

## Cancer Research On Many Fronts

It took seven separate locations widely scattered through the city of Nagaya to accommodate the Seventeenth General Assembly of the Japan Medical Congress last month. In all, 35,000 Japanese doctors and a handful of foreign specialists showed up for what may have been one of the world's largest and busiest scientific conferences.

When the smoke cleared, among the pictures emerging was one of solid progress, though no hypothetical cures, on a broad spectrum of cancer research, ranging from chemotherapy and surgery to instrumentation, photography and microorganisms, including:

### IMMUNOLOGY

#### Antigen Trigger

An attempt to break the body's immunotolerance to tumor cells was reported by Tokyo University pharmacology professor Dr. Denichi Mizuno.

Dr. Mizuno worked with a polysaccharide isolated from the bacterium *Proteus vulgaris*, and found it effective against several cancers in mice, "with few, only very temporary side effects."

The mechanism of the saccharide's cancer-arresting ability, he reports, is the stimulation of the reticuloendothelial—the system charged with recognition and destruction of foreign bodies.

If the RES can be activated to detect and identify cancer cells as an enemy, which it does not always do naturally (SN:4/1), the body's defensive mechanisms can be triggered.

"We believe," he says, "the injection of antigens will open a new avenue of approach to immunotolerance."

### BIOCHEMISTRY

#### Virus-like Organism

Prof. Fusahiro Ikura of the Cerebral Research Institute, Niigata University Medical Department, is examining a mysterious microorganism resembling a kind of virus. It was discovered when he and an American—Dr. H. H. Zimmerman of Montefiore Hospital, New York—were jointly investigating the cause of human cancer in 1960-66.

"Some kinds of virus are known to cause cancer among experimental animals," he explained. But a big problem is whether human cancer is attributable to the viral action or to some

inorganic cancer-causing material.

Dr. Ikura injected brains, muscles, and skins of thousands of mice with various chemical substances known to cause cancer, and always observed by electron microscope "virus-like slender microorganisms present near where the cancer-causing substances had been injected a month after injection, regardless of the kind of substance or location of the injection.

"When cancer began to develop," he continues, "the microorganisms were invariably found to disappear. The strange stick-like objects each contained RNA (ribonucleic acid)."

His studies, if successful, may tell how to prevent the growth of, or remove such microorganisms to control cancer development, as well as identify a possible cause of the cancer. He is yet to isolate completely the microorganisms by a chemical process or confirm that when planted in animals, they reproduce and give rise to cancer.

### BACTERIOLOGY

#### Erysipelas Theory

Hemolytic streptococci, pathogens of such infectious diseases as erysipelas and blood poisoning, have "high cancer control efficiency," says Prof. Hajime Okamoto, bacteriologist at Kanazawa University Medical School. In animal experiments, he found that hemolytic streptococci injection "has arrested growth of almost all types of cancer and proved incomparably more effective than any other chemical substance in arresting such growth."

Whether the erysipelas can cure cancer, as old wives' tales have suggested for more than a century, is still far from settled. But the Okamoto group apparently has determined that, as the bacteriologist reports, "hemolytic streptococci enter the cancer cells by breaking through cell walls.

"They expel the nucleic acid, the most important part of a cancerous cell, and then destroy the cancerous growth."

### CELL MOBILITY

#### Transmission

Movements of cancer cells in blood vessels have been filmed by Dr. Haruo Sato of the Acid-Fast Bacteriology Research Institute at Tohoku University in Sendai. The scientist reported that cancer cells manage to squeeze themselves into capillary vessels smaller than they are. This new phase of the ecology of cancer cells was brought to light when researchers first anesthetized a rat, opened the abdomen, and took out the lining. Then they at-

tached the camera to a microscope and injected cancer cells into the carotid, a neck artery, of the rat. The cells went down the carotid and, gradually advancing, squeezed into capillary vessels smaller than themselves by conforming to their shapes. Dr. Sato noted that a cancer cell 20 microns in diameter can go into a vessel seven microns in diameter; in this way cancer cells circulate through the blood and lymphatic vessels throughout the body.

### SURGERY

#### Peeling Technique

Osaka Medical University surgeons Naohike Harada and Takamitsu Kusunoki described surgery using a new "peeling technique" in bladder cancers. They claimed the chance of cancer return is "extremely low" and added that "any new tumor spots, post-operatively, can easily be detected and excised."

Surgery affects mucosal denudation of the bladder, with no side effects, disclosed clinically in over 40 cases. Normal mucosa grows back within a month's time. Only three of these bladder cancer patients suffered recurrences.

The new growths were found and surgically removed through a tube inserted into the bladder, with regrowth of the lining apparently not increasing the risk of "cancerous infiltration into the urinary bladder," as Dr. Harada explains. "It was notable that the site of the recurrence in the rare cases where such did occur was limited in the unstripped mucosa and not in the newly regenerated mucosal lining."

"Up to 60 percent of patients with low grade tumors can be treated by our technique, since their tumors have not extended into muscular tissue. Results are best if only part of the mucosa is removed and if the bladder is left intact," says Dr. Kusunoki.

### FROM GHANA

#### Instant Fu-Fu For West Africa

A technological marriage between the yam and the instant mashed potato may soon solve one of West Africa's most important food storage problems.

The yam, one of West Africa's most widespread staples, is a large, bland relative of the sweet potato. For centuries, African women have cooked and pounded them in heavy wooden mortars until the starch congealed into a stiff dough of rubbery farina known as fu-fu. The sticky mass is molded into little balls with the fingers, dipped into a spicy soup and eaten.