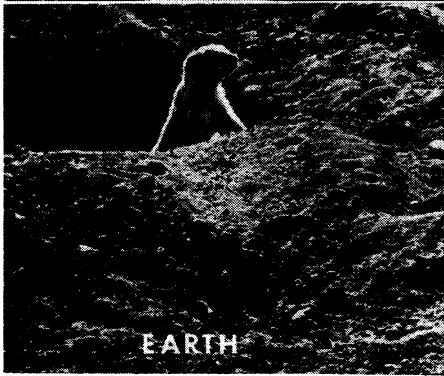
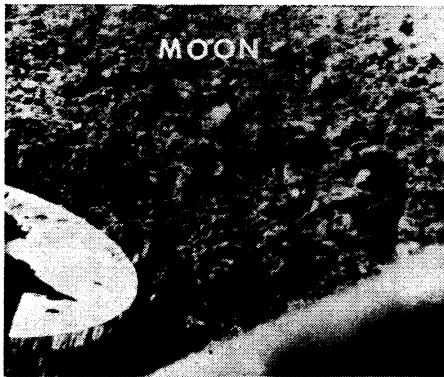


detect hydrogen, the most abundant element in the universe. Secondly, although it can identify most of the elements present, it cannot determine the chemical compounds into which they are combined. For both of these reasons, it is difficult to establish the presence of water, at least until the data has all been correlated enabling an exact comparison to be made with a basaltic type on earth.

Surveyor scientists have, however, established the probability that lunar materials have been affected by heat from within the moon itself, possibly from internal radioactivity or compression due to gravity. It is therefore likely that the lunar maria, or seas, which will include the Apollo manned landing site,



NASA

The moon's crumbly, earthy basalt.

were formed by lava flows filling up craters first created by meteor impact. The other, and much less likely, possibility is that the maria resulted from melting due to the meteor impacts themselves.

**Another likelihood** is that the moon may, like the earth, have a structure consisting of layers, though it may not have an earth-like molten core. "The odds are overwhelmingly in favor" of such a possibility, called differentiation, according to the scientists, although Cornell's Dr. Thomas Gold holds that the differentiation could have taken place in some larger body—such as the earth—of which the moon may once have been a part.

This, in fact, is now the favored theory of the birth of the moon, according to many scientists, and Surveyor 5's findings have added to its

weight. "There are three acceptable theories to the moon's origin," according to Dr. Eugene Shoemaker, the Geological Survey's chief astronomer. "One is that it is a double planet to the earth, another that it was captured by the earth's gravity and a third that it split away from the earth millions of years ago. We now have a little more support for the idea that the moon separated away from the earth."

**There are two** more Surveyors left in the current program. Surveyor 6, equipped with its own alpha-scattering experiment, is tentatively scheduled for next month. Surveyor 7, aimed for early next year, will be equipped with both an alpha-scatterer and a robot shovel like the one that dug trenches in front of the camera of Surveyor 3. It was also recently decided to attach a knob to the top of Surveyor 7's alpha box so that the shovel could nudge it from place to place, thus enabling it to get a more representative sample of its surroundings, all under the eye of the spacecraft's camera. Such nudging is ticklish, NASA emphasizes, however, and won't work if the craft is canted too far over, as Surveyor 5 almost was when it landed with one foot in a crater. ♦

#### THE NEXT 50 YEARS

### The future: still cloudy

"We are fast creating more than the body, more than the mind, more than the spirit can stand." The "we" is man and his creation is runaway technology, of which there was ample evidence at last week's Washington conference on "The Next Fifty Years."

You could breath into a machine and get your lungs full of honest-to-goodness Los Angeles smog. You could step into a booth, called the "Overloaded Eye," hung in sheets of chrome foil with a flashing strobe light in the center. The effect was something like a screaming siren of sight.

**Conference planners** even let loose a dozen mechanical robot-men, 12 inches high, which clacked and clattered around the exhibits. Every few seconds, knobs pushed out of their breast armor, lit up and chattered away like machine guns.

Reaction to the robot men was both amused and bemused. "They've taken over," said one conference participant. Another leaned down and addressed a robot: "What do you people want?" he asked.

Held by the American Institute of Planners, the conference was the second in a series of three annual international thinkfests, devoted to discovering guidelines for building a decent

future global human environment.

The 2,500 planners, scientists, philosophers, authors, clergymen, public officials and youth leaders included such men as French economist and philosopher Bertrand de Jouvenal; Swedish sociologist Gunnar Myrdal, who defined U.S. racial troubles in "The American Dilemma" 20 years ago and Herman Kahn, author of "On Thermonuclear War" and now director of the Hudson Institute in New York.

At the end of the three years, AIP hopes to have sparked enough discussion and gathered enough intelligence to enable democratic societies, particularly the U.S., to start planning their future. But last year's meeting ended in pessimism.

"It was clear," concluded the AIP, "that science is not prepared to deliver answers concerning an optimum environment, nor has man as yet measured optimum environment in his own terms. Further, it was evident that the values by which we might establish priorities to research optimum environment are not understood."

**This year** the conference focused on values and again there was a strong sense of pessimism, particularly regarding the willingness of democratic peoples to plan their future.

"Planning should not be attempted in an airy optimistic mood," warned Dr. Myrdal. "It must imply strivings against heavy odds. . . . What we need today is not a deceptive hopefulness . . . but the will to grapple with staggering difficulties. We need not the courage of illusory optimism, but the courage of almost desperation."

The United States, where planning has long been a dirty word, faces perhaps the heaviest odds, said Dr. Myrdal, because here the lower strata of people have remained "so inarticulate."

On the international scene, one of the greatest dangers is that the race issue will be infused into the international class struggle between rich and poor, said Dr. Myrdal. The fact is that all the rich nations are white while almost all poor nations are colored.

**There was** a pervasive feeling throughout the conference that the world faces changes so great they may mean a profound reformation of society. But like all revolutions, its form cannot be comprehended at the start, which is now.

Into the somberness, Hudson's Dr. Kahn brought a "scenario" of the world in 2017, developed with defense analysis techniques.

It appeared to inject a note of scientific sanity and precision—but it was as easy to puncture as the generalities.

Based on the assumption that certain world trends will continue as they have for the past eight centuries, Dr. Kahn

speculated that in 2017 industry will lose its central position in society, as agriculture did some centuries ago; efficiency will be less important and the market place will play a diminishing role; much of the world will be affluent and society will place more emphasis on "social accounting"; there will be a growing quest for "meaning and purpose."

Of all the concepts presented, Kahn's was the most simplistic, charged British socioeconomist Robert Theobald. "It says the world gets bigger and bigger and bigger."

But, said Dr. Theobald, "there are people in this society who are planning to destroy it in a relatively brief

time—people who have lost hope. Internationally, the world is splitting between rich and poor. For the first time each of us and each of our groups has the possibility of destroying the other, or will have soon."

The Kahn approach has very little use, said Dr. Theobald, and it is misleading when it assumes the disparity between rich and poor will lessen.

As if in illustration, Negro author Claude Brown ("Manchild in the Promised Land") described the expectations of American youth. The expectations are bleak, said Brown. "Youth doesn't expect the country to survive long enough as a viable society to offer anything." ♦

report, originally due Aug. 26, is expected to be ready this month. It should make strong recommendations for control of oil release from tankers cleaning their tanks at sea.

The beaches are already chronically suffering from relatively minor oil



Death of Gulftrade; birth of problem.

pollution apparently caused by passing ships flushing out their empty tanks with seawater. Some resorts along the coast are forced from time to time, to provide, as a service to guests, a can of gasoline and rags near the beach to clean the oil from their feet.

The divers' efforts were spurred by Representative James J. Howard (D-N.J.), whose district includes the New Jersey shore resorts; he visited the site of the Torrey Canyon disaster in Britain earlier this year.

As part of the larger study, the Coast Guard has investigated four of the 100 tankers known to be on the bottom. Three, the Gulftrade, the R.P. Resor and the Varanger, a Norwegian, lie in about 90 feet of water off New Jersey. The fourth, the British tanker Coimbra, lies just off Montauk Point on Long Island, N.Y.

But what of the 96 untouched hulks? Their condition, says Transportation Secretary Alan S. Boyd, can be tentatively deduced from study of the first four wreck sites. "We hope we can draw some reliable conclusions," Boyd says.

Coast Guard technicians will attempt, for example, to compare the present size of the metal samples with their known size when they were submerged. They hope to produce graphs showing the rate at which the tankers are corroding. Since the ships were all built in the 1930s or earlier, however, basic data on the hulls are hard to find.

Chemical analyses of water, oil and mud samples, it is hoped, will enable the Coast Guard to relate their composition to the rate at which the ships are corroding.

The study would take three weeks, Secretary Boyd said on Sept. 8. As of last week, however, the Coast Guard had not released any results and no

## DEEP SEA POLLUTION

### Time bombs off the Atlantic coast

A hundred oil tankers sunk by Nazi submarines in World War II rust on the bottom along the East Coast of the United States. Until recently, their whereabouts were of interest only to fishermen and an occasional scuba diver.

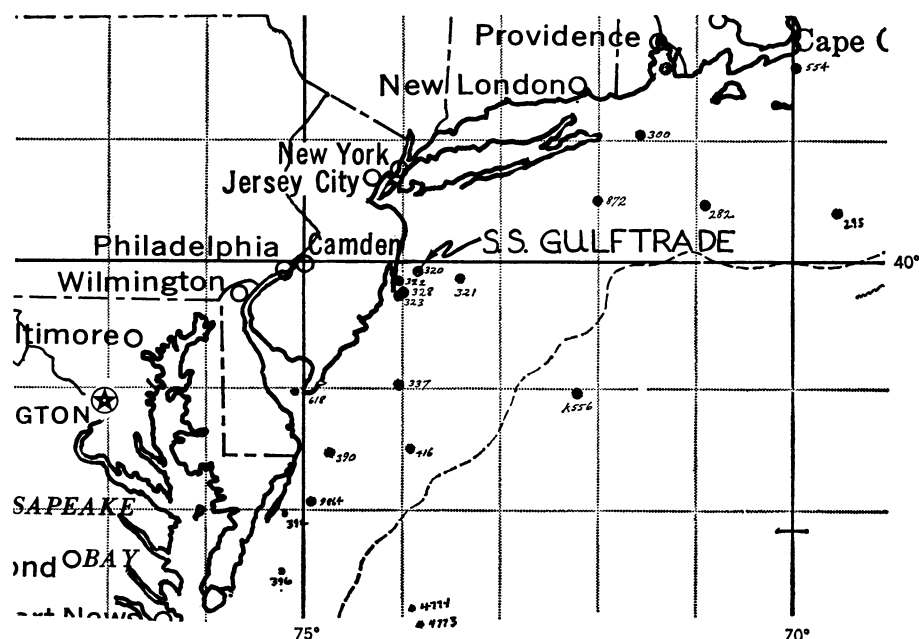
Their peace has now been broken. Coast Guard divers in August began hacking samples from the hulk of the Gulftrade, 12 miles offshore and 38 miles northeast of Atlantic City, N.J.

The Gulftrade carried four million gallons of heavy bunker oil when it was torpedoed early on the morning of March 10, 1942. While some oil was lost through the torpedo hole, much

of it apparently went to the bottom with the ship.

If the oil—or even part of it—is still there, beaches up and down the East Coast are in danger of the kind of disaster that afflicted vast areas of England and France after the Torrey Canyon wreck in March. At four million gallons per tanker, the possibility—however remote—of a 400-million-gallon deluge of thick, black oil hitting the U.S. beaches was too much to ignore.

The Coast Guard began the study, as part of a larger report on oil pollution ordered by President Johnson. That



Gulftrade and other oil tankers litter the sea floor off the east coast.