OCEANOGRAPHY

Oceans Will Provide More Food and Minerals

➤ NOT ONLY will fishermen be hauling more fish, crabs and edible seaweed from the seas in the future, but chemists will be pulling valuable minerals from the sea water and picking up nodules of manganese and phosphorite from the ocean floors.

These anticipated benefits from the waters may amount to $6 billion a year by 1980, according to a special report of the Committee on Oceanography, National Academy of Sciences-National Research Council.

This figure was derived both from expected reductions in costs of food and services and from increases in production made possible by new understanding of the seas around us. The Federal Government is continuing to support oceanographic research to gain more food, minerals and other benefits.

The sea also provides recreation in the forms of fishing, swimming, skin diving, boating, surfing or merely contemplating the beauty of nature.

By understanding how the temperatures of the ocean affect large-scale weather patterns, much money could be saved in better flood and drought protection, in planning for the planting and harvesting of crops and estimating the proper time to construct buildings and roads.

Other benefits resulting from a better knowledge of the sea include reduction of shipping transportation costs and savings on building new sewage disposal plants by learning the capacity of coastal waters for assimilating and diffusing treated waste materials.

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TECHNOLOGY

Jet Cars May Carry Commuters in Future

➤ COMMUTER SERVICE at 200 miles per hour with passengers in jet cars propelled through tubes is envisioned as a possibility for the future.

This imaginative concept to speed up short trips has been developed by a study group at the Massachusetts Institute of Technology, Cambridge, under the direction of Prof. Robert J. Hansen.

Nothing is even near the drawing boards yet. But the tube and capsule idea is intended to lead to a preliminary plan for research and development of the technology of high-speed ground transport.

Behind the study is the belief that door-to-door travel time on short trips can and should be cut. And a long tube—or guideway—on or near the ground to carry jet-propelled vehicles has sufficient potential for further consideration in the eyes of the MIT group.

Specificially under study was such a tube between New York and Washington, designated "High Speed Ground Transport in the Northeast Corridor."

Passengers and baggage would travel in capsules propelled by fluid jets. The jets might either be ejected from the capsules into buckets along the tube, or ejected from the sides of the tube into buckets on the vehicles.

Getting off at the right place would be solved by a series of intermediate loops along the main route. For example, the North Philadelphia Station capsule would leave the main, high-speed tube there and be shifted to a slower moving inner loop on which the capsule would make suburban stops.

Similarly, passengers could catch a car on the local loop and be put onto the main, high-speed line at a capsule transfer point.

It was suggested that planners of an integrated network of facilities might consider new kinds of mechanical suspension of vehicles, the use of air or fluid pads to support capsules in the guideways, and combinations of traditional and new methods of mass transportation.

Too often, it was concluded, the social scientist makes his studies years after the engineer has finished his work and neither profits from the other's work. All aspects of ownership, cost, control and social impact should be explored at the same time as the technical aspects of a new mode of travel.

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SOCIOLOGY

First Americans Fight Against Being Last

➤ IN THE PAST few hundred years, the first American, the Indian, has fallen to the bottom of the economic totem pole and is gradually becoming the last American. This is how the Indian's plight was described by Robert Moses, executive director of the Foundation of North American Indian Culture, Bismarck, N. Dak.

To preserve the culture of the American Indian and to restore in him a sense of pride in the art and skills of his past, the foundation has established an extensive information program.

"The basic cause of many of the so-called Indian 'problems'—under-education, poverty, alcoholism, poor health, welfare needs, among others—is the Indian's loss of pride in his own culture and in his own talents," Mr. Moses declared.

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VITAL STATISTICS

High Population Growth Delays Mexican Progress

➤ MEXICO is in trouble—its rate of population growth today is one of the highest in the world.

Between 1960 and 1980, an expected population growth of about 35 million people will equal that of the past four centuries combined.

This rapid growth is caused by the combination of a plummeting mortality rate due to new scientific advances and a consistently high birth rate, according to a report in Population Bulletin 20:173, 1964.

With nearly 40 million people today, nearly half of which are under 15 years old, Mexico is the most populous of all Spanish-speaking countries in the world.

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IN SCIEN

BOTANY

Catnip Makes Cat Play But Repels Insects

➤ CATNIP may be cat's play to a cat but for some insects it is deadly serious.

The chemical substance called catnip, or nepetalactone, produced by certain mint plants, may cause caddis-flies to fly away and beetles to fall to the ground (as many beetles do when disturbed about something), while other insects may simply turn and walk away.

The mystery that shrouds this remarkable plant, and its effect on cats and their feline relatives is at last being probed. The reason for the chemical catnip is not to stimulate cats, but to repel insects coming to eat the plant, Dr. Thomas Eisner of Cornell University reported in Science, 146: 1318, 1964.

By placing vapors or droplets of catnip extract near various insects, Dr. Eisner found that many insects were repelled, while some remained undisturbed. He believes further investigations might find some insects that are even attracted to the source.

The catnip compound, a cyclopentanoid monoterpene, is chemically allied to compounds which have been found in insects, Dr. Eisner pointed out. Two of these chemicals occur in ants (dolichodial) and another in the walkingstick insect (anisomorphal) which ejects a spray against such predators as ants, beetles, spiders, birds and even human beings.

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VETERINARY MEDICINE

Perform Surgery When Dolphins Put to Sleep

➤ DOLPHINS are being treated more like humans every day.

Now scientists, who have found a way to anesthetize these playful, brainy sea mammals, are hoping that major surgery can be performed on them for the first time.

By means of special ventilating equipment and techniques to insert tubing, nitrous oxide has been used successfully on six occasions to put dolphins safely to sleep, reported E. L. Nagel, P. J. Morgane and W. L. McFarland of the Communication Research Institute and School of Medicine at the University of Miami, Florida.

Because of the complicated construction of the blowhole in a dolphin's head, through which he breathes and whistles, and his unique pattern of breathing, safe anesthetics were difficult to find, the researchers reported in Science, 146:1591, 1964. It was also difficult to provide adequate methods for artificially supporting the respiration of this air-breathing warm-blooded creature, *Tursiops truncatus,* when he was under the anesthesia.

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CE FIELDS

NUTRITION

Teen-Agers Need to Eat More Fruit, Vegetables

➤ TEENAGERS are not eating enough lettuce, carrots, tomatoes and other vegetables or as much fruit as they should.

Only about one out of six children munch daily on green leafy and yellow vegetables, so vital for their growing bodies.

During a typical 24-hour day, 6,200 boys and girls from the Greensboro, N.C., city schools ate, gobbled and nibbled, then reported to a panel of researchers. The results of food habits of these children from the seventh, ninth, tenth and twelfth grades are detailed by Dr. Cecile H. Edwards, Gaynelle Hogan, Dr. Sandra Spahr and the Guilford County, N.C., Nutrition Committee in the Journal of the American Dietetic Association, December 1964.

The survey found that the older the student in the observed group, the more meals he or she missed. As students progressed from the seventh to the twelfth grade, the meals missed increased from 10% to 25%. Even though the majority of students ate breakfast, more students in grades ten and twelve missed this important meal than those in grades seven and nine.

Studies have shown that omission of breakfast decreases the work rate and is detrimental to attitudes and scholastic performance. Previous research found that girls who missed fewer meals than other girls scored best in emotional stability, conformity, adjustment to reality and family relationships.

Younger students often selected more wholesome snacks in the mid-mornings and mid-afternoons. They preferred milk, fruit, bread and cereals, while older students chose soft drinks and candies to curb their hunger pangs.

Generally, adolescents who have more information about nutritional needs have better diets.

The survey will provide data for a nutrition education program of the Guilford County community.

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SPACE

New Parachutes 'Float' Spacecraft to Earth

➤ TWO NEW TYPES of parachutes that will help return manned or unmanned space vehicles safely and softly back to earth have been developed.

A new steerable parachute, called the Cloverleaf, has three chutes in one, and can glide two feet through the earth's atmosphere for each foot that it descends. This means that on a windless day an astronaut, inside a reentering space vehicle, could use the opened chute to steer the vehicle to a landing point within an eight-mile diameter circle. With the wind blowing in the astronaut's favor, the diameter would be even greater.

The Cloverleaf, built by Northrop Corporation, Beverly Hills, Calif., is a descendant of the steerable Glidesail parachute that was used in project Mercury. The best the Glidesail could manage was seven-tenths of a foot horizontal glide for every foot of vertical drop.

In addition to controlling the descent of space vehicles, the Cloverleaf is designed for booster recovery (exact-spot), landing of aerial supplies and controlled landing of high-altitude instruments.

Another newly developed parachute is designed to slow up reentering space vehicles traveling five or more times the speed of sound.

Called Hyperflo, this new parachute is the first to perform successfully at high supersonic Mach numbers.

The parachute has been successfully tested at Mach 4 (four times the speed of sound) in a Cree missile free-flight experiment and at Mach 6 in wind tunnel tests conducted by the Air Force.

The Hyperflo, developed by Cook Electric Company, Morton Grove, Ill., followed that Company's development of the Hemisflo chute which has been used in B-58 aircraft escape capsule applications.

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AERONAUTICS

Test Sonic Booms Are Stronger Than From SST

➤ THE SONIC BOOMS being created by the Federal Aviation Agency in its new series of tests in New Mexico are actually stronger than the ones that will be produced by a cruising supersonic transport (SST) plane.

The tests, part of a two-month study to investigate the effects of sonic booms on buildings, begin at an "overpressure" of 2.0 pounds per square foot. Overpressure is increased atmospheric pressure caused by the shock wave of an aircraft above and beyond normal pressure at sea level of 2,116 pounds per square foot. The two companies (Boeing and Lockheed) competing for the still-undecided SST contract, have been advised that the overpressure of the SST during cruising must be kept below 1.5 pounds.

The only time the SST will reach the two-pound mark is while it is accelerating to supersonic speed at lower altitudes. Earlier tests over Oklahoma City ranged from 1.0 to 2.0 pounds.

The new program, however, does not take place over "population centers." Seventeen buildings occupy a target area in the desert near White Sands Missile Range, about 50 miles from Alamogordo. They range from a farmhouse to a greenhouse to a group of store fronts.

The sonic booms are being created by F-104's from nearby Holloman Air Force Base. Later on, B-58 Hustlers and other aircraft may be used.

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AGRICULTURE

Tiny Formless Mite Does Little Harm to Cattle

➤ ONE of the latest mites to be discovered in the United States is so small and lacking in form that it is hard to find, even under a microscope.

The wee creature, a member of the arachnid class, called *Psorergatic bos,* is an eight-legged relative of the spider. This newly discovered parasite was recently found on a New Mexico Hereford cow by researchers of the Agricultural Research Service, part of the U.S. Department of Agriculture.

Scientists believe that the mite is widely distributed among cattle, though it has escaped detection because it is so small and apparently does little or no harm to its host.

Attempts to transfer the mite from the original infested cow to other cattle, white rats and rabbits were unsuccessful.

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CONSERVATION

Dams and Lake May Save Rare Trout

➤ THE DARK OLIVE green trout with yellow gold on its sides and belly may yet survive on this planet, if biologists and Indians have their way.

By building 15-foot dams and a small lake, fish researchers and Apache tribesmen hope to save the rare native Arizona (or Apache) trout which today survive in only two small mountain streams—Ord Creek and part of the East Fork Creek, both on the Fort Apache Reservation in Arizona. Formerly this beautiful fish was found along 360 miles of streams.

The need to save and propagate the trout is urgent, reports the Bureau of Sport Fisheries and Wildlife, Department of Interior. A forest fire, a natural catastrophe or a pesticide could destroy this fish forever, as well as its close relation, the Gila trout.

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PHYSICS

Man-Made Hill to Cover Nuclear Reactor Inside

➤ A NUCLEAR REACTOR will be built under a man-made hill to study the potential uses of plutonium fuel in advanced nuclear power systems.

The facility, which will be known as the Zero Power Plutonium Reactor (ZPPR), will be used for research on the nuclear characteristics of large, fast breeder reactors. Breeder reactors show promise as great economic sources of nuclear power since they "breed" more fuel than they use.

The ZPPR will be enclosed by a 50-foot diameter circular cell that in turn will be covered by a layer of earth and gravel. Construction is planned to begin late this year by the U.S. Atomic Energy Commission's Argonne Laboratory at the National Reactor Testing Station near Idaho Falls, Idaho.

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