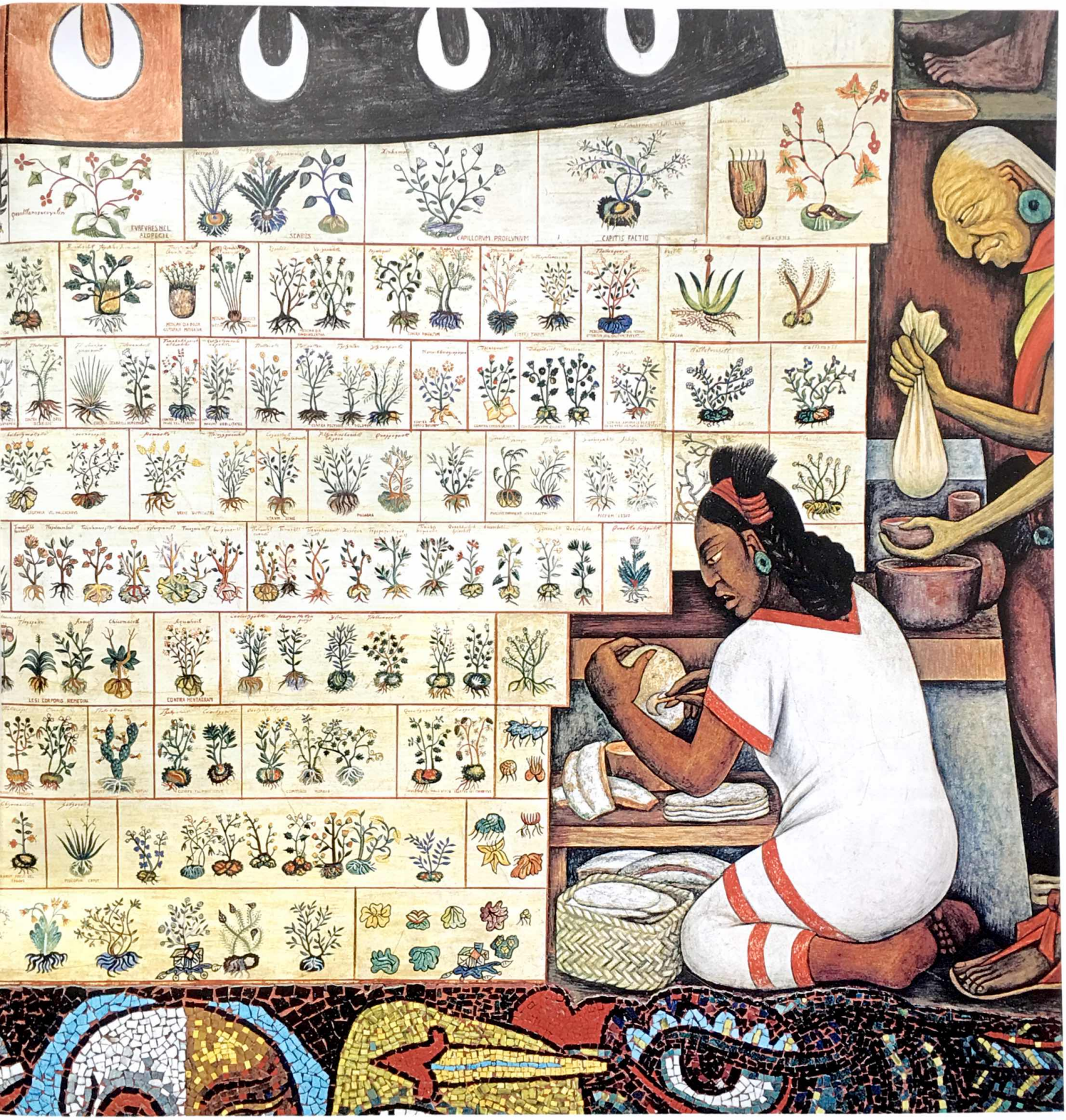


LEFT: A student explores the Decode the Codex interactive station built by a design contractor in Dublin, Ohio, before installation in the activity center, January 2018. Visitors match photos of real plants with watercolor illustrations from the earliest known medical book of the Americas, created for the King of Spain in 1552 by two Nahua men. Known as a codex, it features the Nahuatl language and Latin translation with Nahua artist illustrations. ABOVE: Mexican artist Diego Rivera included pages from the Codex de la Cruz-Badiano in his 1953 mural, *The History of Medicine in Mexico: The People's Demand for Better Health.* Diego Rivera (1886-1957) ©ARS, NY. Centro Médico Nacional La Raza, Mexico City, Mexico

A GALLERY OF **INVENTIONS**

PHOTO COURTESY OF NMAI ARCHIVES

Carved ivory and hide snow goggles, probably Inupiaq, ca. 1890. Alaska. 23/5639

1. SNOW GOGGLES: Snow goggles are a type of eyewear traditionally worn by the Inuit people of the Arctic – a predecessor of the world's first sunglasses which were developed about 2,000 years ago. Designed with narrow slits which reduced the amount of harsh sunlight hitting the eyes reflecting off snow and ice, they protected the hunters from snow blindness. Snugly fit against the face, the only light entering is through the slits of the goggles, still providing a wide range of vision. Traditional materials for making them included whale bone, walrus tusk ivory, animal hide, tree bark and driftwood.

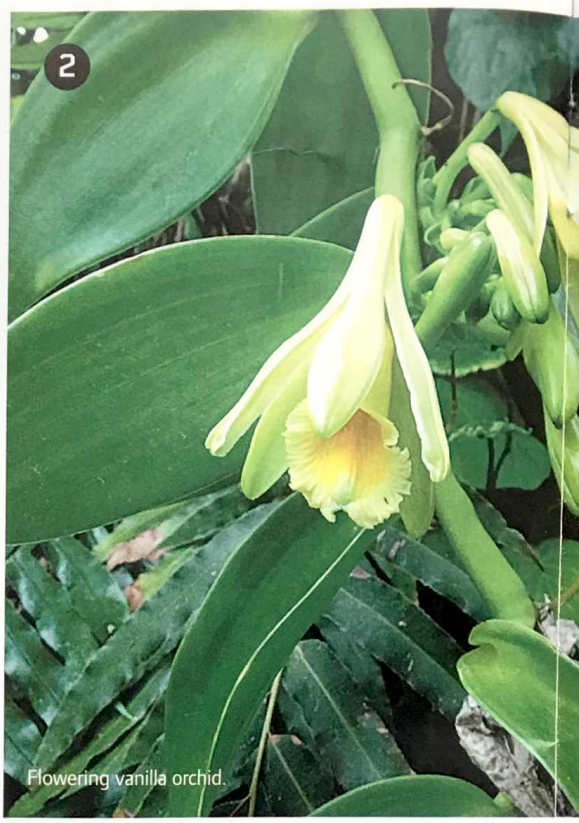
2. VANILLA: What would the world be like without our many uses of vanilla? From ice cream to baked goods and flavored drinks, vanilla has become a major influence on the way we experience and season various foods. Vanilla was cultivated by the Indigenous peoples of Mesoamerica, in Papantla of north-central Veracruz, Mexico, as well as in the Maya cultural area. For the Totonac people, vanilla is known as *xanath*, also the name used for a liquor made from an extract of the plant. It is continually grown there today. The orchid *Vanilla planifolia* is one of the few edible species of its kind.

3. BLUEBERRIES: Another important contribution, wild (lowbush) blueberry *(Vaccinium angustifolium)* originated in eastern/midwestern Canada and the northeastern/mid-Atlantic/midwestern United States. It is a superfood, known for its many health benefits, including maintaining bones and skin, as well as lowering cholesterol.

4.CACAO (CHOCOLATE): Cacao, a bean that is the primary ingredient in chocolate, has delighted our taste buds for centuries. It is harvested out of a small football-sized pod on a tree which flourishes in warm temperatures and year-round moisture. Perhaps as early as 1500 B.C., the Olmecs of southern Mexico were probably the first to roast, ferment and grind cacao beans for drinks and thin porridges. When thinking about the history of chocolate, most people think of its more recent development in Europe instead of its origins in Mesoamerica. Cacao was predominantly significant as a sacred cuisine, symbol of status and cultural cornerstone in pre-modern Maya society.

5. CHICLE: Many of us couldn't imagine going a few days without chewing a piece of gum. When a sapodilla tree is cut a resin known as chicle latex emerges, which Native people in Mesoamerica harvested and was used as the base of today's chewing gum. Later, many manufacturers replaced chicle with a manmade polymer. The same company that makes car tires, Goodyear, currently produces the base for various gum products. Chicle is not completely forgotten and is being revived as a sustainable alternative to modern gum.

6. RUBBER BALL: The Olmec, Maya and Aztec of Mesoamerica made rubber using natural latex – a milky, sap-like fluid from rubber trees and mixed it with juice from morning glory vines, which makes the latex less rigid. Ceremonial ball games were played throughout Mesoamerica and, to this day, a version of the Aztec ball game called *ulama* continues to be played in Sinaloa, Mexico, using balls made from natural latex. The oldest ulama court, in the Mexican state of Chiapas, was built around 1500 B.C.



Flowering vanilla orchid.

PHOTO COURTESY OF NMAI

NMAI Hispanic Heritage Month event, 2017.

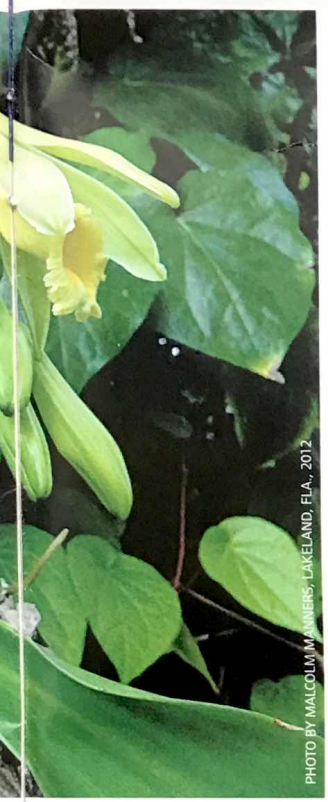


PHOTO BY MALCOLM MANNERS, LAKELAND, FLA., 2012

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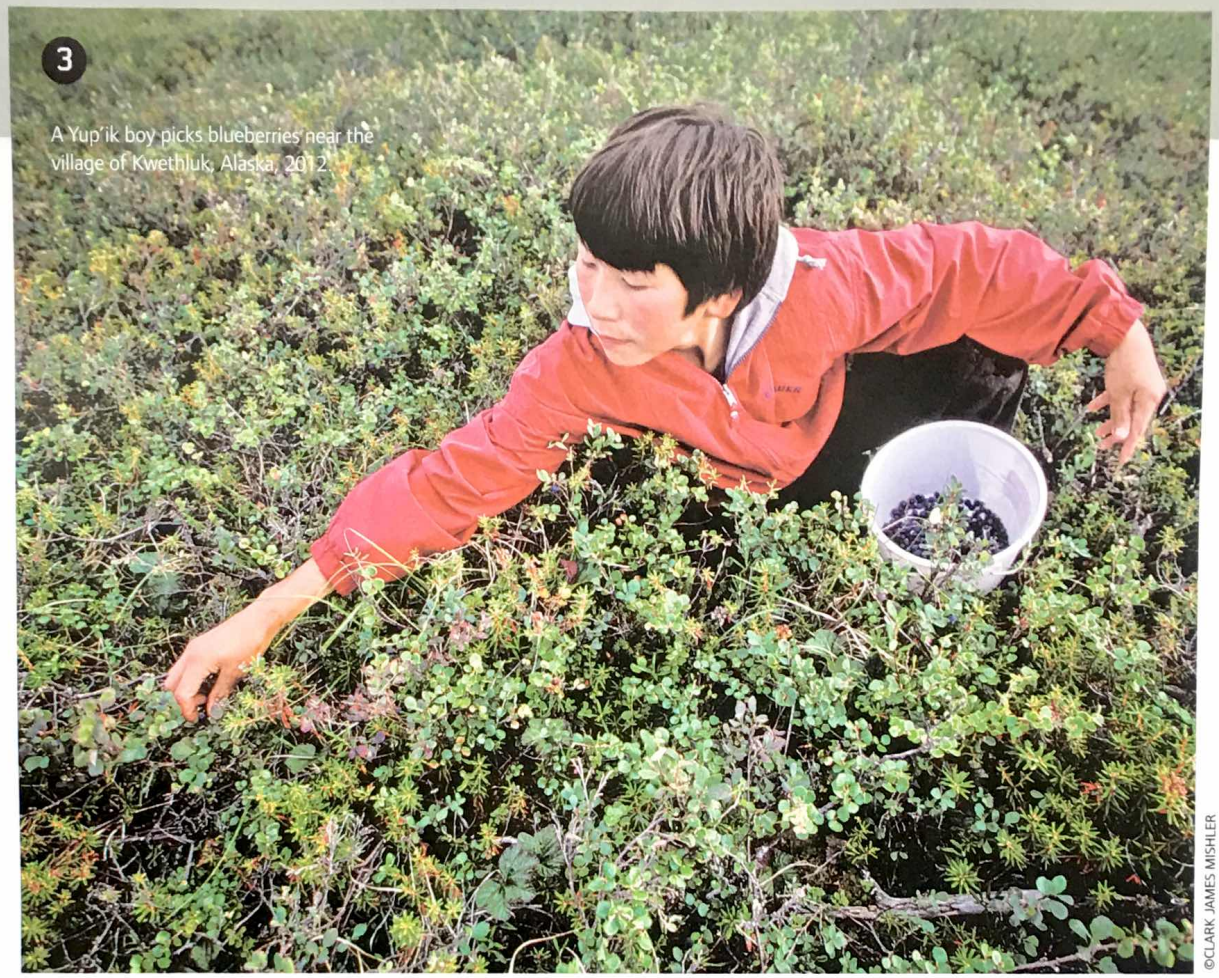
A Yup'ik boy picks blueberries near the village of Kwethluk, Alaska, 2012.



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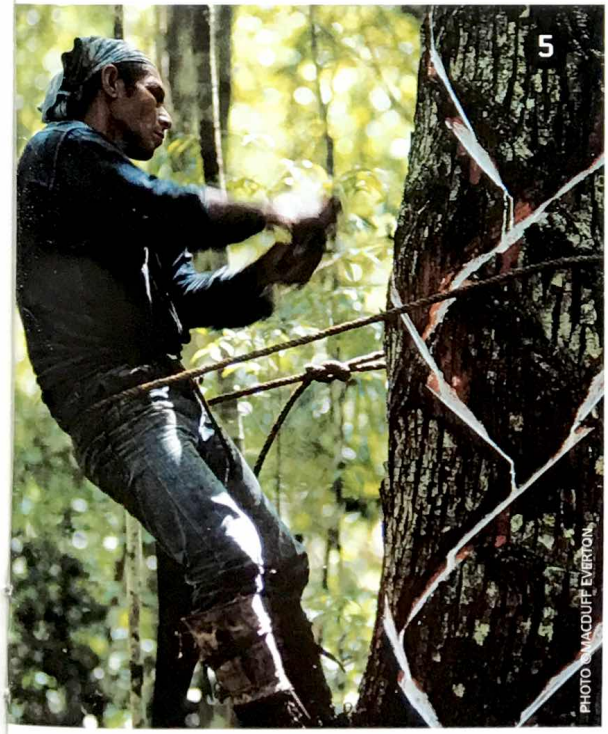

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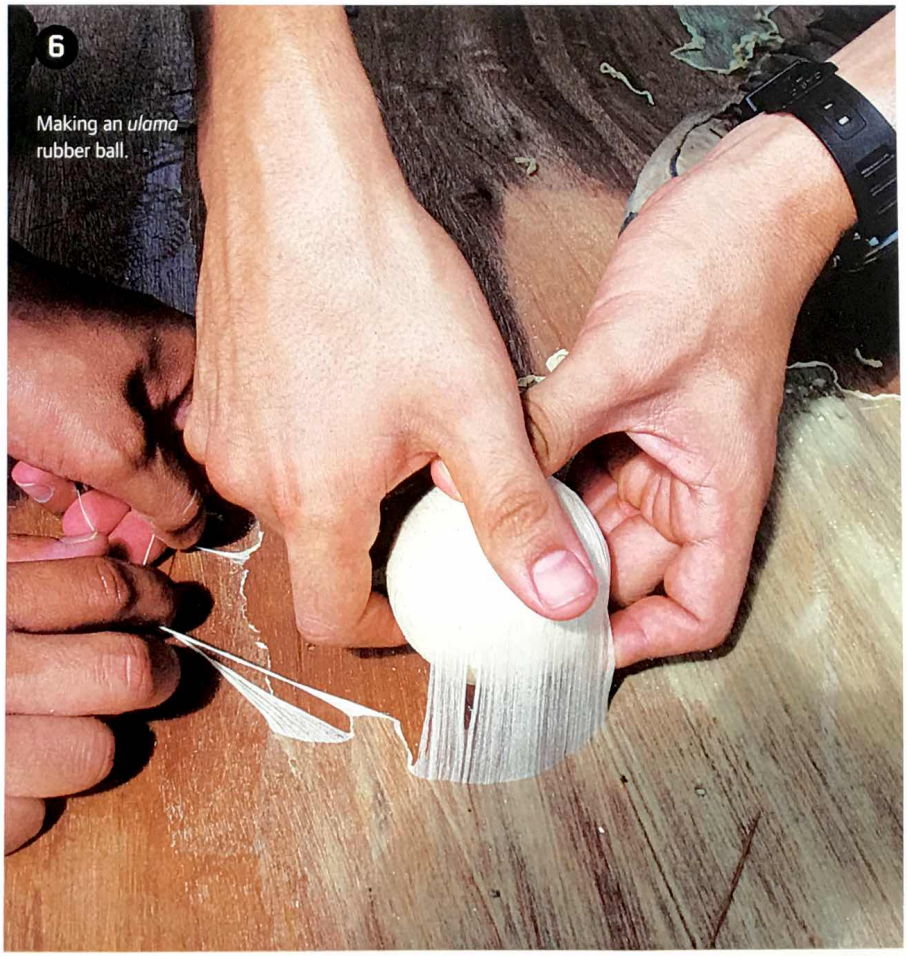
PHOTO BY MACDUFF EVERTON

Quintana Roo, Mexico; Maya *chiclero* making cuts in the bark of a chicozapote tree to capture the resin, 1971. *Chicleros* can only work during the rainy season and must shift locations so that the trees can rest 4–5 years between each tapping. ©Macduff Everton; *The Modern Maya: Incidents of Travel and Friendship in Yucatán* by Macduff Everton, University of Texas Press, 2012.



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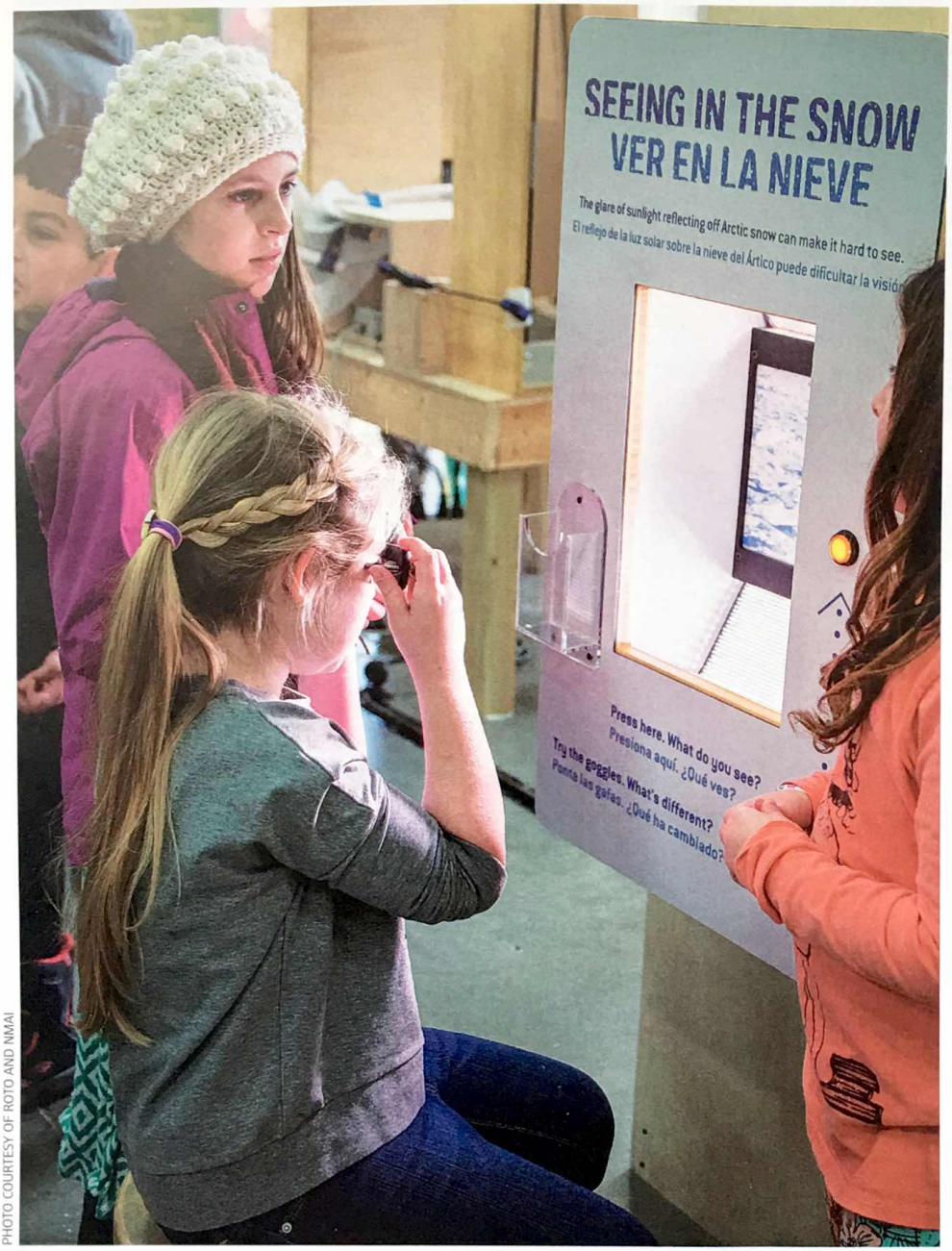
Making an *ulama* rubber ball.

PHOTO BY MANUEL AGUILAR-MORENO



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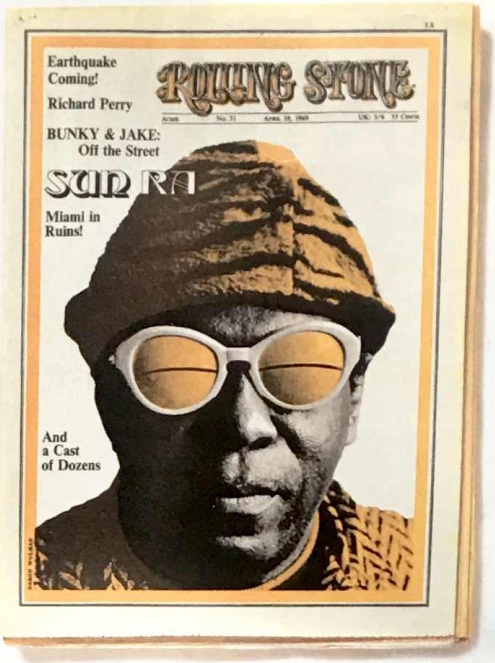

ABOVE: Students learn about the science of snow goggles while testing an interactive station, 2018.
TOP RIGHT: *Rolling Stone* magazine cover, #31 Sun Ra, April 19, 1969.

What does it take to create a suspension bridge with natural fibers? Hundreds of years ago, the Inka constructed suspension bridges with ropes of grass that had the ability to hold people, armies, animals and heavy loads over extremely deep gorges. Engineers utilize the same core physics principles today when building bridges. Two thousand years ago, the Maya civilization in Mesoamerica was one of only three cultures on earth to invent the concept of zero. These are just some examples of the ideas explored in the imagiNATIONS Activity Center.

Where would we be without potatoes, chili peppers, blueberries, tomatoes and many other staple forms of nutrition? Contrary to popular belief, all of the foods represented in the center were first cultivated and domesticated by Native peoples, who also ascertained their primary uses. Genetic modification was and remains a technology developed by Indigenous societies.

Tomato domestication was a two-step process, beginning in South America and continuing in Mesoamerica. It had attained a fairly advanced stage before traveling to Europe in the 15th century. It continued to be developed there in the 18th and 19th centuries. Both the tomato and potato had eventual destinations in European countries. These primary foods have become essential to global sustenance.

Many people may think of Ireland when potatoes come to mind. However, their origin is in South America with about 4,000 distinct varieties – many of which continue to grow in the Andean highlands of Peru, Bolivia and Ecuador. Wild potatoes contain solanine and tomatine, toxic compounds thought to guard the plants against harmful organisms. Animals like the guanaco and vicuna (relatives of the llama) have learned to lick clay before eating deadly plants. Native people of the Andes also learned to submerge wild potatoes in a mixture composed of clay and water. In

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Native Foods Feed the World

For generations, Native Americans harnessed the potential of natural grasses, trees, bushes and even cactus to breed edible crops. Today, four of the top ten crops that feed the world originally came from Native American farmers: corn, potatoes, cassava and tomatoes.

The imagiNATIONS Activity Center explores many of our everyday foods that originated in the Western Hemisphere due to the innovation of Native farmers. Please note: This map graphic is still a work-in-progress; the complete version will be on view in the center's Nutrition section.

1. MAPLE SYRUP/SIROPE DE ARCE
2. JERUSALEM ARTICHOKE/PATACA
3. WILD RICE/ARROZ SILVESTRE
4. BLUEBERRY/ARÁNDANO
5. SUNFLOWER/GIRASOL
6. CRANBERRY/ARÁNDANO ROJO
7. COMMON BEAN/FRIJOL COMÚN
8. TURKEY/PAVO
9. PECAN/NUEZ DE PECÁN
10. PAPAYA/PAPAYA
11. CORN/MAÍZ
12. STRING BEAN/EJOTE
13. VANILLA/VAINILLA
14. ALLSPICE/PIMIENTA DE JAMAICA
15. SQUASH/CALABAZA
16. PRICKLY PEAR/TUNA
17. AVOCADO/AGUACATE
18. CACAO/CACAO
19. SWEET POTATO/BATATA
20. TOMATO/TOMATE
21. CASSAVA/MANDIOCA
22. PINEAPPLE/PIÑA
23. CASHEW/MARAÑÓN
24. GUAVA/GUAYABA
25. POTATO/PAPA
26. QUINOA/QUINUA
27. LIMA BEAN/FRIJOL BLANCO
28. PEANUT/CACAHUETE
29. CHILE PEPPER/CHILE

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Support for the ImagiNATIONS Center

As of December 2017, lead support for the National Museum of the American Indian's imagiNATIONS Activity Center in New York is provided by the City of New York, with support from the Office of the Mayor, New York City Council and the Manhattan Borough President's Office through the Department of Cultural Affairs; Valerie and Jack Rowe; The Rockefeller Foundation; and the Margaret A. Cargill Foundation.

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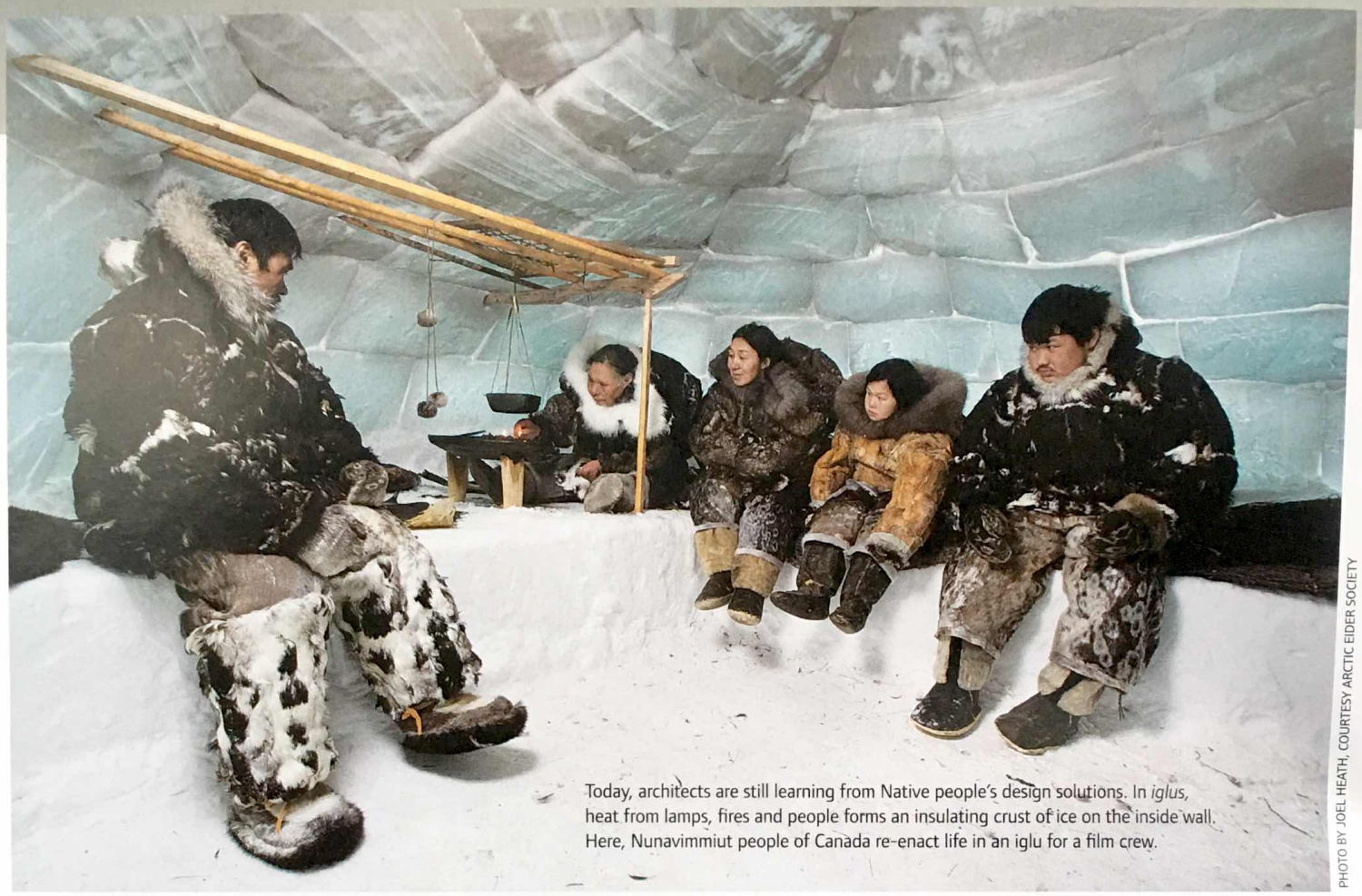

Today, architects are still learning from Native people's design solutions. In *iglus*, heat from lamps, fires and people forms an insulating crust of ice on the inside wall. Here, Nunavimmiut people of Canada re-enact life in an iglu for a film crew.

PHOTO BY JOEL HEATH, COURTESY ARCTIC EIDER SOCIETY

time, less-toxic potatoes were bred. Since they are preferred for their survival in frigid temperatures, some of the older, lethal forms endure. Clay dust continues to sell in Peruvian and Bolivian markets to complement these particular varieties.

We also owe many everyday medicines and lotions to Indigenous ingenuity. Chili peppers originated in eastern/central Mexico and central Bolivia. A total of five different species derive from the familiar *Capsacium* genetic line. Linda Perry, an archaeobotanist at Smithsonian's National Museum of Natural History, determined that people in the Americas began cultivating chilies more than 6,000 years ago. Not only were they eaten or integrated with other ingredients, chili peppers contain capsaicin, which is used in pain-relief creams and patches. From Mexico to South America, Native people placed spicy chili peppers into medicines for aches and pains. *Simmondsia* is a shrub that contains seeds known to produce a very useful oil. In the American Southwest, tribes such as the Tohono O'odham pressed oil from jojoba seeds to treat sores, cuts, bruises and burns. Today, many soaps, shampoos and skin creams include jojoba oil.

Gaetana DeGennaro (Tohono O'odham), a member of the project team responsible for content development and management of the new center, reflected on the center's mission. "Visitors often come to the Museum and view objects in the galleries solely as aesthetically beautiful works of art, which they are," she says. "However, they are not always taking into account the makers' interconnectedness with and his or her understanding and knowledge of the environment. With the opening of the imagiNATIONS Activity Center, I look forward to visitors encountering new perspectives and gaining insight about Native inventions and their impact."

According to DeGennaro, the activity center will present Native peoples, their resilience, creativity and scientific prowess in a compelling way through handling objects, interactive media stations and hands-on activities. She adds, "Visitors will be encouraged to learn about how many different Native cultures impacted our daily life today – from the ancient Indigenous farmers of Mexico who invented corn through a process called cross-breeding to the remarkable precision used by the Inuit people of the Arctic to engineer the kayak – expertise spanning thousands of years, still very much in use." ✸

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PHOTO COURTESY OF NMAI ARCHIVES

An Arctic hunter's clothing is an insulated, waterproof system like a modern wetsuit. Hand-colored lantern slide portrait of Uliggaq (Ella Pavil), dressed in a seal-gut parka, 1935. Alaska. L02290