

## PHYSICS

# France Not an A-Power

Although many atomic research pioneers were French, interruption of scientific training by World War II and lack of uranium isotope separators plague France's atomic effort.

By HOWARD SIMONS from Paris

➤ FRANCE, whose early scientists pioneered in nuclear physics, is anything but an atomic power today.

While confusion about atomic bomb testing powers American political debate during election year oratory and England enters the industrial atomic era with a new electrical-atomic plant at Calder Hall, France, by necessity, remains an interested bystander.

Lack of properly trained manpower and no industrial plant for isotopic separation of uranium plague the French atomic effort.

The first shortage is a world-wide shortage, but perhaps more acute in France. During World War II, scientific training in France came to a screeching halt and has not yet fully recovered.

The second shortage is being overcome through the use of the U. S. atoms-for-peace offer under which France has already negotiated for 40 kilograms, or 88 pounds, of uranium 235, estimated to cover its present needs.

France's need for atomic energy is almost desperate. Resources are very short. In black and white for this year, almost 50% of the country's hydroelectric potential has been used, coal production is at its maximum, and the French production of oil and natural gas does not even begin to meet the needs.

Concentrating heavily on a fast, short-term atomic program designed to produce power, France expects to double the electrical capacity of its plants operating on atomic fuel every three or four years.

By 1975, the Commissariat à l'Énergie Atomique, or C.E.A. the French equivalent of the U. S. Atomic Energy Commission, hopes to have France producing from between 15% and 35% of its total electrical output by means of atomic energy.

The French already have one reactor in operation, nicknamed G1, the "G" standing for graphite. It is a gas-cooled, natural uranium, graphite-moderated reactor. Two larger reactors, called G2 and G3, are being built. All three reactors are located in Marcoule in the south of France on the Rhone River. None are as big as the Calder Hall reactors.

G1 has been in operation since January, 1956, and is only a prototype of the larger reactors. When completed in 1958, G2 and G3, plutonium producers, will each be capable of producing 150,000 kilowatts of heat and between 25,000 and 35,000 kws net electricity.

The French are also building a fourth reactor, tabbed EDF1. Scheduled to go into operation in 1959, it will be located in the Loire River valley. This graphite reactor will be capable of producing between 60,000 and 70,000 kws of electricity.

The fourth reactor, EDF1, is being financed by the French electricity works, which expects to build a new power reactor in France every 18 months.

In addition to the reactors, France has set up an atomic research center at Saclay, southwest of Paris. It is at this center that the major share of French experimental and theoretical work in the field of nuclear studies is carried out.

At the present time, the French C.E.A. has a budget of \$140,000,000.

France must and is relying heavily on international cooperation and the sharing of the atom.

Science News Letter, November 3, 1956

## PLANT PATHOLOGY

## Ill Snap Beans Cured By New Antibiotics

➤ SNAP BEANS are being cured with antibiotics. The latest U. S. Department of Agriculture report is that two new antibiotics, anisomycin and griseofulvin, protect healthy plants against the fungus diseases of powdery mildew. In larger concentration, they also cure infected plants.

Science News Letter, November 3, 1956

## TECHNOLOGY

## Army Midget Radar Portable as Small TV

➤ A MIDGET RADAR SET in the same class as portable TV sets has been developed for the Army.

Built by the Sperry Gyroscope Company, the portable radar is intended to move with mobile forces and watch the enemy despite smoke, darkness and fog. The set contained in a drum 14 inches high and 14 inches long is powered by a motor-generator that can be carried by one of a two-man team.

The whole outfit weighs 85 pounds compared with most Army radars of a ton or more.

Science News Letter, November 3, 1956



**PORTABLE RADAR**—The lightweight radar being operated here by Pvt. Thomas Hughes of Kearny, N. J., while Pfc. Thomas Yamada of Honolulu, T. H., plots the results, weighs only 85 pounds, compared to the ton or more of most Army radars. The midget radar set, built for the Army by Sperry Gyroscope Company, produces an audible signal when a man or object is within range instead of the usual visual signal, thus eliminating the cathode ray tube.