



Japan Screen Topics

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YEAR-ROUND BUTTERFLIES

72 feet 2 min.

1. (FAMILY ENTERS ZOO) It is a crisp, clear winter day in the suburbs of Tokyo, but this couple, like many others, is taking a short Sunday trip to more tropical climes.

2. (BUTTERFLY) Here, in the Insect Pavilion of the Tama Municipal Zoo, it is springtime all year round, and the 200-odd fluttering butterflies who live here are oblivious to the snow and cold. Established 13 years ago for the purpose of researching the breeding habits of butterflies, this 200 square meter greenhouse now operates on a year-round basis, housing over 10 different butterfly species.

3. (CARETAKER ENTERS) Strict temperature control and surveillance is critical. The research team learned that butterflies begin to prepare for winter when daylight hours drop below ten and temperatures go below 16 degrees centigrade. In a highly successful deception, the greenhouse is now artificially lit and oil-heated long after the sun has set and the winter frost is on the ground.

4. (TWO BUTTERFLIES) Butterfly lovemaking is an elaborate yet flighty affair. The eggs are laid on the leaves of a suitable foodplant which are then placed in a glass-domed container. The first step in metamorphosis, where the egg yields a caterpillar or larva, gives way to the pupal or chrysalis stage.

In Japan, the 45-day cycle is repeated four times between April and September. Those larvae turning to pupa in late September remain in a kind of hibernation throughout the winter.

5. (STILL PHOTOS) But here at the Tama Insect Pavilion, the cycle continues uninterrupted. The pupal stage is one of fierce biological activity beneath a still surface. When it is completed, the fully developed adult butterfly emerges to enter the last, the reproductive stage, of its life cycle:

6. (WOMAN AND CHILD) ... to mate and fertilize the eggs that will begin the wondrous cycle of metamorphosis once again.

FUEL OF THE FUTURE

83 feet 2 min. 18 sec.

1. (RIVER) Every day, Tokyo's 10 million residents produce on an average of 17,440 tons of household waste. One suburban community decided to do something constructive with its own 660 ton share of such waste: they decided to use it as fuel.

2. (TRUCKS) After the sanitation trucks pick up the trash, they bring it here to the Katsushikaku Sanitation Center. It is then dumped into a large bunker where it is kept until incineration.

3. (HAND ON LEVER) Operated by remote control from within the glass-enclosed control room above, a clam-shell bucket crane lifts the flammable waste material from the bunker and drops it into the adjacent furnace.

4. (FURNACE) Temperatures in this subterranean incinerator range from 750 to 900 degrees Centigrade.

5. (GENERATOR) The water in the boiler above the furnace turns to steam which in turn drives the generator turbine. In one hour, as much as 12,000 kw of electricity can be produced.
6. (CONTROL CENTER) The power produced by this process provides all the electricity used at the plant, including that needed by the control room. In addition to being totally self-sufficient in electrical energy, the Sanitation Center produces a considerable surplus of electricity.
7. (CENTER EXTERIOR) This overage is fed into the power system of the Tokyo Electric Power Company through which it helps to heat a Home for the Aged across the street from the plant, as well as public swimming pool in the neighbourhood.
8. (POOL) This community housewife is probably unaware that she is participating in a unique experiment - an important part of Japan's effort to find alternative energy sources for the future.

LISTENING ARM

94 feet 2 min. 37 sec.

1. (GLOVE HAND) Reaching for a glass of water; gripping it; raising it to the mouth; simple movements for most of us. But for those who have injured or lost one or both upper limbs, they can be tortuously difficult, if not impossible, to execute. Now, this voice-activated, micro-computer controlled artificial arm offers revolutionary help to the handicapped. The arm is modular in design. Attached to the body by a shoulder harness and waist-band, it can be separated into three parts - at the shoulder, the elbow and the wrist - and can therefore be used by people with varying degrees of injury and limb loss. Made of light, strong carbon fiber, it weighs only 1.98 kg.

2. (MEETING) Under the auspices of the Science and Technology Agency and the Ministry of Health and Welfare, a team of doctors, mechanics and students from Japan's most prestigious universities began intensive research in 1975 on the development of the computerized limb. The basic finger mechanism had been first developed in France 12 years ago,^{*} and it too underwent refinement.

3. (MICROPHONE ON NECKBAND) The most interesting feature of the arm is its operation. The user simply hums a four-note melody through a miniature microphone fitted at the throat. The voice instructions enter the pocket-sized micro-computer, where different patterns have been stored in a memory bank. The computer then sends electrical impulses to 12 small, high-capacity, battery-operated motors fitted at the shoulder, elbow and wrist. Virtually every motion of the human arm can be mimicked.

* by the Centre d'Etude et Recherche aux Anciens Combattants.

4. (BRUSHING HAIR) Since even the simplest human arm action involves complex muscle and joint movement, the team's most difficult job was creating life-like motion. This is the first artificial arm able to be raised above shoulder level.

5. (EATING SOUP) Although over 500 humming combinations are possible, few people can memorize that many. 50 basic "ditties" were thus chosen to represent the 50 most oft-performed complete tasks, like "drinking" and "eating with a spoon", single patterns represent the entire series of actions involved. Minor technical improvements are still being made, but it will not be long before this "listening arm" is mass-produced. Very soon, many handicapped people will experience physical and psychological freedom and independence to an extent never before possible, just by humming a few little tunes.

HANDMADE "SOBA"

116 feet 3 min. 13 sec.

1. (FLOUR) Few foreigners are in Japan very long before they notice that "noodle slurping" is practically a national pastime. Among the many different kinds of noodles or "Japanese spaghetti" available, "soba", or buckwheat noodles are among the most popular. And although nowadays most soba is machine made, many shops still pride themselves on the unique flavor and texture of their hand-made delicacy. Here a soba maker carefully mixes his buckwheat flour with water, hand kneads the dough, and rolls it out with a traditional Japanese wooden rolling pin. His eye alone tells him when the dough has been rolled evenly, to between one and two millimeters in thickness.
2. (CLEAVER) After the dough is folded over itself several times, it is cut with a simple cleaver and no measuring device. Yet miraculously the noodles are more often than not twenty centimeters long and identical in width.
3. (SOBA SHOP) Here, in a typical "soba" shop in the old part of downtown Tokyo, the noodles are being furiously boiled. This is one of the most popular types of "soba", called "Zarusoba", after the "zaru" or small raised bamboo mat upon which it is served. The "zaru" acts as a strainer for excess water. The noodles are first dipped in a cup of soy sauce mixed with onions, and then eaten. Many other types of "soba" are served in soup form, taking their names and peculiar ingredients from the area in which they are made and served. Many Japanese and even some foreigners make it a point to sample the "soba" of a given area whenever they travel around Japan, and many bring back samples of packaged "soba" as souvenirs.

4. (DISPLAY CASE) "Soba" is a traditional food that goes far back into the annals of Japanese history. Fast-food chains notwithstanding, it is a workingman's (and workingwoman's) delight - quick, nutritious, filling and economical. At lunchtime all over Japan, it is standing-room only in most soba-shops. The crowds only encourage more passersby to enter, since they are a guarantee that the soba shop has a healthy and happy clientele.

5. (TELEPHONE) And for those who are too busy to join in the festivities in person, delivery services are available for phone-in orders. Every noon, shop boys can be seen performing breath-taking balancing feats as they zig-zag through heavy traffic. Although all of them are adept, it is undoubtedly true that in the world of noodle-bowl-balancing, there are "apprentices", and high above, there are the real "experts".

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