

The Skylab 1 crew returns

The "master tinkers of space", as NASA Administrator James Fletcher called the Skylab 1 crew, returned to earth last week to begin a month-long series of debriefings and medical tests prior to the launch of the second Skylab crew, scheduled now for July 27 or 28. Astronauts Charles Conrad, Paul J. Weitz and physician Joseph Kerwin splashed down in the Pacific at 9:50 a.m. EDT, Friday, June 22 and within 40 minutes were on the deck of the carrier U.S.S. Ticonderoga. They flew to San Clemente, Calif., to see the President and visiting Communist Party leader Leonid I. Brezhnev of the U.S.S.R. before returning to Houston late Sunday night.

The crew set a new record in space of 28 days and Commander Conrad chalked up his own personal record for the most time in space for one man—1,177 hours and 38 minutes. The crew returned more than 30,000 pictures of the sun, 14,000 pictures of earth (including 31 states and nine foreign countries), photographs of the stars and many other scientific goodies.

Before getting out of their Apollo spacecraft, Kerwin took the blood pressures and pulse rates of himself and the other two crewmen. Only Kerwin found it necessary to inflate his pressure suit to help his body accommodate the sudden return to gravity. The pressure suit forces the blood, which upon return to gravity tends to collect in the legs and feet, back up to the heart.

All of the men experienced some degree of uneasiness, but Kerwin suffered the most from nausea and dizziness.

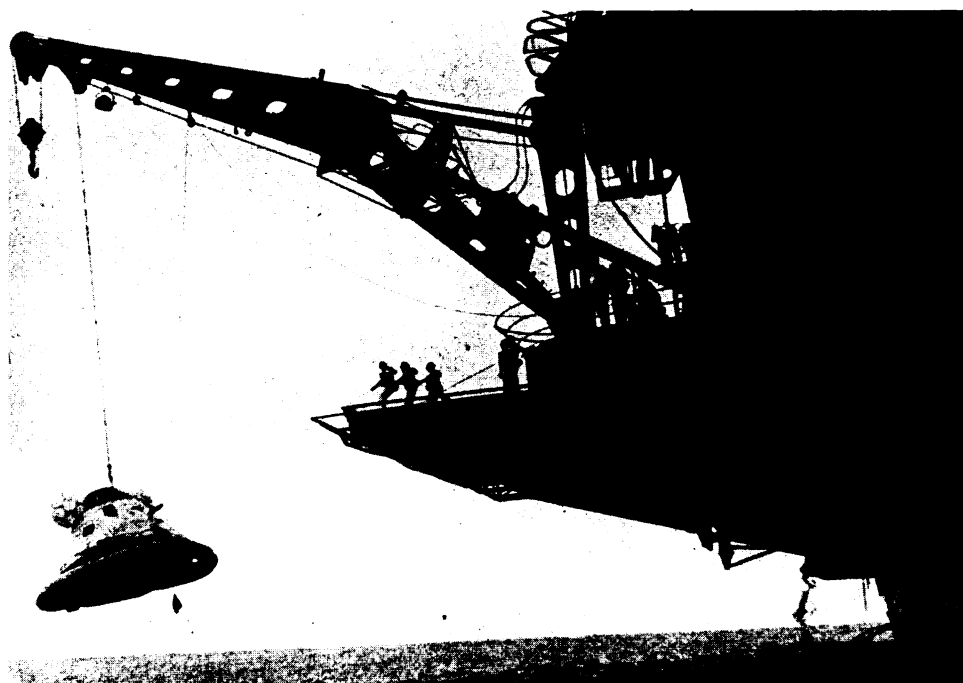
All of the men lost an inch or so in their calves—some muscle tissue as well as fluid. All lost weight: Conrad, three and three-fourths pounds; Kerwin, six and a half pounds, and Weitz, eight and one-fourth pounds.

If the crew experienced some uneasy moments back on earth, they had had none during their adaptation to weightlessness. The crew reported no motion sickness or illness during their stay in the space laboratory. Kerwin showed signs of deconditioning during the lower-body negative-pressure tests in Skylab. (In this test, the blood is forced to the lower body much the same way as occurs upon return to gravity.) "The tests had to be terminated twice because of presyncopal [fainting] symptoms," Hawkins said. None of the men had problems in space completing the tests on the bicycle ergometer, which measures metabolic and exercise capacity.

By midweek none of the crewmen had yet returned to their preflight baselines. But this was expected. All of the Apollo crewmen took at least two to three days to return to normal after the 12-day trips to the moon. This week, doctors began the analyses of the blood, fecal and urine samples returned from space which will reveal chemical changes in the body. Only time and such tests will tell the story of what weightlessness does to the body. □

Spacecraft and astronauts are hoisted to the deck of the U.S.S. Ticonderoga.

NASA



Science and Man in the Americas

In a city built upon and surrounded by the legacy of an advanced civilization of the past, scientists from 20 Western Hemisphere nations are engaged in an unprecedented meeting this week and next to exchange research results and to discuss the problems of the present and the potentials of the future.

The site is Mexico City, a sophisticated, modern metropolis built on the ruins of the capital city of the Aztec empire, destroyed so effectively by the Spanish conquerors 450 years ago. Everywhere there are simultaneously disquieting and reassuring signs for both the transience and the continuity of civilization and culture. It is an exaggeration to say that the meeting can help modern society choose between termination or continuation. The one purpose is certainly to help steer the path toward the latter. Another is to promote friendships and contacts among hemisphere scientists.

The event is a special 14-day inter-American conference on Science and Man in the Americas. It is a joint undertaking of the United States' American Association for the Advancement of Science (AAAS) and Mexico's two-year-old National Council of Science and Technology (CONACYT).

"Never before has such a diverse array of important scientific and technological subjects of concern to an entire hemisphere been discussed in full public view over so long a period of time by so many experts from so many different nations," said Glenn T. Seaborg, co-chairman, in opening ceremonies attended by the President of Mexico, Luis Echeverria. His fellow co-chairman, Gerardo Bueno, director general of CONACYT, expressed hope that the exchange of ideas would lead to concrete actions for the benefit of human welfare, and especially in Third World countries.

Not all the hopes of the meeting organizers may be fulfillable, but the conference did seem to be going well. In interviews with *SCIENCE NEWS* as the first week of the meeting neared an end, AAAS President Leonard Reiser said he was very pleased with it, AAAS Chairman Seaborg called it "a resounding success" and Jorge A. Vargas of CONACYT exclaimed, "It's beautiful, beautiful."

With a majority of the sessions yet to be held, registration had already reached nearly 4,000. Organizers predicted it might rise above the anticipated 6,000 mark. Most participants were from Mexico and the United States, but at least 20 other countries in the Americas and a half dozen else-

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where were represented. Included were four scientists from China who had quickly made plans to attend after receiving invitations from Seaborg in Peking less than a month earlier.

Most participants seemed to delight in this meeting and the chance to meet colleagues from throughout the hemisphere. A session on volcanism in Mexico and Central America was the first chance for many of the volcanologists to get together. A session on archaeoastronomy in pre-Columbian Mesoamerica was the first such meeting ever held. Sessions on nutrition and new food technology and on earthquakes and earthquake engineering ended in congratulations over their success.

Not everyone was happy with the meetings. Half a dozen or so persons from the Science for the People organization in the United States set up a small table with literature branding the conference "a perpetuation of U.S. economic and cultural expansion into Latin America." Their presence was low-keyed, however, and they made no attempt, at least during the meeting the first week, to disrupt sessions as they had at previous AAAS meetings.

One irony was that the meeting itself contained sessions related to such matters. There was an entire four-day session devoted in part to a critical examination of the role of multinational corporations in the economies of foreign nations, a timely and politically important issue in Latin America.

CONACYT's Bueno spoke out on a related matter: "Up to now, technology transferred from rich countries to poor nations . . . often has been uneven

for the latter. . . . Generally, technologies have not been adapted to the standards of the developing countries. . . . Science and technology in the Third World should be used for their own interests and be independent of those followed by industrialized countries. This implies the adoption of a different pattern, with little or no importance to expensive research with military goals and those devoted to encourage a consumption society."

Other sessions dealt with such important matters in Latin American countries as population, ocean resources, the development of arid land and energy for development.

In a major address to the conference, Seaborg called for putting "science and technology to work more constructively and humanely on an international scale." He suggested that AAAS might join with its sister associations of science in Latin America "to create a true American Association for the Advancement of Science—an association in which the term American represents a broader and true meaning."

Reiser, the current AAAS president, has also proposed such a move. He told SCIENCE NEWS he hoped the AAAS could have a special meeting in Canada in the next few years and then plan inter-American meetings every two to five years. "I think the AAAS would make a greater contribution to science if we interpreted 'American' broadly."

This and the following article and the articles on page 423 open our coverage of the meeting in Mexico City. Further reports will appear in later issues.

A calendar mosaic from 1000 B.C.

Almost two years ago Alexander Marshack's book *The Roots of Civilization* burst upon the archaeological world with its thesis, based on detailed analysis of markings on bone artifacts, that paleolithic peoples in Europe had highly developed skills of cognition and of lunar notation (SN: 2/19/72, p. 124).

Now Marshack, who is a research associate at Harvard's Peabody Museum of Archaeology and Ethnology, has turned this analytic method to a New World artifact and found that it "documents the presence of prehistoric arithmetical, geometrical and technical skills of surprisingly high order. He believes it probably represents the symbolic lunar year, perhaps a particular year in some astronomical or ritual conjunction.

Marshack's subject is a unique mosaic pendant made of precisely shaped pieces of pyrite arranged in a geometrical pattern over a ceramic base. The mosaic was excavated illegally about nine years ago from the Olmec site of Las Bocas in West Puebla, Mexico. It is now in the St. Louis Museum of Art.

The mosaic has been dated at about 1000 B.C., making it the earliest Mesoamerican mosaic excavated so far. It is the most complex mosaic to come from Mesoamerica and is, surprisingly, also one of the most complex artifacts to come from a prehistoric context.

Olmec skill in carving and sculpting

New treaty facilitates joint atomic installations

A new, 10-year treaty of atomic energy cooperation signed last week by President Nixon and Secretary Brezhnev provides for construction of jointly administered installations and greatly expanded technology and personnel exchanges between the United States and the Soviet Union.

Taking the place of a series of two-year, ad hoc agreements between the two countries, the new treaty emphasizes cooperation in the areas of controlled thermonuclear fusion, breeder reactors and fundamental particle research.

Previously, joint atomic projects have been administered solely by the Atomic Energy Commission and its Soviet counterpart, but now the National Science Foundation, the National Bureau of Standards, universities and private, nonprofit organizations will also play an active role.

AEC Chairman Dixy Lee Ray briefed newsmen in Washington on the treaty's

implications, calling it a "significant milestone" in cooperation between the two countries. The magnitude and expense of conducting atomic and high-energy physics research has become too great for any one country to bear, she said, adding that joint, permanent installations, such as particle accelerators or reactors, could help ease the burden.

She was particularly optimistic about cooperation in the field of controlled thermonuclear fusion where both the United States and the Soviet Union can learn from each other's experience. "Scientific feasibility" of the fusion process may be demonstrated within a matter of months, she said, but cautioned that even with international cooperation, thermonuclear reactors would probably not go on-line until after the turn of the century.

(By "scientific feasibility" is meant the point at which more energy comes out of a controlled fusion reaction than was put into it to get it started. Several generations of successively larger-scale experiments will lie between the feasibility demonstration and

a practical thermonuclear reactor.)

Laser-induced fusion research was pointedly left out of the treaty. Though some scientists believe this approach would be faster in attaining a workable fusion reactor, some of the technology involved has serious military implications and is highly classified. Some informal information exchange between American and Soviet experts in the field has taken place, however.

The Soviet Union is considered to be far ahead of the United States in some aspects of breeder reactor technology, having constructed a 600-megawatt prototype in the Urals. Ray explained that the American approach has been to conduct development in sequential steps while the Russians have tried—apparently successfully—to solve the numerous engineering problems involved while actually constructing the reactors. Britain and France also have plants in operation.

At present, 10 American and Soviet scientists are working on atomic projects in each other's country. The new treaty should increase that number by a factor of four or five. □