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## *Japan Screen Topics*

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### TRAPPING SOLAR ENERGY

104feet 2min 53sec

1. (INTRO, SUN) Alternatives to petroleum are a vital need in today's energy short world.

One of the potentially most attractive sources of energy is the Sun --- solar energy could lead to limitless supplies of cheap energy.

This pilot plant on the island of Shikoku is exploring two systems for exploiting the power of sunshine.

2. (MIRRORS, TOWER) Both systems rely on increasing the intensity of sunshine through reflection from curved mirrors. Sunlight concentrated by the mirrors generates enough heat to produce steam for driving a turbine generator.

In one system, total of 807 mirrors, each 4 x 4 meters square, reflect light upward to this 69-meter tower. Inside the tower, heat-absorbing arrays of pipes containing water soak up the sunlight, converting it to heat which boils the water to produce steam at temperatures up to 249°C.

3. (TANKS, PIPES) The steam is stored in large pressure tanks, and can be used to drive turbine generators producing electric power. The most vital step in this process is the motorized aligning of the mirrors to keep the beams of light focused sharply on the heat absorbers.

4. (COMPUTER CONTROL ROOM) Each step in the process is carefully monitored by computerized equipment, requiring only a minimum staff to operate.

5. (LONG MIRRORS) The second system differs mainly in the alignment of the mirrors; this time long banks of mirrors reflect the light onto pipes through which water is run. The water heats to temperatures of 370°C, producing steam which is again stored in large tanks for use in powering turbine generators.

6. (COMPUTER CONTROL ROOM) This system also uses computerized automatic monitoring equipment to check on each step of the process.

7. (CLOSE) Each of these pilot systems produces 1,000 kilowatts of electric power. It is thought that commercial applications could generate up to 100,000 kilowatts.

This efficient, clean and relatively inexpensive means of employing solar energy promises a bright future.

#### SOILLESS FARMING

57feet 1min 35sec

1. (INTRO, PLANTS) Getting "more for less" is the theme of the revolutionary hydroponic process for stimulating plant growth. The fruits and vegetables grown through this process are as delicious as those grown naturally, only larger, more abundant, and easier to harvest.

2. (PLANTS, TOMATOES, ROOTBED) A single plant, such as the tomato plant, can be made to grow at an exceptionally rapid rate, and to bear fruit at any time of the year inside a greenhouse.

No earth is required for this process --- air and plentiful water being the only requirements.



The roots are kept enclosed in a special container, with a sufficient supply of water to stimulate growth. This plant is producing large numbers of tomatoes after only seven months of growth, and will continue to produce for an estimated four to five years. Ordinary plants take a longer time to grow to fruit-bearing size, and produce only a single harvest.

The fruit of the plant is carefully checked for size, weight, color, taste, etc. And so far, the results have been tomatoes of greater size, better taste and in larger numbers than possible with any natural-growth process.

The hydroponic process can also be employed for other fruits and vegetables, such as cucumbers or melons. And success is leading to continued new applications for a process which could someday end the 'seasonal' approach to agricultural produce.

## INDUSTRIAL ROBOTS

102feet 2min 50sec

1. (ROBOT WORKING) Hydraulic parts are being produced in this factory, with no human workers anywhere in sight.

Instead, the parts are produced by robots --- not the mechanical men of science fiction, but industrial automated machines that can be programmed to undertake a wide range of complicated tasks.

2. (ROBOTS) Robots are produced by specialty firms, like this company, and can be programmed to perform almost any basic productive or assembly task.

In factories throughout Japan, industrial robots are beginning to take over jobs which are simply too heavy, too dangerous or too boring for humans. The robots can work just as fast, and just as accurately, without tiring.

Workers replaced by robots are trained for more sophisticated jobs which offer greater chances for advancement.

One application in which industrial robots excel is welding. A single robot can tirelessly continue to weld various spots, or, for example, to lift and move into place extremely heavy items. Robots can work in environments which would be unhealthy or even dangerous to humans, and are capable of complicated and delicate tasks as well as those simply requiring rote actions or brute strength.

3. (IC BOARD) Here, for example, a robot is putting together Integrated Circuit boards for use in electronic appliances. This is skilled work that once required many human hands.

An age of industrial robot labor is dawning in Japan as in other advanced industrial countries, an age in which man can be released from dangerous, boring work to pursue more productive and rewarding tasks.

#### INTERFERON: NEW CANCER DRUG

126feet 3min 30sec

1. (INTRO, COMPANY) Cancer has long been one of mankind's most dread scourges. But today, a promising new development brings hope that at least some types of cancer may be defeated.

Interferon is a new wonder drug which has been extremely effective in treating some forms of cancer. Ane here at the Hayashibara Group's Fujisaki Institute, the mass production of Interferon is now underway.



2. (LABORATORY, HAMSTERS) While experiments with Interferon have shown amazing results against some forms of cancer, the drug was prohibitively expensive to manufacture. The Hayashibara Group, however, spent five years in developing an inexpensive mass production system for Interferon, using hamsters.

Newly-born hamsters are injected with human cells which reproduce as the hamster grows, forming a large tumor. When the tumor is harvested, after three to four weeks, cells in it contain a relatively large amount of Interferon which can then be made available to cancer patients. According to previous experimental data, and the production results, sufficient Interferon to treat one patient can be obtained from just ten hamsters, at an extremely low cost.

3. (LAB WORK, PURIFICATION) The 'lymphoblast' cells containing Interferon are treated to obtain the drug, which then goes through a careful purification process. The Interferon resulting from this process is absolutely pure and compatible with human cells. Although experimental treatment has been necessarily limited until now, mass production of the drug will allow expanded clinical testing.

4. (TESTS, MICRO) Cancer is basically an uncontrolled reproduction of ordinary human cells. So far, Interferon appears to work on some forms of cancerous cells by interacting with them to halt the wild reproductive process. With readily available supplies of the new drug, it is hoped that experiments will result in reliable treatments which will put an end to at least some forms of cancer.

5. (CLOSE, INTERFERON BOTTLES) Mass production of Interferon is, perhaps, the most promising step yet on mankind's long road to finding a 'cure' for cancer.