PUBLIC HEALTH

# Nuclear Plant Hazards

**Nuclear reactors are explosive machines, expert points out, and are more dangerous than any industrial machine in current use. Lists four perils.**

➤ A WARNING against the hazards of nuclear power plants was sounded by Dr. George Weil, technical director for U. S. participation in the United Nations Atomic Pool plan and a physicist in the Atomic Energy Commission's reactor development program until 1952.

Dr. Weil believes that nuclear power facilities can be successfully operated, but that discussion of the possible dangers has been limited "almost exclusively to technical meetings and publications," whereas the benefits have been widely publicized.

Reactors, Dr. Weil pointed out, are not only expensive machines, they are substantially more hazardous than any industrial machines in current use. Their operation requires a great degree of caution and control, and those in charge of designing and building them "must make the most pessimistic assumptions" concerning potential accidents and their consequences.

Three principal considerations must be weighed to establish a realistic overall perspective of the industrial hazards, Dr. Weil concluded. He listed these in *Science* (March 4) as follows:

1. The types of accidents that can occur and the extent of property damage and personal injury that may be involved.
2. The chances that accidents will occur.
3. The positive benefits that may be balanced against such risks.

The two main characteristics making a nuclear power plant hazardous are the contained radioactive materials, fission products and some types of fuel used, and the more than critical amount of fissionable material that may be within the plant.

The risks of combining these two ingredients under one roof, Dr. Weil says, can be compared to large-scale production of both highly poisonous gas and explosives in the same plant.

A nuclear power plant has a built-in capacity for self-destruction in a fraction of a second, Dr. Weil pointed out. The greatest possible danger from such a run-away accident would include:

1. Destruction of the reactor part of the plant beyond repair.
2. Radioactive contamination, beyond hope of salvage, of the building housing the reactor and measuring equipment.
3. Persons killed and injured by the blast.
4. Fall-out of radioactive material from the blast cloud.

Precautionary measures in plant design, location and operation, Dr. Weil said, would reduce these hazards, but would increase costs considerably.

Only with basic understanding of any process can effective steps be taken to minimize risks, Dr. Weil concluded, and the 12 years of "safe activities with many types of reactors is convincing testimony" that reactor technology is understood.

Science News Letter, March 19, 1955

MEDICINE

## Men Are "Sicklier" Hospital Figures Show

➤ THE MALE sex is the "sicklier," hospital figures gathered in an American Medical Association survey seem to show.

In spite of the fact that one-sixth of all persons admitted to hospitals in one year were pregnant women, there are more men than women hospitalized.

On one day in 1953 there were 1,206,592 persons in 6,539 of the nation's 6,840 registered hospitals. This included 642,156 men and 564,436 women.

Even in the childbearing years of life, between 15 and 44, men exceeded women in hospitals by 13,000. At ages 45 to 64 the excess was over 51,000, but after 65 it dropped to 2,000.

Accidents and occupational diseases might account for some of the male excess in hospitals, but would hardly account for the fact that there were 11,300 more males than females under 15 years old in hospitals, the A.M.A.'s Dr. Frank G. Dickinson pointed out.

Men in Veterans Administration hospitals and other federal hospitals made up much of the excess, apparently.

Science News Letter, March 19, 1955

TECHNOLOGY

## First Paper Made From Synthetic Fibers

➤ PAPER WITH up to ten times the strength and 200 times the folding resistance of conventional sheets has been produced for the first time from nylon and other synthetic fibers.

The paper, which tests show could be produced commercially, is also resistant to corrosive chemicals, mold, bacteria, light and moisture. Such properties would make the product ideal for heavy duty bags, chemical packages, file cards and record stock.

Development of the experimental paper was disclosed by Dr. Robert A. A. Hentschel of the Textile Fibers Department of E. I. Du Pont de Nemours and Co. Inc., Wilmington, Del., to the Technical Association of the Pulp and Paper Industry.

Science News Letter, March 19, 1955

ELECTRONICS

## "Surplus" Radar Waves Now Used Against Smog

➤ "SURPLUS" WORLD War II radar waves, which never proved useful in detecting Nazi or Japanese planes, are being employed successfully against a peacetime foe.

These microwaves are being used by Dr. W. D. Hershberger, professor of engineering at the University of California at Los Angeles, in an effort to "put the finger" on the chemical culprits responsible for the damaging effects of smog.

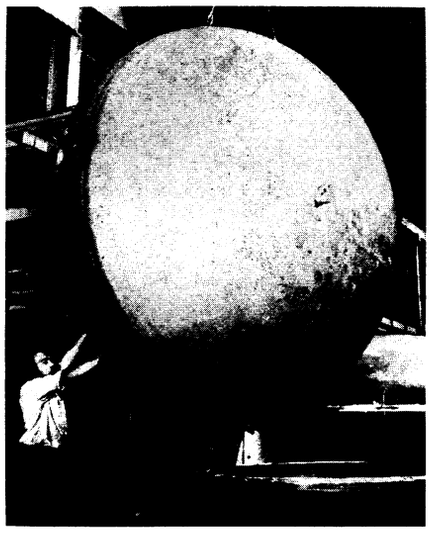
Certain gaseous chemical compounds thought to be associated with smog are known to absorb some of these waves. Thus wave absorption patterns may serve as "fingerprints" to help identify the guilty compounds.

Smog is being trapped in tiny capsules and subjected to a thorough laboratory scrutiny by "radar sleuths" in the first phase of the study.

In the second phase the Los Angeles basin will serve as a laboratory. Microwaves will be beamed across the basin from appropriate stations to special receiving instruments on top of the U.C.L.A. engineering building.

Absorption patterns recorded by the instruments may thus give clues as to the identity of members of the smog gang that at times make life miserable and may endanger health in Los Angeles.

Science News Letter, March 19, 1955



*LIGHTNING SHIELD—This lens-shaped steel tank, as part of one of the world's largest oil circuit breakers, will tame surges of electricity caused by lightning. Electric arcs during momentary interruption of flow of current are almost as hot as a nuclear explosion. The device is being manufactured in General Electric's High-Voltage Switchgear Department in Philadelphia.*