a period of time and many cell generations, mutations in the contaminating HeLa cells could occur, and result in cells with new characteristics. These mutants could then be mistaken for the original tumor cells they contaminated if extremely precise chromosomal and enzymatic analyses were not done to reveal the error.

These important results may be met with some skepticism. "Some people may try to disprove the results or point to differences between the cells, to prove separate genetic heritage," Nelson-Rees told SCIENCE NEWS. "Many people have spent hours, months, even years studying cell cultures in which the cells have been inadvertently contaminated. If it takes a prostate cell to perform a certain function in the body and you are zeroing-in on what made that cell stop performing that function and become malignant, then working on cervical cells will change your results." Many think their cultures couldn't be affected because they don't have HeLa cells in their laboratories, he said, but they may be using other suspect contaminants. New techniques have enabled Nelson-Rees and others to identify cultures that had been misidentified for years, including some presumably human cells that were actually hamster cells, and rabbit cells that were actually monkey cells.

"There is a good chance," Nelson-Rees says, "that an awful lot of work has been affected by these HeLa contaminations," including hundreds of studies over a number of years. □

Science on TV

The Ascent of Man is finally getting off the ground in the United States. This excellent 13-part television series on the scientific and cultural history of the human race (SN: 12/8/73, p. 362) has found a sponsor and will be shown to television audiences next winter. With funding from the Mobil Oil Corp. and the Arthur Vining Davis Foundations, the series will be telecast by the Public Broadcasting Service. An exact date has not been set, but the series will probably be shown weekly beginning in January. Written and narrated by Jacob Bronowski, *The Ascent of Man* was co-produced by BBC-TV and Time-Life Films. The series was also recently published as a book by Little, Brown and is being made available as a teaching aid in 16mm and video cassette formats.

PBS's other science series, NOVA (SN: 3/2/74, p. 147), is just winding up its first season and will be aired again next year as a regular Sunday night feature beginning Nov. 26. At least 18 new shows are in the works for the 26-week season. □

Ocean energy: New life for an old idea

Almost a century after the French physicist D'Arsonval first proposed the idea, the extraction of heat energy from the ocean to generate useful power is moving closer to practical application. A working model of such a generator was built in the 1930's, and recent experiments indicate that the operations could profitably be combined with mariculture to help provide power and food for countries near tropical seas (SN: 4/13/74, p. 243). Last week, hearings before the energy subcommittee of the House Science and Astronautics Committee brought the spectrum of schemes for making sea-thermal energy available into new focus.

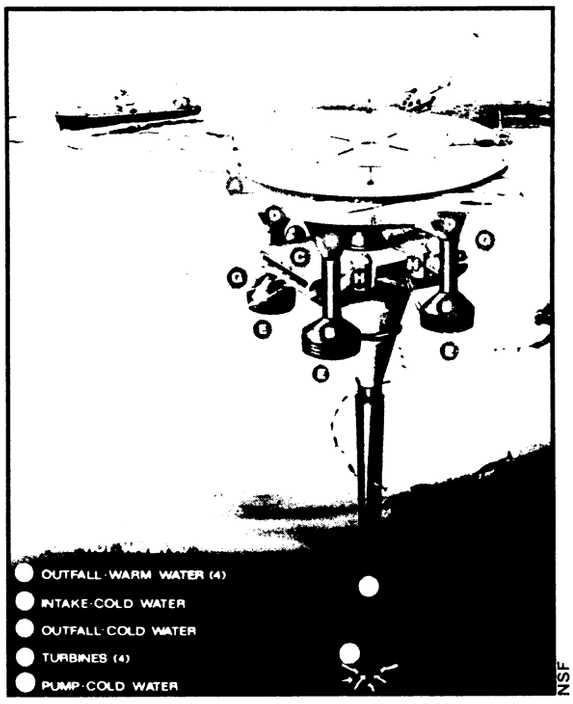
Electrical power from oceanic generators could potentially have the lowest cost of any solar-generated electricity, a panel of experts told the subcommittee, perhaps competing with conventional or nuclear sources. For a relatively modest investment, compared to R&D funds for nuclear power plants, commercial power plants could be in operation in a decade, they said.

"Successful implementation of the solar sea power concept can make the United States an exporter of fuel," predicted Clarence Zener, a physicist from Carnegie-Mellon University.

Some 45 percent of the total incoming solar energy falls on tropical seas, which form a heat reservoir whose stored energy is 10,000 times greater than present human demand. The problem that has delayed exploitation of this vast resource is its lack of concentration—temperature differences between the sea surface and the coldest depths are only about 40° F. Conventional power plants depend on heating various materials (steam or jet fuel) by hundreds or thousands of degrees. As these expand they drive turbines or pistons and thus convert heat into work. The greater the temperature differential, the more easily heat can be transformed.

Now designers believe they can efficiently convert the small oceanic temperature differences into useful energy by using them to boil and then recondense ammonia. Sea surface temperatures are above the boiling point of ammonia; temperatures at great depths, below. The expanding ammonia gas could then drive a turbine in much the same way boiling water is used to drive a steam turbine. But unlike steam engines, which must be constructed from heavy, cast metal to keep them from bursting, sea-thermal plants could be built from light-weight materials because of the surrounding inward pressure from the sea. Zener estimates that a neutrally bouyant, lightly constructed apparatus could be made from aluminum and suspended at 200 feet depth (where the external pressure is equal to the vapor pressure of ammonia) and the total energy cost of refining the aluminum would be recovered in the first few hours of the plant's operation.

But skeptics point out that several problems must be resolved before sea-thermal energy can be considered economically feasible. Because the operating temperature differential is so small to begin with, heat transfer through the thin walls of an apparatus might be cut to inoperable levels by even a thin



One concept of a partly submerged ocean-thermal power plant, making use of temperature differences between warm surface water and cold deep water.