

NUCLEAR PHYSICS

New Atomic Furnace Plant

Somewhere in the West a new atomic power field station will be constructed where new kinds of nuclear reactors will be built.

► AN ATOMIC furnace factory where machines for releasing atomic energy will be manufactured and tested is planned for construction somewhere in the West, Dr. Robert F. Bacher, scientist-commissioner of the U. S. Atomic Energy Commission, disclosed.

The Commission program for the development of machines for harnessing atomic energy, called nuclear reactors, was unveiled by Dr. Bacher to the American Academy of Arts and Sciences in Boston. It calls for operation, construction or investigation of nearly a dozen different kinds of atomic machines.

Three kinds of nuclear reactors were built during the war: chain-reacting piles at Chicago and Oak Ridge, Tenn.; and the big reactors at Hanford, Wash., for making the synthetic atom bomb element, plutonium. A high-energy atomic furnace has been put into operation at Los Alamos, N. Mex., since the war, and a more conventional chain-reacting pile is nearing completion at Brookhaven National Laboratory on Long Island.

Four new kinds of reactors will be built in the near future. They are:

1. Materials testing reactor for testing materials for use in atomic machines. This high-energy, small-space reactor has been under design for two years at Oak Ridge National Laboratory.

2. Naval reactor to be constructed by Westinghouse will be a land-based prototype for a shipboard atomic power plant. Plans are being developed at Argonne National Laboratory near Chicago, and construction will be started in about a year.

3. High-energy experimental breeder or fast reactor being designed at the Argonne Laboratory. It will operate with high energy atomic bullets, or neutrons, like the present Los Alamos pile, but will be more powerful and use uranium 235 instead of plutonium for fuel.

4. An "in-between" reactor operating with neutrons at intermediate energies, between the slow neutrons of the wartime piles and the high-energy pile at Los Alamos. The intermediate reactor will be built at Knolls Atomic Power Laboratory operated by General Electric at Schenectady, N. Y.

Both the materials testing reactor and the land-based Navy plant will be built at the new atomic power field station "in the western part of the United States," Dr. Bacher said.

He described the new station as a "field facility" of the Argonne Laboratory, major

center of the Commission's nuclear reactor work.

When it is selected, the new site will come under the secrecy regulations which govern the Hanford plant in Washington state, Dr. Bacher indicated. In addition to the two reactors scheduled for construction at the yet-to-be-picked location, others will probably be manufactured at this atomic furnace factory, he indicated.

In addition to the four new types of reactors now moving from the drawing board to construction stage, four other new kinds of atomic energy machines are under study.

They are:

1. Still in the study stage, but getting lots of attention, is nuclear reactor for aircraft, being investigated in a project called NEPA (nuclear energy for propulsion of aircraft). A survey of this field by the Massachusetts Institute of Technology is now being studied by the Commission.

2. A power plant using natural uranium for fuel. The Hanford plutonium-making reactors use natural uranium, but harnessing this fuel for power production is a job for the future.

3. Homogeneous reactor in which the fuel and materials for cooling, moderating and reflecting would all be mixed together instead of having fuel embedded in the other materials.

4. A simple, low-cost reactor for scientific research and training of new technical people in atomic energy.

End products of this program of atomic machine research and construction may be economically useful electrical power from atomic energy, Commissioner Bacher concluded.

Science News Letter, February 19, 1949

ENGINEERING

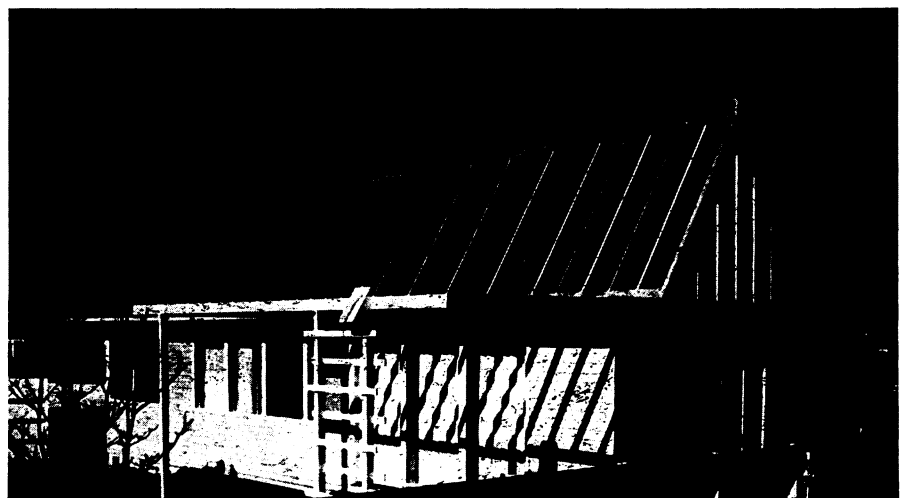
New Solar-Heated House

► SUN-HEATED water is to be used in an experimental house just completed in Cambridge, Mass., to determine how effectively solar heating may be used to replace coal and oil in keeping the dwelling comfortable in the cold weather of a New England winter.

The building was erected by the Massachusetts Institute of Technology and is to be used in connection with solar heating investigations to determine to what degree the sun can compete with conventional methods of heating. The construction of

the house and the research directly associated with it is a project directly under Edmund L. Czapek, research associate in architecture.

The completed house is a one-story affair with five rooms. It resembles ordinary modern small dwellings except for the roof structure. The south slope of the roof, with heat collector, inclines 57 degrees to the horizontal, presenting an area of 400 square feet on which the sun's heat is received. Water, warmed by the sun in a special "flat plate" collector located on the roof of



SOLAR HOUSE—This is a view of the south exposure showing the areas of the heat collector on the roof of the house.