

TECHNOLOGY

Water for Guantanamo

To help supply fresh water to water-deprived Guantanamo Bay, a complete sea water conversion plant is being dismantled to be set up in the Cuba base—By Barbara Tufty

► THREE SEA-TO-FRESH-WATER plants are scheduled for water-starved Guantanamo Bay.

One sea water conversion plant in San Diego will be dismantled and set up in the Cuba base, and two conversion plants will be built on the spot.

As precious fresh water from Castro's Cuba continued to be shut off from U.S. personnel at Guantanamo, the U.S. speeded up plans to establish permanent and self-sufficient plants to provide the necessary 2.2 million gallons of fresh water a day from the sea.

First step is to freight a desalting plant now in operation at Point Loma, San Diego, through the Panama Canal to the base. Lowest estimated time from start of dismantling in California to the first drop of sweet water produced in Cuba is about 15 or 16 weeks.

The San Diego plant, operated by the U.S. Department of the Interior, has been providing the area with fresh water for the past two years. It converts salt water to fresh water by a multiple-stage distillation process in which heated sea water is sprayed into a large chamber with lower temperatures and pressures. The steam condenses in a flash into pure water. It is expected to produce about 750,000 gallons a day for the Guantanamo Bay area.

Each of the other two desalination plants to be built at the U.S. Navy base will also produce about 750,000 gallons. These plants will use essentially the same system as the Point Loma plant.

The U.S. Navy selected Westinghouse International of New York as prime contractor for the three-stage job of providing enough water for the afflicted area. Details of dates for dismantling the Point Loma plant and erection of the new plants will be set soon.

Plans are underway for a bigger and more modern plant to replace the San Diego desalting plant.

Meanwhile, the converted Navy oil tanker, the Abaton, remains tied at the Guantanamo dock converting 100,000 gallons of water each day. The rest of the necessary fresh water will continue to be hauled in tankers from Florida to the base until the Point Loma plant can be set into operation.

With a system similar to that of a tea-kettle, the 6,600-ton ship Abaton heats salt water from the sea, catches the steam, which is then condensed to pure water, and lets the residue salt water fall back to the sea.

The Abaton is at present the only barge of its kind in the U.S. fleet which can provide a substantial quantity of fresh water. More ships, however, could be fitted out with the necessary equipment for water

evaporation and condensation. Most Navy ships have standard equipment for converting enough salt to fresh water for drinking, cooking and medical purposes for their crew.

Test wells have been driven 7,000 feet deep into the soil of the Guantanamo base in an effort to find drinking water, but no subterranean sources have been located in that particular area.

Fresh water from Cuban island sources was shut off Feb. 6 by Castro's order in retaliation for the arrest of a group of Cuban fishermen in Florida's waters. Since that date, valves on the two water mains have remained closed, and no Cuban water has been piped into the Navy base on the southeastern tip of the island. In answer to Castro's unfounded charge that the U.S. base was using some of the inland water, Rear Adm. John D. Bulkeley, commander of the base, retorted "Hogwash!" and ordered a chain saw to cut through the water pipes and sever any connection with Cuban water.

Research into the vital problem of ex-



Westinghouse

DESTINATION GUANTANAMO
—The engineer on the catwalk atop the maze of pipes at the Point Loma water desalting plant shows how steam is admitted to the brine heater by opening a valve. The heated brine is piped to evaporators and "flashed" into fresh water. This plant, designed by Westinghouse for the Office of Saline Water, U.S. Dept. of the Interior, is being completely dismantled for shipment to Guantanamo.

tracting sweet water from the vast sea around us is going ahead in various parts of the country in different phases.

There are several sources of energy for these desalination plants, explained an official at the Office of Saline Water, U.S. Department of the Interior. Scientists and technicians are experimenting with sources such as solar energy, electricity, conventional fuel heat, nuclear power—and the relatively new process of freezing the water free from the salt.

The use, practically and economically, of each process depends on the location, he said. For instance, the use of solar radiation as heat for distillation is feasible in arid lands where the sun's intensity is high. Electricity as source of heat would be cheap near a hydroelectric plant—but then, there would be enough water in the vicinity.

Latest plans in salinity research include a large pilot plant designed to convert 200,000 gallons of water each day—by freezing. This plant will be added to the four pilot plants already in operation at Wrightsville Beach, N. C.

Here other problems of salinity are being studied—such as corrosion of equipment from the salty water, recovery of minerals from the extracted salt, and new methods of economic distillation.

Several commercial plants already in operation around the world include a plant yielding five million gallons a day near the Persian Gulf, and other plants in Israel, Italy, the Virgin Islands and states such as Texas, New Mexico, California and Arizona.

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GENERAL SCIENCE

Farming in Space To Be Shown on TV

► HYDROPONICS, the growing of plants without soil, will be discussed on the ABC-TV series, Science All Stars, on Sunday afternoon, March 8, by Linda Archibald, 14, of Lake Parsippany, N.J.

Practical uses of hydroponics will then be discussed by Capt. William R. Anderson, USN, who was in command of the atomic submarine, Nautilus, during its historic voyage under the ice cap of the North Pole. He will show samples of vegetables grown by means of hydroponics on the submarine.

John Shirtz, 15, of Malverna, Pa., then will demonstrate a complete life-support system similar to the type required in space. Oxygen produced by algae in one sealed jar is pumped to mice in another sealed jar. The carbon dioxide given off by the mice is returned to the algae. Thus, the algae and the mice keep each other alive.

Further developments in biological research are represented by a bacteria-operated electric battery model built and demonstrated by John Beers of Moscow, Pa. It generates nine volts of electricity.

Another guest scientist, Adm. Arleigh A. Burke, USN (Ret.), will tell about Navy research, especially the biological fuel cell.

The work of young scientists is featured regularly on the show, produced by Steve Carlin in cooperation with SCIENCE SERVICE.

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