JAPANESE SCULPTURE AT ROM

A monumental sculpture by the Japanese artist Sofu Teshigahara was unveiled recently at the Royal Ontario Museum, where it is permanently installed on the terrace in front of the McLaughlin Planetarium. The work is a gift, through the Ontario Heritage Foundation, of Toronto businessman and art connoisseur Walter Carsen.

The sculpture, entitled "Happy Cloud", is carved in wood, in the traditional Japanese manner, with riveted bronze facings over much of its surface. It stands six feet nine inches high, with a diameter of 105 inches and is mounted on tall aluminum stilts resting on a base of the same metal.

Teshigahara was born in Tokyo in 1900. Before he took up sculpture, he had become internationally known as the founder and headmaster of the Sogetsu School of Ikebana, noted for the study and creation of harmonious arrangements of flowers, branches, leaves, stone, wood, ceramics and organic materials. Ikebana arrangements vary from those occupying the smallest spaces to landscapes and gardens, cityscapes and windowsills.

Teshigahara's skills include calligraphy, sculpture, Ikebana, poetry, painting and philosophy.

Happy Cloud

CONTROL OF FOREST PESTS

A significant advance in the biological control of the spruce budworm, Canada's most costly forest pest, was reported recently by the Canadian Forestry Service.

Researchers headed by Dr. Wladimir A. Smirnoff of the Laurentian Forest Research Centre at Ste. Foy, Quebec, and aided by the Quebec Lands and Forests Department have completed an experimental spray program of a 10,000-acre fir forest in the Temiscouata area of eastern Quebec. The heavily-infested forest was sprayed with bacteria (*Bacillus thuringiensis*) improved by an enzyme to speed the effect of their attack on the feeding budworm larva.

The spruce budworm, which has ravaged Canadian forests for many years, is in a severe epidemic state this summer in more than 20 million acres of eastern Canada's spruce and balsam-fir growth. Much of the forested areas under attack has been protected over the years by chemical spray. This special bacteria formulation offers an important alternative, one that does not endanger other species of beneficial insects, plants, fish or mammals.

CFS scientists have studied the use of *Bacillus thuringiensis*, a natural-occurring bacterial disease, against the budworm for several years. The bacteria are licensed for agricultural and forestry use but their effect has been too slow to halt the voracious feeding habits of the budworm during the larval stage of development.

Dr. Smirnoff undertook to improve the effect of the bacillus and reasoned that an enzyme was required to break down the gut wall of the larva and speed introduction of the fatal infection of the budworm's blood system.

Since the rigid structure of the budworm consists of chitin he chose the enzyme chitinase, which had been introduced successfully into spray formulations in over 100 acres in 1971. Chitinase, however, was expensive and not available in sufficient quantities.

BIRD HELP

Dr. Smirnoff began looking for a supply in nature and turned his attention to the digestive tracts of birds, which eat insects containing chitin, and found a supply in their stomachs. He then worked with a chemical company to extract 100 grams of chitinase from the entrails of 60,000 chickens acquired from poultry-processing plants.

Only a few milligrams of chitinase was used for each acre in the bacillus formulations, but this was enough to accelerate the action of the bacteria and arrest larval feeding. Growth of the trees, which otherwise would have been stripped, continued and the forest is in good health, he said.

The 100-acre plot sprayed last year is flourishing this year, although it is surrounded by an epidemic of budworm. These results suggest that there may be some residual effect of the bacteria, giving promise of long-range control.

General use of the bacillus-chitinase spray will depend upon the low-cost production of chitinase by the new process.