

## CONSERVATION

# How to Cut Water Waste

Sea water distillation, re-use of water and a reduction in consumption are methods for combatting the water shortage and lessening water wastage.

By A. C. MONAHAN

► WHAT water shortage means is now partly known in New York City, but few realize that there are many sections of the United States where more water is used daily than the amount that nature is providing for future needs.

Population increase in rapidly growing cities is not the sole cause of the greatly increased use of water that may result in shortages. Individuals use more water than ever before.

Modern equipment ranging from dish-washing to street washing are water wasters. Manufacturing plants in industrial process are using ever increasing quantities.

Scientists and engineers today are much concerned about the future water supply. Much water now passing to the ocean by the various river routes can be held back and stored for use in reservoirs, and in conservation practices and forestation. But that will not be enough. Much of the water now used can be easily purified and used over and over again.

## Ocean to Supply Water

The one abundant supply of water is the briny ocean. Coastal cities may some day find it to be a main source of domestic water. It can be used as it is for street washing and fire extinguishing. For domestic and industrial uses it must be cleared of its salts and other impurities.

Best methods are now an engrossing problem. Even Congress is interested. A proposal is before it to provide funds for scientific studies in the methods of getting fresh water from sea water.

Sea water can be purified by distillation, of course. Ordinary distillation processes are too costly, however, to be applied to the giant job of supplying a city with domestic water. But distillation is now widely used on shipboard. Many ocean vessels get their potable water from the sea on which they float.

## Compression Distillation

A much cheaper method than ordinary distillation is essential. What is known as compression distillation may be the answer. This process, developed by Arthur D. Little, Inc., Cambridge, Mass., provided water for a million soldiers during the war on Pacific island and mainland beachheads.

In compression distillation, preliminary

heat is used to get a small amount of steam. This steam is mechanically compressed. The process raises its temperature as steam, and also raises the temperature at which it condenses to water. The temperature raise means that heat is given off. This heat, in turn, evaporates more water in the still. As long as the pressure is kept up, the process is continuous.

At the Army Base, Boston, a special distillation system is making 1,250 gallons of fresh water an hour from harbor salt water, utilizing what is called an improved heat pump principle. For every pound of fuel consumed, 200 pounds of water are obtained.

It is said to be some four times as efficient as processes used during the war. This particular experimental plant, after tests are completed, is to be moved to the Air Force field in Bermuda, where fresh water is a problem.

Freshening salt water may be of interest to other than coastal cities. Take southern California, for instance. If seacoast towns can get fresh water from the ocean for their greatly increased industrial activities and increased population, more of the

water now obtained from the Colorado river and other sources will be available for irrigation. Southern California agriculture, it must be remembered, is dependent upon irrigation.

## Conserve Available Supplies

The first step in preventing water shortages is the conservation of available supplies. This does not necessarily mean the use of less water. It means the purification of used water so that it can be used over and over again. The purification of water after use in one city, even if not used again at that location, means less pollution of streams and more possible uses of the water in cities farther downstream.

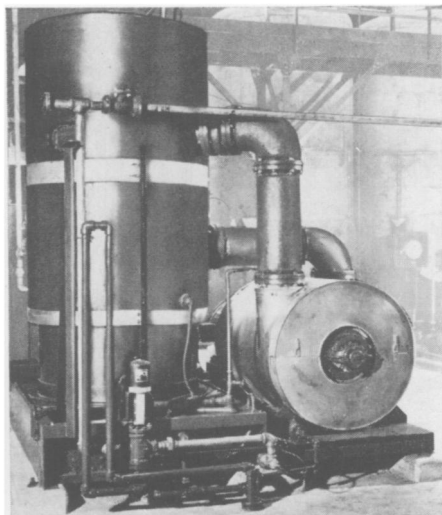
## Cleaning of Waste Water

At least one simple method has been developed for removing dirt and oil from water used in laundries and industry, making it completely suitable for re-use. It utilizes what is known as the Gale Separator, designed and built by the Gale Oil Separator Company, Inc., New York City. The system uses gravity, not the complicated mechanism and the heat needed in distillation processes.

As described by W. A. Gehle, president of the Gale Company, this cleaning system utilizes a simple engineering principle of hydraulics. He describes the device as a specially rounded tank with directional baffles to give direction to the water flowing through it. The water to be purified is dispersed outwardly by the baffles to the sides of the tank. This causes de-sludging



**WATER CLEANED HERE**—The "water laundry" cleans water utilized in industry so that it can be used again. It is known as a Gale Separator and, by baffles, separates sludge and grease from the dirty water



**OUT WITH THE BRINE**—Heat distills sea water making it pure enough to drink. The compression distillator, made by the Arthur D. Little Company, Cambridge, Mass., allows the reuse of the original heat, thus cutting down fuel costs.

or separating impulses to be created immediately.

The waste water, after entering the tank, is deflected downward to the sloping bottom by an inlet baffle. Stretching crosswise in the bottom of the tank are a series of small low "dams." Engineers call them riffles. Solid matter in the water settles behind these riffles. Oil and grease float to the top of the water, and from there are drained off.

#### Score of Separators in Use

More than a score of Gale Separators are now in use. One installation is in a railway terminal yard where Diesel locomotives of several railroad companies are serviced. The water used in washing the Diesels accumulates much oil, grease and dirt. The separator not only salvages the vast quantities of water necessary in the washing process but also salvages grease and oil for re-use, and keeps these undesirable contaminants out of the city sewage.

#### Used in Laundries

The separator is also in use in commercial laundries, a type of activity that ordinarily wastes great amounts of water. One installation is for a laundry on shipboard. A different type of application is in a factory of a great copper and brass company. There it is used to recover for use over and over again the water which cools the rolls that turn out copper sheets. This water in the cooling process accumulates oil, grease and dirt. After passing through the separator it is as good as fresh water straight from water mains.

Science News Letter, April 8, 1950

#### ASTRONOMY

## Asteroid As Yardstick

➤ THE new heavenly asteroid just discovered to have been within 5,400,000 miles of the earth in March promises to provide a new and more accurate yardstick for distances in the solar system.

The chances are that it may replace the famous asteroid Eros as the body which will be used to scale the distances of the sun and the planets. The new asteroid, discovered at the University of California and called 1950DA, approaches to almost one-third of the distance of Eros' closest approach.

For the next six months the new asteroid and the earth will run along together in the heavens like one airplane behind another, giving astronomers ample opportunity to observe it and determine its orbit with great precision.

Dr. Leland E. Cunningham of the University of California computed the orbit of the extremely faint object discovered by Dr. C. A. Wirtanen last month. It is believed to be about a half-mile in actual diameter. It swings about the sun in an elongated orbit approximately every two years, stay-

ing in sight long enough to have its path accurately determined. By triangulation astronomers can determine the distances of other parts of the solar system with greater accuracy once the new asteroid is precisely located, it was explained at Harvard College Observatory in Cambridge, Mass.

Four or five other asteroids of this kind have been found in the past half century. In 1912 Albert came close, but has never been seen since. In 1932 Apollo and Amor both came close, but Apollo's orbit is poorly determined and only Amor has a reliable orbit. Amor was seen again in 1940, and at its nearest can be about 10,000,000 miles from the earth.

For comparison, the nearest approach of well-known asteroid Eros is about 14,000,000 miles, planet Venus 26,000,000, and Mars 35,000,000. Other asteroids have come closer, such as Hermes, which in October, 1937, shot clear across the sky in nine days. At that time, Hermes was scarcely three times the moon's distance away, but so few observations could be gotten of Hermes that we know little about its future course.

Science News Letter, April 8, 1950

#### MEDICINE

## Wall-Eyed Conditions from Living at High Altitude


➤ A PERSON living at high altitudes is likely to become wall-eyed. Or he may suffer the opposite condition of crossed eyes.

More than half, 60%, of Peruvians who had lived for more than six months at altitudes of 10,000 feet and higher had the wall-eyed condition, Dr. Jorge Valdeavellano of Lima, Peru, found. Besides this 60% who had difficulty turning their eyes inward enough to converge on a near object, another 12% had crossed eyes which turned inward too much.

An inadequate supply of oxygen at the higher altitude is probably the cause, Dr. Valdeavellano said in his report to the Pan-American conference on Prevention of Blindness, Miami Beach, Fla.

Science News Letter, April 8, 1950

**IT'S EASIER TO LEARN A LANGUAGE By LINGUAPHONE**



You learn through natural everyday conversation . . . with effortless ease and real pleasure. First you LISTEN and in an amazingly short time you SPEAK, with correct accent and the right swing.

In your own home you can study alone in privacy or have wife and children or friends join you in a delightful pastime that is an asset in a career, business, profession and for cultural enjoyment.

It will take you only 30 minutes a day to master any of 29 important languages the Linguaphone Way.

**SPANISH  
PORTUGUESE  
ITALIAN**

**FRENCH  
GERMAN  
RUSSIAN**

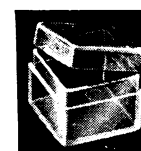
or 23 other languages

Linguaphone courses were made astonishingly simple, easy and practical by more than 150 expert linguists of international fame. Endorsed by educators, used by colleges, schools and the choice of more than one million home-study students.

---SEND FOR FREE BOOK---

LINGUAPHONE INSTITUTE,  
31 Radio City, New York 20, N. Y.  
Send me the FREE Linguaphone Book.  
I want to learn \_\_\_\_\_ language.  
Name \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_

## TRANSPARENT BOXES



Five Sizes: Maximum protection and visibility for samples, specimens, small parts and other objects easily lost.

Write for Leaflet TR-SNL

**R. P. CARGILLE**

116 LIBERTY ST. • NEW YORK 6, N. Y.