Technology Notes

REACTOR

Reactor Materials Tested

A new variable energy cyclotron will be able to tell scientists in a matter of hours how reactor materials—steel concrete, graphite—will be altered after 30 years of use in the intense radiation of a nuclear power plant.

The machine, located at England's Harwell nuclear complex, bombards materials with charged particles or ions.

In the past, the only way to test radiation resistance has been to expose samples in research reactors for years.

MILITARY

Body Armor Floats Too

A combination body armor and life vest that protects the wearer from "explosive ordnance" is now being tested by the Navy in Vietnam.

The buoyant armor weighs less than three pounds (the same as a standard life preserver), compared with eight pounds or more for conventional body armor, while giving 80 percent of the protection.

The armor is made of silicone-treated acrylic fibers, which trap flying metal particles by fluffing up into "snowballs" on impact.

BIOELECTRONIC

Heart Powers Energy Source

The vibration of a beating heart powers a new energy conversion device designed to run such body implants as heart "pacemakers."

The heart beat causes a piezoelectric water to vibrate and thus generate electricity. At a rate of 80 beats per minute, with a movement equivalent to a dog's heart, the maximum output of the device is 4 volts and 160 microwatts.

This is enough to drive existing pacemakers or to power a tiny implanted telemetry system broadcasting data about, for example, body temperature.

The device, which is two inches long, seven-eights inch wide and half an inch thick, was reported to Dr. Wen H. Ko of Case Institute of Technology.

ELECTRONIC

TV Camera Is Tubeless

A tubeless television camera smaller than a man's hand has been developed for the Air Force.

Instead of an image tube, the camera uses 32,400 microscopic dots of photoconductive material at the intersections of thin wire conductors, placed on an inch-square glass slide in a grid pattern. Each dot produces a tiny current in proportion to the amount of light falling on it.

The dots are scanned both vertically and horizontally 60 times a second by a technique similar to that used in computer memory read-out. The camera is being developed by the Radio Corporation of America.

METALLURGICAL

Zinc Reclaimed More Cheaply

A less costly method for reclaiming zinc from die-cast zinc-aluminum alloys used in automobiles for carburetor parts, has been developed by the U.S. Bureau of Mines.

An iron compound is used to convert the aluminum in such alloys to easily separated forms at lower temperatures than in the usual distillation method.

CARTOGRAPHIC

Combat Mapping Improved

A distortion-eliminating mapping system that can chart 1,000 square miles in 48 hours is being developed by the U.S. Army Corps of Engineers.

The system, which produces contour, including selected ground points, maps from aerial photographs, can turn out simpler maps even faster. Still in early stages, the system will not be issued until 1968.

The mapper is designed for rapid set-up and use in the field. A newly-developed electrostatic printer enables production of 2,000 copies per hour.

COMPUTER

Memory Cores Shrunken

Computer memory cores have been reduced almost to the size of a human hair by scientists at International Business Machines Corp. using the ancient art of the candlemaker.

They found that the usual technique of pressing became unusable as the required size of the doughnut-shaped cores became smaller and smaller. So they passed a nylon filament through a bath of varnish and magnetic powder, passed the "taper" through an oven to bake the coating on, and recycled it through the bath again until the desired thickness was built up.

The coated taper is then "frozen" in a block of wax and the nylon filament pulled out, leaving hollow tubes of core material which are sliced in a milling machine and fired.

WATER RESOURCES

Rivers To Be Shifted

A scheme to divert north-flowing rivers during the next 20 years to augment the water resources of the Canadian prairie provinces is expected to get underway by 1968.

A $10 million dam on the Pembina River is to be built near Entwistle some 65 miles northwest of Edmonton, Alberta. The objective of the project, planned by the Alberta, Canada, Department of Agriculture, is to control flood waters and to start a channel that will take north-flowing water into the North Saskatchewan River.

The increased flow in various tributaries of the North Saskatchewan will be the first step on the continent toward diverting the flow of water from the Arctic.