News of Science

Solar Distillation of Saline Water

Progress in the development of economical means of utilizing solar energy to convert salt water to fresh water in arid regions has been reported by the U.S. Department of the Interior. Research conducted by the department's Office of Saline Water since 1953 has shown that the use of heat from the sun to distill salt water has promise of economical large-scale fresh production. This is particularly true in the Southwest, where solar intensities are high, provided that simple stills can be made inexpensively enough, or the productive capacity of stills greatly increased, or both.

One means of increasing output is by multiple-effect distillation in which the heat absorbed in evaporation is recaptured in condensation and made to evaporate additional water, according to David S. Jenkins, director of the Office of Saline Water. Maria Telkes of New York University, working under a contract with the department, has developed a ten-effect solar still based on an earlier patent by Defoe Ginnings of the National Bureau of Standards. The device requires no expensive mechanical equipment and, from a given area exposed to sunshine, can produce about 6 times as much fresh water as a single still.

The principle can be used also with other forms of low-grade heat. Telkes has also been developing an improved tilted single-stage solar still for the department. Larger units and field testing now are needed on both types.

A possible way to reduce costs is to use plastic materials with specially designed properties. Departmental studies conducted through the Bjorksten Research Laboratories of Madison, Wis., have shown that plastic materials are feasible, provided that transparent materials which can withstand at least 3 years of outdoor weathering can be developed. Many materials have been tested but without success.

Recently, however, several new types of materials have become available in experimental quantities from the Du Pont Company. For example, it is reported that a new type of transparent film of tetrafluorethylene resin will withstand an estimated 10 years of outdoor exposures.

A solar-still design envisioning a heavy, black plastic base or evaporation pan, with a transparent plastic film supported only by slightly increased air pressure—without rigid supports—has been proposed by Du Pont. The sun's energy is trapped between the plastic base and the transparent canopy.

Under an agreement signed recently between the Department of the Interior and the Du Pont Company, the company will provide materials for construction of prototype stills approximately 2 feet wide and 100 feet long for experimental tests on salt-water conversion. The stills will be constructed and operated by the Federal Government.

In addition, the company will supply to the department or a few of its cooperators, which the department may designate, small samples of the film for small-scale laboratory tests on solar stills. Cooperators include the governments of Spain, Morocco, and Algeria.

Another means of reducing costs of simple solar stills is being developed for the department by George O. G. Lof of Denver, Colo. A roof-type still built directly on the ground, eliminating some framing and insulation, is expected to operate at night from heat stored in the ground during the day. An experimental still covering about one-tenth of an acre at the seashore location is being prepared for the study of night radiation. The Du Pont and Telkes stills also will be tested at the seashore location.

AAAS Theobald Smith Award

Oscar Touster, associate professor of biochemistry at the Vanderbilt University School of Medicine, is the winner of the 1956 AAAS Theobald Smith award in the medical sciences. This annual award, which was established in 1936 by Eli Lilly and Company, consists of $1000, a bronze medal, all travel expenses to and from the AAAS annual meeting, and all expenses at the meeting for the week of its duration, 26–30 Dec. This year's presentation will be made by Irvine H. Page, director of research for the Cleveland Clinic and chairman of the AAAS section on medical sciences, at 9 A.M. on 30 Dec. in the ballroom of the Hotel Statler, New York.

The award is given for "demonstrated research in the field of the medical sciences, taking into consideration independence of thought and originality." The recipient must be a U.S. citizen who is less than 35 years of age on 1 Jan. of the year in which the award is to be made.

Touster's major and most recent work has been on the underlying cause of congenital pentosuria, a rare genetically determined metabolic abnormality in human beings that is characterized by the excretion of large amounts of a rare pentose sugar called L-xylulose. Years ago the condition was frequently mistaken for diabetes.

Using refined analytic techniques, Touster was able to detect the production of the pentose sugar in guinea pigs and in apparently healthy normal human beings. Since the then current knowledge of biochemistry could not explain the widespread ability to form the sugar, Touster further investigated its metabolism and discovered liver enzymes whose actions provide an understanding of the normal metabolic pathway of the sugar and an insight into the enzymatic deficiency in pentosuric individuals. The results of Touster's research on pentosuria, as well as on bacterial metabolism and organic chemistry, have been published in articles in medical and chemical journals and in contributions to scientific books.

Radiationproof Photosensitive Plastic

The Army Signal Corps has announced the development of a photosensitive plastic that can be used for printing photographs in areas affected by atomic radiation. The new process is almost unaffected by gamma rays. The pictures are clear, durable, waterproof, and stronger than ordinary paper prints, which tend to fog under nuclear radiation.

The process, originated by the Ferro Chemical Company of Bedford, Ohio, employs a minimum of equipment. No water, chemicals, or darkroom are needed. A sun lamp takes the place of an exposure light, and an oven replaces trays of hyposulfite and developing solutions. Printing of the picture is accomplished in 5 minutes.

Ten Unitarian Church Services Coordinated with AAAS Meeting

In recognition of the 123rd annual meeting of the AAAS in New York, ten Unitarian churches in the metropolitan area will observe "Religion and Science Sunday" on 30 Dec. Ministers will address their congregations on the cordial relations between liberal religion and sci-