

turning increasingly to Baker's group for advice on scientific matters. The NATIONAL JOURNAL quoted Baker at the time as saying, "There is a need for someone to serve as an interface between Washington and the scientific community." Baker said the council scientists would "nominally report through NSF but actually will consider themselves White House advisers," dealing with such matters as energy, environment and transportation.

Before the Congressional committee, Baker spoke with authority, usually saying "we decided" when speaking of Administration science policy. The shift from OST to NSF, he said, was only part of a broader program to move Federal science policy away from "performance systems" (geared to solve only specific, narrowly defined problems such as developing weapons) to "economic systems" (in which free-enterprise dictates which projects are to be pursued). "A quite different strategy of research and development is necessary—one that is close to what has been developed in private industry."

The whole scientific community must become committed to decision-making on a "free-will, free-market basis." Gone are the days of the 60's with their "widespread illusion" that society would support "research and development as ends in themselves, as the cultivation of science as a kind of new national sport."

The committee did not determine to what extent these views were indeed those of President Nixon, nor to what extent Baker and other members of the re-election council influence Administration science policy. But in light of Baker's outspokenly critical views on the Environmental Protection Agency and his ideas on overhauling the Administration's science policy apparatus, the question of his influence vitally affects the scientific community. □

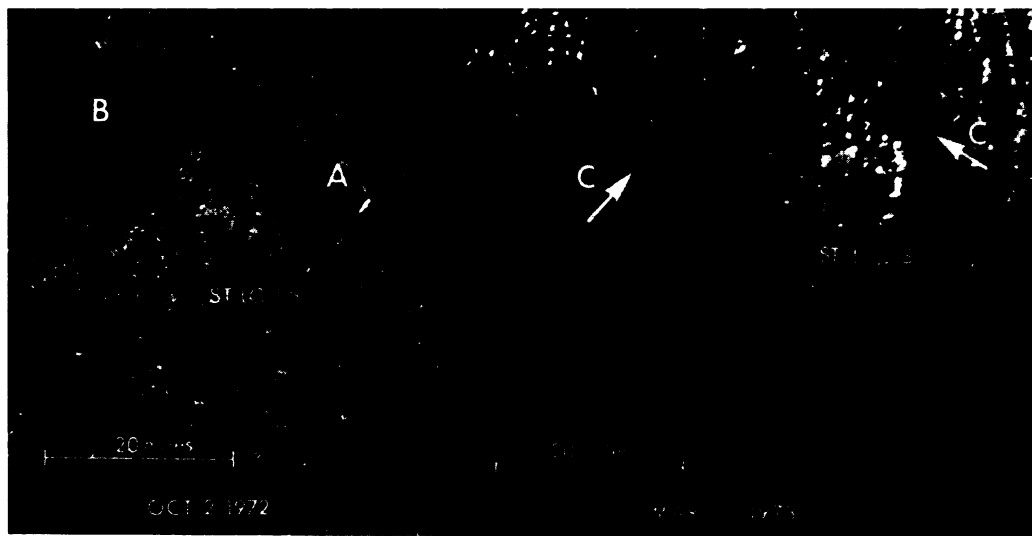
One year and 70,000 photos in space

The Earth Resources Technology Satellite is one year old this week.

Launched July 23, 1972, ERTS (SN: 6/24/72, p. 408 and 3/31/73, p. 214) has orbited the earth more than 5,000 times and produced more than 70,000 images of three-fourths the earth's surface, including all of the land mass of the United States. Three hundred investigators in the United States and 38 foreign countries are using the imagery.

At a conference this week in Philadelphia sponsored by the builders of the spacecraft (General Electric Co.'s Space Division) scientists and managers reviewed the results of this first year of earth observation from space.

July 28, 1973



Space view: The Illinois, Missouri and Mississippi rivers before and after flood.

"During its first year in orbit, ERTS has produced a wealth of scientific data that have exceeded our most ambitious prelaunch expectations," says Daniel J. Fink, GE vice president.

"We know of nothing we hoped or expected to see that we haven't seen," says John DeNoyer, head of the Department of the Interior's earth observation program. "Only the skeptics have been surprised by ERTS."

The accomplishments of the ERTS system over the past year tend to support these accolades.

For the first time, geologists and hydrologists have a complete overview of a flood: the Mississippi River and its tributaries before, during and after the disastrous spring floods this year. Since the spacecraft passes over the same area of earth every 18 days, scientists get a repetitive coverage that allows them to detect changes. They were able to make very accurate "automatic maps" of the flooded areas from the imagery, says DeNoyer. The photos were used in evaluating flood insurance claims. The government has used the photos to determine the impact of the floods on agriculture and the best methods of flood control.

The spacecraft photos allowed the entire state of Rhode Island to be divided into 11 land-use categories with 90 percent accuracy. Officials of Los Angeles County were able to differentiate high-, middle- and low-income residential areas. Synoptic views of large areas, such as the state of Alaska, could be assembled with "scissors and Scotch tape." It takes six months to produce equivalent information by normal means, according to William Nordberg of NASA.

A map of the Eastern Seaboard from New York to Virginia was made with nine ERTS images. At least 100,000 images would be required to prepare the same map with conventional aircraft.

Cropland in southern California af-

flicted with the cotton bollworm is being monitored by ERTS to ensure compliance with state regulations for dealing with diseased crops.

New faults, fractures and other geological features associated with mineral and petroleum deposits, as well as results of movements of the earth's crust, have been identified. South Africans have found features in their country resembling features present in the nickel-rich areas of Canada. As a result, new South African mining activities are expected to begin soon.

Three "utterly striking" examples of plate tectonics features can actually be seen on the imagery in the Himalayas, Alps and Alaska, says Nordberg.

ERTS also revealed a line that extends all the way from California to Canada. The line could be related to a previous episode of plate movements. Now the geologists are wondering if that line intersects somewhere another long line that begins in the Yukon and extends to that area of Canada.

ERTS imagery is going to court. A Vermont scientist has traced a pollution plume in Vermont waters to a paper mill in Ft. Ticonderoga, N.Y. The picture has been submitted, along with a NASA affidavit, to Vermont's attorney general as evidence in court. □

The Calico controversy: Artifacts or geofacts?

The oldest proposed evidence of human habitation of the New World exists in the form of several hundred flint-like rocks collected in the foothills of the Calico Mountains near Yermo, Calif. Louis Leakey and Ruth Dee Simpson exhibited the chipped stones as tools made by early Americans. Geological evidence, they said, dated the stones and the site at between 50,000 and 100,000 years old (SN: 11/7/70, p. 364). But since this theory was first put forward, a number of

New council for science and society: 'Social consequences for good or ill'

Last September the British journal *NATURE* carried an article titled "A Corporate Conscience for the Scientific Community?" In it retired lawyer Paul Sieghart summarized a two-year study by him and six other British scholars that suggested creation of a new body to consider the social consequences of science. The organization would be "organized by the scientific community itself and expressly charged with the task of informing the public in general, and the organs of government in particular, at the earliest possible time, of all scientific work likely to have important social consequences for good or ill."

Last week at the Royal Society in London the creation of such a group was announced. It is to be called the Council for Science and Society. It is believed to be the first organization of its kind.

Thirty-two prominent persons, including Nobel laureates Maurice H. F. Wilkins and Denis Gabor are members. Sir Michael Swann, chancellor of Edinburgh University and chairman of the British Broadcasting Corp., is chairman. Sieghart is vice chairman. Other members include astrono-

mer Sir Bernard Lovell, geneticist C. H. Waddington, psychiatrist Anthony Storr, historian Edward Crankshaw and writer and gerontologist Alexander Comfort.

One of the first subjects the council will examine is the control of human behavior, including mood-changing drugs and methods to determine sex before birth. The council plans to select six such projects for its first three years.

The hope is that the council, if it works well, will serve as a model for such bodies in other nations, much as the Royal Society did for scientific societies.

"[The council] is not committed to any view of scientific optimism or pessimism about the future of man," says its statement of objectives.

"It will try to identify areas of research in science and technology which could have important social consequences for good or ill, but which are not yet fully explored; to study these objectively; to attempt to foresee what their consequences might be; whether they could be controlled, and how, and to publish responsible reports designed to stimulate wide public debate."

archaeologists and geologists have been chipping away at it.

Vance Haynes of Southern Methodist University in Dallas said the site was probably 500,000 years old (SN: 2/6/71, p. 98). The artifacts would have to have been made by pre-Neanderthaloid peoples. And after more than a century of investigation, there is no evidence of significant human evolution in the New World. After six visits to the Calico dig, Haynes still believes the site to be 500,000 years old. In the July 27 *SCIENCE* he presents evidence for this date and proposes an alternative hypothesis for the origin of the flaked stones. Instead of artifacts, he says, the specimens may be geofacts—artifact-like phenomena of geologic origin.

The deposit from which the stones were taken, he says, was formed by a mudflow out of the Calico Mountains. The chert or flint fragments were therefore subjected to a two- to four-mile journey over rough ground. Fragments falling, tumbling and sliding down steep slopes can produce the same percussion fractures and battered edges a primitive flint knapper (chipper) would have produced by hammering the flints with tough igneous rocks. Tectonic stress and weather fracturing (root pressure, freeze-thaw cycles, etc.) are other natural processes Haynes cites as ways in which nature imitates the flint knapper's work.

Haynes also questions another piece of evidence used by Leakey and Simpson to indicate human habitation. What looked like a hearth was unearthed at the site. A group of wedge-shaped stones were set in a circle that could have been a fireplace. Tests of one of the rocks showed that the smaller end had a high amount of magnetism, indicating that it could have been subjected to high temperatures. Haynes

says circular formations of stones are not rare and the magnetism could have been produced by lightning. In conclusion Haynes says, "After examining, for the sixth time, the Calico site and specimens recovered . . . I find no evidence to alter my previous views—that is, that the evidence for artifacts remains unconvincing and that a natural origin cannot be precluded." □

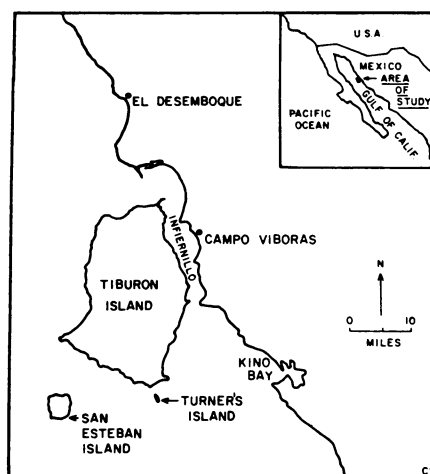
A grain from the sea serves as Seri's gruel

The first known case of a marine grain being used as a human food resource is reported in the July 27 *SCIENCE*.

Botanist Richard Felger of the University of Arizona and linguist Mary Beck Moser of the University of North Dakota learned of the practice while studying botany and the Seri Indians along the Gulf of California in Sonora, Mexico.

Zostera marina, or eelgrass, is harvested in the spring by the Seri Indians and has apparently been an important part of their traditional diet and culture for centuries. "Eelgrass has considerable potential as a general food resource for mankind," say Felger and Moser. "Its cultivation would not require fresh water, pesticides or artificial fertilizers."

Eelgrass, a widely distributed sea plant with an edible grain, grows along the coasts of North America and Eurasia. In spring, the upper stem of the plant, which bears the fruit, breaks off and floats on the surface of the water. The Seri harvest the grain in April when the plant is floating loose in large quantities close to the shore. The protein and starch content of the seed is similar to that of many terrestrial



Felger and Moser/*Science*
Indians harvest eelgrass in gulf.

grains in widespread use as food.

Once they harvest the eelgrass, the Seri spread it along the beach to dry and then pick out seaweed and debris. Traditionally, they toast it and grind it into a flour. The flour is cooked with water and made into a gruel. Generally, the Seri eat the gruel with other food, usually sea turtle oil or honey. A portion of the grain is stored for the rainy season.

Though eelgrass is primarily a food for the Seri, it is also used as a cure for diarrhea. It is piled over house frames for shade and it is fashioned into toys for children.

"We know of no other case of the grain of an ocean plant being used as a human food resource," write Felger and Moser. "The cosmopolitan distribution of *Zostera* in shallow coastal waters enhances its possible significance as a food plant. . . . Prejudices against strong and unfamiliar flavors do not present a complication since the flour is bland." □