



PLUTONIUM PLANT—This element which may play an important role in atomic power as well as atomic bombs is manufactured at the Hanford, Wash., plant of the Atomic Energy Commission. The plant has changed in the three years since this picture was taken, but the AEC has not released any more recent pictures which would reveal changes.

(and thorium from which one kind of fissionable uranium can be manufactured) in the world. Despite the fact that a piece of uranium metal that can be held in one hand would yield the heat equivalent of 2,500 tons of coal, the extraction of the uranium or its conversion into fissionable material is a long and tedious technical task.

Once the technical problems are overcome, what is the competitive cost position of atomic power compared with generating power from conventional fuels? No one can estimate this too closely now.

There is another danger in atomic power plants beyond the technical ones. In the operation of any pile there will be a concentration of uranium from which atomic bombs might be made. In addition, the pile reaction may be just the same as the process

at Hanford where plutonium is made from non-fissionable uranium. So every atomic power plant becomes potentially an atomic bomb material factory, from which there could be bootlegged the materials for illicit atomic bombs. Thus atomic power plants must be controlled if there is to be international or other control of atomic energy.

Some experts feel that time is being lost by lack of a direct construction program for atomic power plants, while others believe that money and time will be saved by collecting additional experimental data and perfection of theory.

Secrecy shields some of the facts needed for judgment as to whether America is doing all that can be done to bring about the new era of atomic power.

Science News Letter, September 11, 1948

ASTRONOMY

Many Man-Made Skies

➤ MANY more people today can observe man-made skies than ever before.

Ten months to a year ago, planetaria existed in only a half dozen communities. Now over 30 different organizations are operating instruments that within a half hour or so show stars visible in the heavens not only that particular night, but through-

out the entire year. Most of the projecting devices and domes in use today are portable so they can be carried to out-of-the-way localities for display.

By far the most effective device yet produced for picturing the motions of the heavens is the Zeiss planetarium, designed by engineers of the firm of Carl Zeiss in

Jena, Germany, at the suggestion of the astronomer Max Wolf. Several such instruments, which cost around \$150,000, are in operation in the United States.

The first was installed at the Adler Planetarium of Chicago, almost two decades ago. More than 3,000,000 visitors attended during its first three years. The Fels Planetarium of the Franklin Institute of Philadelphia opened in 1934. Almost 200,000 visit it each year.

Other Zeiss instruments are operated at the Griffith Planetarium in Los Angeles, the Hayden Planetarium in New York City, and the Buhl Planetarium in Pittsburgh. Stockholm's Zeiss planetarium has been acquired by the University of North Carolina, in Chapel Hill, but will not begin operation for some time.

The clock can be turned back a thousand years or more with a Zeiss planetarium. It is designed to exhibit, with close fidelity, the appearance of the sky at any place on the earth and any time of day or night for many thousands of years. Projectors of sun, moon and planets may be operated independently. The Zeiss works are no longer in existence, and it is unlikely that any more of these instruments will be available.

At the Museum of Natural History in Springfield, Mass., is the Korkosz plane-

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Do You Know?

Milk contains 14 times as much *calcium* as the blood of the cow.

Waste from the process of canning *pears* is suitable for growing high-protein, high-vitamin yeast for use in poultry feed.

The parent stock for most of the improved hybrid commercial varieties of *sugarcane* has come, in recent years, from a U. S. Department of Agriculture nursery.

Cocona, a desirable new fruit for the humid tropics, is said to be delicious in preserves, pies and sauces; it has been called a "jungle apple" and a "peach tomato."

To improve the curing of coarse-stemmed *hay*, some farmers used what is known as a mower-crusher; this cuts the hay in the usual manner and then passes it through crushing rolls which crack the stems.

Super *service stations* for private planes are promised; they will be built at flying fields and will provide fuel, oil, and minor repairs, and also rest rooms and a chart room with maps and other navigation plotting facilities.

Between Jan. 5 and May 12, 1948, 211 floating Japanese *mines* were spotted in the Pacific, including 113 within the 50-mile limit of the American continental coast; 69 were destroyed by American agencies within the 50-mile limit, and 74 outside.

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tarium, an elaborate home-made device that projects the stars upon the inner surface of a dome, as does the Zeiss planetarium, but without representing the planets. Special "twinkling" effects add reality to the projected star images. This was opened to the public in 1937.

A new portable planetarium, simple in design and operation, has proved highly popular. First shown at Harvard late last year, more than 20 Spitz planetaria can be found from coast to coast. Developed by Dr. Armand N. Spitz, educational director of the Franklin Institute, some are used in schools and colleges, some in public museums and observatories, and one is employed in government research.

Costing but a fraction as much as the Zeiss, these sell for \$720 each; home-made

domes are often used with them. Attachments are available to show coordinates, eclipses of sun and moon, comets, meteors and other astronomical phenomena.

A number of other, simpler devices are also used for indoor study of the heavens. Some are electrically operated, others are turned by hand to show how the skies change during a night or season.

One consists of a frosted globe left unpainted where light to represent the stars can shine through. Another is simply a series of cards with holes punched in them. All these devices acquaint amateurs with changes in the heavens, and teach them to recognize outstanding stars and constellations when the heavens shine in all their glory.

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GENERAL SCIENCE

Textiles Would Aid Japs

► **REBUILDING** the textile industry in Japan is a number one problem in the economic recovery of the country, according to the U. S. Department of State. The labor that constructed wartime equipment should now go back to peacetime fabrics.

Twenty years ago, textiles accounted for 40% of the total value of Japan's factory production and absorbed 52% of all industrial labor. Less than a decade later more than one-fourth of this labor had been taken over into industries which involved the war-supporting metal, machinery and chemical industries. To become self-supporting, Japan must redevelop its international trade. The basis of this trade is textiles.

International trade is essential for Japan because that country must import many of the raw materials used in industry as well as one-fifth of the food required. The textile industries rely largely on imports; Japan raises practically no cotton or wool, and much of the silk produced in the country was, in prewar years, sent abroad in the raw condition.

The postwar rehabilitation of Japan's textile industry has been a slow process although supported by the Supreme Commander for the Allied Powers and bolstered by about 900,000 bales of American cotton sent to the country by the American Commodity Credit Corporation in 1946-47. Later 350,000 bales were sent.

This was done to help get Japan on its feet with as small an outlay of American money as possible. Stocks of raw cotton and wool were more readily available than other raw materials, and it seemed desirable to promote textile manufacture because it is not a war-supporting industry.

Shortage of raw materials is an important factor in the textile rehabilitation program. Shortages of labor and fuel are other important factors. Machinery is available, although much was destroyed by bombs or scrapped by the Japs to build war equipment. Japan has more machinery in oper-

able condition than is actually in operation, the State Department report asserts. The labor shortage is due in large part to the many former textile workers who moved to rural areas during the wartime bombing, and now seem to prefer to remain there where food is more plentiful.

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PHYSICS

Unheard Sound Helps Test Paint, Varnish

► **SOUND TOO SHRILL** to be heard by human ears can now tell whether a paint or varnish will wear well. It can do it in less than a second.

This modern test to tell whether a synthetic coating will peel before it should was reported to the American Chemical Society meeting by Saul Moses of the Naval Research Laboratory, Washington.

The coating is smeared on metal which is then shaken violently electronically by a device that generates high frequency sound waves. The force of vibration needed to make the paint or varnish peel indicates how long it can be expected to last under normal conditions of wear.

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