

Bacteria May Replace Ponderous Presses

Bacteriology—Chemistry

Extract Oil From Coconuts at Much Lower Cost

TINY bacteria may replace ponderous iron presses in the work of extracting vegetable oils from many varieties of seeds and nuts. This is the suggestion of John Woods Beckman, an Oakland industrial chemist, made in a report to the American Chemical Society.

Vegetable oils are held in microscopic cells in plant tissue. The walls of these cells are composed of tough cellulose. The pressing of vegetable material for oils means crushing these cell walls. Exceptionally tough cell walls often offer so much resistance to pressure that extraction of fat is far from complete. A means of eliminating the cell walls not only would liberate the fat more perfectly, but would leave the remaining cellulose material in far better condition for further working. The residue, a hard fibrous cake in the pressing method, is valuable as a source of by-products, chief

among which is cattle food.

To dissolve the cell walls by chemicals is inadvisable, because most substances necessary would affect the quality of the oil. These same walls, eaten away by the action of bacteria, would liberate the oil completely and untouched.

"There is a very prevalent hardy and vigorous bacterium that is easy to obtain from brewers' malt," says Mr. Beckman. "This bacterium has been pressed into service in a new oil recovery process.

"The temperature at which these organisms prefer to work is 60 degrees Centigrade, and this fact makes it possible to work under conditions that are self-sterilizing. If a culture of this organism made from brewer's malt is mixed with disintegrated nuts such as copra (dried coconut) together with a weighed amount of ground limestone and sufficient water to form a mush,

and the resulting mixture is placed in an incubator at the desired temperature, with exclusion of air, active growth takes place, and free oil begins to appear on the surface. After about six days the oil can be recovered from the residue by filtration."

Several advantages are claimed for this method over the older method of pressing. There is more complete extraction of oil, which means greater profit. The quality of the oil is better. The residue, containing as it does bacteria, amino acids made indirectly by the bacteria, and calcium lactate, is more valuable as cattle feed than the cake produced by pressing. It is virtually a predigested food which can be fed in larger quantities than press cake. The cost of operation is only a fraction of the cost of producing oil by the standard pressing method," writes Mr. Beckman.

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Physicians to Learn New Treatment

Medicine

MOUNT Alto Veterans' Hospital in Washington is to be made a training center for Veterans Bureau hospital physicians learning the Baer method of treating the dangerous bone disease, osteomyelitis, with maggots, tiny larvae of flies.

This is now the plan of the Veterans Bureau, Representative Royal C. Johnson of South Dakota, told the Veterans' Committee of the House of Representatives. Representative Johnson is chairman of the committee, and recently arranged for Dr. William S. Baer, clinical professor of orthopedic surgery at Johns Hopkins University, Baltimore, together with his assistant, Dr. S. K. Livingston, to give a lecture with slides and demonstrations on his treatment before all committee members.

Because doctors must be well trained before they go out to the hospitals and introduce this treatment, Representative Johnson said, it was thought that the best plan was to make Mt. Alto hospital a training center for doctors to learn the work at first hand.

Mr. Alto is staffed largely by Johns Hopkins men, he said.

Appropriately enough the new

method, which is to be used to treat the thousands of veterans suffering from this bone disease as soon as their physicians and surgeons can learn its technique, was developed as a result of observations made on wounded men during the World War. Dr. Baer was then chief surgeon of the orthopedic section of the medical corps of the second army of the A. E. F.

Treating the wounded as they came into the hospitals, he noticed that those who had been lying out on the fields for hours were brought in with their wounds covered by the tiny crawling maggots, the larvae from which common flies develop. But these men, strangely enough, did not develop infections in their wounds, as did those whose wounds had been dressed and treated very soon after their infliction.

After the war, Dr. Baer remembered the maggots when he was treating children suffering from osteomyelitis. This disease is an inflammation of the bone, more common in children than in adults. It is the result of an infection and requires prompt surgical treatment. It is also frequent in soldiers following wounds in which the bony tissue has been in-

jured. Recovery is often delayed for years if the disease reaches the chronic stage. Dr. Baer remembered the maggots on the soldiers whose wounds healed quickly, and he remembered that the healers of ancient times had written that maggots should be used to clean up wounds of patients whose bones had been broken. He then started careful, scientific investigations.

The action of the maggots, Dr. Baer found, is to eat the dead tissues, bone and flesh, of the wounds and thus to destroy the material that would have furnished good breeding ground for bacteria. The bacteria which might have entered a wound and set up an infection were unable to exist in the wound scavenged by the maggots. Dr. Baer has had excellent results with this method in treating children.

The investigations had a number of setbacks. During the first winter, the supply of maggots gave out abruptly when cold weather killed the flies, and more had to be brought hurriedly from warmer cities than Baltimore. Then Dr. Baer started breeding maggots, so as to have a constant supply available.

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