

# Conversation Pieces

Technically intriguing items  
from TRW, guaranteed to add luster to your  
conversation and amaze your friends.

**Metallurgy for the Thirsty Earth** Slightly more than 70% of the Earth's surface is covered by water too salty to be directly useful to the people, agriculture, and industry of the land. By 1975, more than a thousand desalination plants throughout the world will be doing something about this untapped resource. From saline and brackish waters, they will produce a billion gallons of fresh water per day.

There are two ways of converting saline waters: (1) take the fresh water out of the salt (distillation or freezing); (2) take the salt content out of the water (membrane processes). Most all desalination plants distill the water, duplicating in miniature the hydrologic cycle by adding heat energy to the water to vaporize it, then removing the heat energy from the steam to condense it into fresh water.

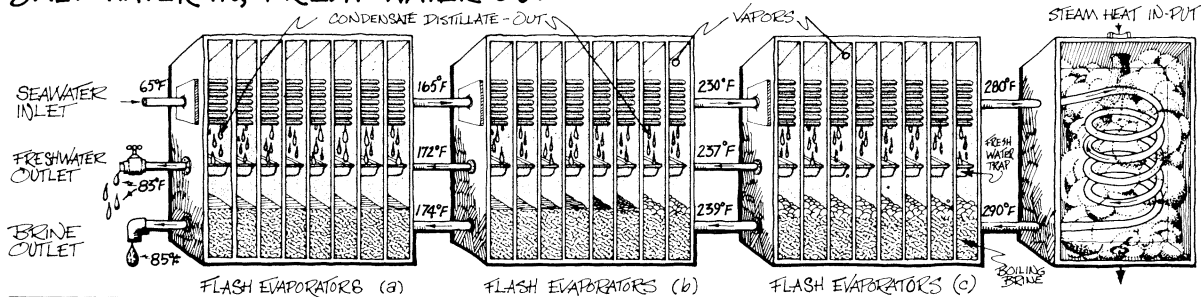
Typically, a desalination plant may use several hundred miles of heat exchanger tubing which must meet the severe corrosion requirements posed by hot brine. The

copper-base alloys conventionally used contain 10-30% nickel and are quite expensive.

Several years ago, TRW devised a novel way of formulating and surveying new alloys. Using the method, we began looking at less expensive iron base alloys which could meet the corrosion operating requirements of advanced desalination plants. We found a family of alloys which have an extraordinary resistance to hot seawater—corrosion rates of less than 1 mil (half the thickness of a human hair) per year at temperatures up to 300°F.

We call the alloy family SeaKo steels. We think these new alloys will substantially reduce the cost of desalination heat exchanger facilities. Right now, we're embarking on a worldwide program to develop markets for these SeaKo steels. Business agreements with industrial organizations capable of significant manufacture of SeaKo alloys are being established throughout the world. If you have an idea for an application of a corrosion-resistant alloy such as SeaKo, drop us a line.

## SALT WATER IN, FRESH WATER OUT



**The Days Grow Longer** The same oceans that will soon supply water for man have another, more subtle effect upon his life. They make each day just a tiny bit longer.

The gravitational pull of the Moon lifts the waters of the Earth slightly, forming two bulges—one on the side toward the Moon, and the other on the side opposite the Moon. These watery bulges move around the Earth as it rotates, and are a source of the tides.

Where the oceans are shallow, the water rubs against the sea bottom, applying a frictional drag to the rotation of the Earth. As a result, the Earth's rate of rotation is very gradually slowing down, and the days are thus becoming longer.

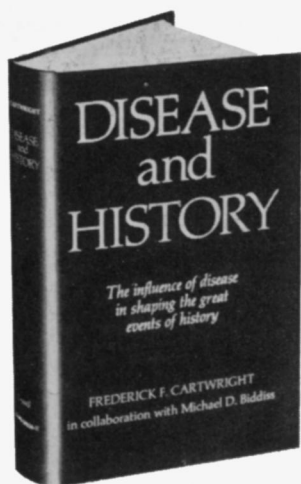
Every 100,000 years, the length of the day is increased by 1 second—a small change to be sure, but with noticeable effect. As recently as the age of the dinosaurs, for example, the days were a half hour shorter than they are now.

For further information, write on your company letterhead to:

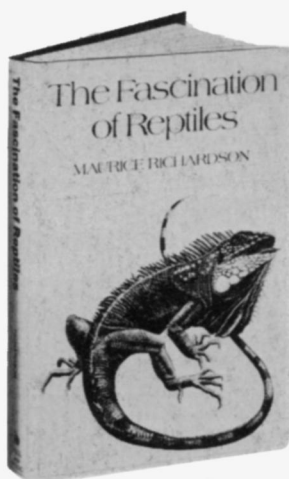
**TRW**  
SYSTEMS GROUP

Attention: Marketing Communications, E2/9043  
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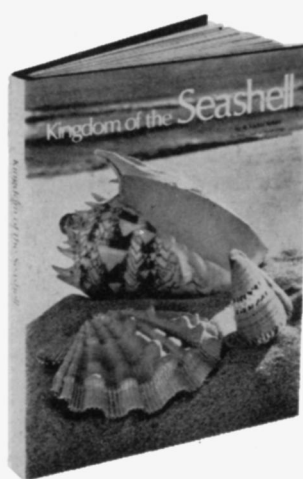
# COME ADVENTURING!



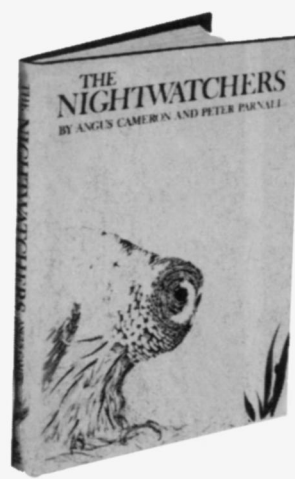
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