

TV Camera Shows Tests At 45,000-Foot-Depth

► EFFECTS of tests being conducted at simulated depths up to 45,000 feet, can now be seen by means of a television camera.

Operating from the outside of a high-pressure test and evaluation vessel, the camera, developed by the U. S. Naval Oceanographic Office shows what will happen to instruments having to withstand pressures existing in the deepest known parts of the ocean.

The camera relays a clear picture to a TV monitor and shows what is happening to equipment at pressures up to 20,000 pounds per square inch. The TV camera is light in weight and so compact it can be handled easily by one man. The test vessel on the other hand weighs 18 tons and has a plug-type cover weighing 4,000 pounds. The test device is capable of accepting instruments up to eight feet in length.

The closed circuit television monitoring system clearly depicts how instruments will react when subjected to pressures claimed by manufacturers.

"Some instruments disintegrate, others collapse, but many perform as claimed," William L. Bryan of the Naval Oceanographic Office stated.

ZOOLOGY

Shellfish Eat Starfish, Save Great Barrier Reef

► TOURISTS in Australia are unwittingly helping to destroy the Great Barrier Reef by killing big shellfish for souvenirs. These shellfish are natural enemies of starfish, which in recent months have turned miles of the reef into rubble.

So extensive is the damage that the Queensland Government is spending thousands of dollars for research on the starfish.

The particular starfish which is causing such damage to the Great Barrier Reef is the Crown of Thorns, or *Acanthaster planci*, often growing to be a foot across with 13 to 16 arms. Most starfish have five. It is also unusual in being covered with long spines, which give it its name.

Mr. Douglas Boness, head of an aquarium in Sydney, discovered by chance that a shellfish of the triton species is a natural enemy of the Crown of Thorns.

The enemy is the True Trumpet, or *Charonia tritonis*. Shaped like a foot-long spiral shell, it is a prized ornament in many Australian homes.

Mr. Boness made his discovery when he received a large triton from the Barrier Reef. He placed it in a tank where there were 14 Crown of

Thorns starfish, collected from a ship trading in North Queensland.

After several of the starfish died, Mr. Boness found the triton had killed them by eating right through them with its radula, a powerful rasp which acts as tooth and tongue.

Tritons are known to live in large numbers on some reefs, where they do much to keep down starfish. Any killing of tritons must result in fewer enemies for the starfish and encourage their multiplication.

An official of the Australian Museum said efforts were being made to protect tritons in those parts of the Great Barrier Reef visited by tourists, in order to leave the best specimens for holiday souvenir hunters.

TECHNOLOGY

World's Biggest Power Station Gets Go-Ahead

► THE GREEN light has finally been given to the development of the world's largest hydroelectric power site at Churchill Falls in Labrador (formerly Hamilton Falls) with the signing of an agreement between the Province of Quebec and Brinco, the international group of developers of the British Newfoundland Corporation.

The development will eventually result in a power generating complex capable of delivering 6 million horsepower, with an ultimate capacity of 10 million horsepower.

The largest U.S. installations are at Niagara Falls and Grand Coulee Dam, each of which develops about 2.5 million horsepower. Grand Coulee has the ultimate capacity for about one million horsepower more.

The biggest power stations in the Soviet Union are in the 4.5 million horsepower range, with the reported capacity of expanding to more than 5 million.

The Province of Quebec will spend \$350 million for transmission lines from the Quebec-Labrador boundary through the province to markets in the United States.

It is expected to cost Brinco \$600 million to \$700 million to develop the falls. The firm has already spent about \$40 million on the site.

Brinco hopes to sell power to Consolidated Edison Company of New York, which has reportedly offered to buy 20% of Churchill Falls' capacity when available by 1970 or soon after. Informed sources said that if Consolidated Edison decides to buy power, Hydro Quebec would sell it for 4.5 kilowatt mills, making it possible to deliver power to New York City for about six mills, roughly half a mil less than the anticipated price for nuclear power.

Edison is expected to absorb about two million horsepower annually.

IN SCIENCE

PUBLIC HEALTH

Asian Flu Preventable By Prescription Drug

► THE U.S. FOOD and Drug Administration has approved marketing of the prescription drug Symmetrel amantadine hydrochloride for prevention of human illness due to A-2, the Asian flu virus. The drug is taken by mouth and is not a vaccine or antibiotic. It acts by interfering with virus penetration of host cells, but does not conflict with antibody production. Scientists from the DuPont Company, Wilmington, Del., first reported effectiveness of amantadine hydrochloride in 1964.

SURGERY

Fatal Heart Infections Are Cured by Surgery

► A YEAST infection of the heart's lining, always fatal in the past, has been cured with surgery in three of four cases, a team of doctors reported.

The infection, *Candida endocarditis*, occurs if the inside of the heart is damaged by rheumatic fever or is defective at birth. The *Candida* yeast grows in the heart lining around the defect, usually a valve.

Antibiotics are useless in combating the infection.

The first surgery was performed in 1960 on a man with a half-inch patch of the yeast growing on the tricuspid valve, between the two right chambers of the heart. The infected portion was cut away in the unprecedented surgery, and the heart defects were repaired with stainless steel sutures, which would not support yeast growth. Now six years later, the patient is a full-time worker with a normal life expectancy.

Since 1960, three other patients, whose conditions were considered hopeless without the surgery, were operated on for destroyed aortic valves and accompanying yeast infections. In all three, the infectious growth was removed and the aortic valve replaced with an artificial valve. Two of the patients were saved.

The cures were reported at the American Heart Association meeting in New York by Dr. Jerome Harold Kay for a seven-member medical team from the University of Southern California School of Medicine and the Los Angeles County General Hospital.

AGRICULTURE

IRMA to Analyze Milk Protein in One Minute

► IRMA has come to Cornell University, but she is not a student. She is a \$12,000 Infrared Milk Analyzer, IRMA for short, and can analyze 400 milk samples a day for butterfat, protein and lactose.

Invented and manufactured in England, the new machine operates by passing a beam of infrared light through a thin layer of milk. It converts the reading to actual percentage and posts them on a meter to be read by the operator—all in less than one minute for a single sample.

The machine is expected to replace present cumbersome methods of testing for butterfat, the basis for paying dairy farmers for milk. In addition, since protein quantity will now be known, it also may be included in the pricing formula. And the consumer may eventually purchase a high-protein low-fat milk.

In food processing plants where a great deal of milk is used, plant operators have to determine the exact quantity of the various food elements, including protein, in maintaining the quality of their products.

IRMA would be useful particularly in plants producing infant formulas, those manufacturing low calorie meals and in cereal plants.

Since the initial cost of IRMA is high, the machine will have to be kept in constant use to justify the expense. Operating costs probably will be similar to the Babcock test, now used for butterfat, or about 10 cents a cow.

Profs. John W. Sherbon, W. Frank Shipe and James D. Burke of the New York State College of Agriculture, Ithaca, reported tests will be made of milk from the Cornell herd to compare IRMA's accuracy with conventional chemical tests.

GENERAL SCIENCE

Space Doctors Advised To Stay on Earth

► THE BEST place for space doctors is on the ground, according to Soviet physician-cosmonaut Boris Yegorov. His reasons are medical, not personal. For the time being, the earth-based physician can get all the information he needs by telemetering astronauts in flight, Dr. Yegorov believes.

The 29-year-old cosmonaut, who became the first doctor in space two

years ago, believes that the major menace in long space flights will be radiation, the intensity of which will be extremely dangerous to human systems with a low rate of tissue regeneration, such as the central nervous system.

Radiation encountered on short flights has so far been well below the accepted danger level, he reported, but the high-energy radiation believed to exist farther out is another matter.

The Soviet spaceman thinks that American astronauts have tired easily during their walks in space because of the artificial mixture of high oxygen and low pressure in space suits and cabins. Soviet cosmonauts do not have this problem, he said, because their larger rockets can boost bigger payloads carrying a supply of the heavier air.

"I am convinced," Dr. Yegorov said, "that the American system can provoke a state of fatigue more easily, leading to respiratory and cardiovascular complications."

He also believes that weightlessness in space is the great unknown, since too little is understood of its long-range effects on the cardiovascular system, fluid balance and central nervous system. The maximum stay in the weightless state, he noted, has been the 22-day flight of several animals in a Soviet space experiment, Cosmos 110.

These animals experienced many disturbances, including reduced arterial blood pressure.

Reporting on the psychological effects of space flights, the Soviet physician said, "You feel like an aviator of 60 years ago. There is an uneasiness and also an exaltation—indeed euphoria and pride—in accomplishing an extraordinary act. But one adapts quickly to the experience."

ZOOLOGY

Dog With Hearing Aid Can Hear Man's Voice

► PETER, a 10-year-old cocker spaniel, is surely the only one of Sydney's 250,000 dogs that wear a hearing aid.

"We thought he might be frightened by all the noise, but he seems happy as can be with it," said Peter Barrand, who fitted him with the aid after taking a plaster cast of the dog's drooping ears.

In response to his master, whom he had not heard for the years in which he had been deaf or partially deaf, the dog came when called, sat down and obeyed all other instructions.

He wore the hearing aid for only a few hours at first to get used to the world of sound once more.

"Now I don't think he could be without it," Mr. Barrand said.

PUBLIC HEALTH

Western Health Methods Not Needed Everywhere

► INSISTENCE on Western health methods in developing countries can hold back progress because they are not adaptable, an international health expert believes.

Highly educated health workers who are culturally too far above the people they are trying to help also can be a deterrent to progress because they do not communicate with the uneducated masses, Dr. Donald T. Rice of the University of California School of Public Health, Los Angeles, reported.

The chief paradox in health development, Dr. Rice said in *Public Health Reports* 81:885, 1966, is that "the more effort, time, energy, personnel and money spent on curative services, the less there is going to be for preventative services."

This cold truth means that humanitarian feelings can impede progress toward a higher standard of health for an entire country.

"Few can bear to see people suffer from illnesses they know can be cured," he said. "If higher priorities are given to preventive programs in developing countries, it necessarily must be at the expense of suffering and possibly death of a few."

Western health methods are held up as a sacred cow, but though they are good for the West, they may not necessarily be good for the countries of Asia and Africa.

"Wisely, these nations have not copied our ways," Dr. Rice said. "The mirage of the 'best of the West' medical care hides many dangers. A fresh approach to improving each nation's health services is more likely to produce health planning that is appropriate and sound."

Leaders with native intelligence but with minimum educational qualifications can be trained to be effective health workers, either for cure or prevention of disease.

In many African nations extensive programs for the control of communicable diseases have used teams of "auxiliaries" supervised by a few professionals.

The significance and necessity of starting with persons of rather low educational level and giving them specialized training has been demonstrated in agriculture, literacy campaigns and other programs in addition to those in public health, Dr. Rice said.

When basic education is only slightly higher than that of the general population, communication and cooperation are likely.

Auxiliary health workers already are being used in the United States, especially with Indians, Spanish-speaking people and lower economic groups.