Earth and Environment Notes

MARINE TECHNOLOGY

British Build Undersea Bug

A design study of an undersea vehicle that would be, in essence, an extension of an operator on the surface has been completed by engineers at Britain's Atomic Energy Research Establishment at Harwell.

The bug, as they call it, would have two arms that would reproduce movements by the operator's arms and stereovision and sound that would be fed back to the operator's eyes and ears.

Sucker pads on telescopic legs would hold the bug to any solid object, the Harwell engineers reported at the National Conference on Technology of the Sea and Seabed.

Such a bug would be especially useful for deep-ocean salvage work and scientific sample-gathering. Since it would be relatively light, it could also be flown to the scene of an underwater rescue effort where its dexterity would be invaluable, the engineers believe.

POLLUTION

Super-Sunsets Fade Away

If no more major volcano eruptions spew sulfur dioxide into the upper air, the spectacular sunsets visible this past winter will fade away within three years.

They are caused by a layer of high altitude smog, chemically similar to that which blankets most large cities, but formed naturally from volcanic gases, according to a University of Arizona astronomer and his wife.

Dr. Aden B. Meinel told an Optical Society of America meeting that he thinks the 14-mile-high, lavender-tinged deep orange glow is caused by reaction of volcanic sulfur dioxide with natural ozone.

The sulfur dioxide came from the powerful Agung eruption on Bali in 1963, the Meinels think, and has since been replenished by eruptions in Costa Rica, Iceland, the Philippines and Indonesia.

GEOLOGY

Earth Flow Under Impact

The effects on the earth of dropping a 1,000-pound projectile on it from 4,000 feet up are being studied by Texas A&M University and the Sandia Corp. Sandia has coined the word "terradynamics" to describe the work.

The experiment is concerned with the flow and resistance to flow of soil, rock, water and ice under sudden impact. The projectiles are instrumented to reveal the forces on them. After impact, the ground is carefully excavated to determine subsurface effects.

GEOLOGY

Nation-wide Magnetic Survey

An aerial magnetic survey has been completed by the U.S. Navy and the Geological Survey in a 100-mile-wide strip from San Francisco to Washington, D.C.

The survey found an area of intense magnetic variations over a 200-mile stretch in central and western Nebraska.

It also confirmed estimates of the thickness of the earth's crust—12 miles on the Pacific Coast, 30 miles under the Sierras and 18 miles beneath Washington.

The Geological Survey helped interpret the data collected by the Naval Oceanographic Office in flights over a two-year period. The survey is part of a world-wide geomagnetic survey, Project Magnet.

POLLUTION

Cleaning Up the Sea

Straw proves to be the best material for cleaning oil off the surface of the sea, British researchers find in a study spurred by the Torrey Canyon disaster.

A team at the Atomic Energy Research Establishment at Harwell has been seeking ways to deal with large quantities of floating oil since the tanker went aground near Land's End, spreading its oil on beaches for hundreds of miles.

Apparently, the Harwell team reports, the oil sticks to the straw while water runs off. A line of straw thrown on oil floating in a tank and dragged along picked up all the oil, leaving the water clean.

They found that the straw works best on thick fuel oils. Oil on beaches can be washed off with fire hoses and then collected with straw while in the water, they found.

GEOLOGY

Sand Tagged for Beach Study

Sand from a beach near Point Conception, Calif., has been radioactively tagged at Oak Ridge National Laboratory for a large-scale study of littoral drift—the movement of sand along the beach by the sideways component of a wave's motion.

Movement of the sand, which has been returned to its original beach, will be followed by an ORNL-developed detection system to be towed along the bottom just offshore.

POLLUTION

Behavior Indicates Water Quality

Twin studies of fish behavior and distribution may hold the key to economical reclamation of Pennsylvania's 2,900 miles of polluted streams.

Measurement of the speed with which small-mouth bass react to danger may be an easy indicator of the amount of low-level pollution in a stream. And a careful inventory of the state's present fish population may turn up pollution-resistant species.

Research to those ends is being carried on by Dr. Robert L. Butler and Dr. Edwin L. Cooper respectively. Both are with Pennsylvania State University.

Dr. Cooper has checked fish populations in 356 clean streams and 29 polluted ones in a search for resistant fish. If fish can be found that will survive in slightly polluted water, streams will have to be cleaned up only enough to accommodate them, the scientists suggest, saving large amounts of money and effort while developing sport fishing opportunities.