

# Leaves Provide Protein

Soldiers in Viet Nam are exposed to the human flea, *Pulex irritans*, and the rat fleas, *Xenopsylla cheopsis* and *X. astia*. *X. cheopsis* is known to be the chief carrier of plague and murine typhus. *P. irritans* can also transmit plague under favorable circumstances, and *X. astia* can transmit both plague and typhus. Vaccine protects the men from typhus, of course.

Other insects in Viet Nam include six species of *Anopheles* mosquito. There are at least 36 species of *Anopheles* in Indo-China. *Aedes aegypti* and *A. albopictus* are both found in South Viet Nam. They are capable of transmitting dengue fever, but their relative importance as carriers in South Viet Nam has not been determined, Army medical authorities say. Soldiers get yellow fever vaccine, although urban yellow fever has never been reported in that part of the world.

Lice, flies, ticks, mites, spiders and scorpions are all present in Viet Nam, and ants, termites, bedbugs and cockroaches add to the discomfort although they are not known to have much medical significance.

## Watch Out for Ticks

Vacationers in the United States are warned to watch out for ticks, closely related to insects, which are found along pathways in woods or uncleared land.

In such areas, the Public Health Service advises, it is unwise to sit or sleep on the ground. Clothing should be examined carefully at least once a day, and ticks destroyed. Children should be checked for ticks twice a day when they play out in wooded places.

Ticks feed entirely on blood, usually of animals, but often of humans. Their bite can cause paralysis in young children and animals. Ticks can carry Rocky Mountain spotted fever, tularemia and a number of other diseases.

In removing ticks, take care to avoid breaking off the mouth parts and leaving them embedded in the skin. If the tick is swollen from feeding, take special care not to crush it so the skin is smeared. Use tweezers slowly, or apply petroleum jelly or fingernail polish, which will cause the creature to withdraw its mouthparts allowing it to be easily removed. After removal, paint the wound with iodine or other antiseptic and wash your hands with soap and water or rinse them in alcohol.

• Science News, 90:42 July 16, 1966

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► PEOPLE MAY be nibbling a leaf sandwich or munching a leaf ravioli in the near future if scientists come up with better ideas for squeezing the nourishing protein juice from leaves.

British scientists have devised a leaf pulper which in essence cuts or presses sugar beet tops or pea greens to release the protein-rich juices from the cells, reported Dr. N. W. Pirie, chairman of the biochemistry department of the Rothamsted Experimental Station at Harpenden, England.

After the juice is heated quickly to coagulate the protein, the extract is washed and pressed into a dark green block having the texture of cheese and containing 60% water, Dr. Pirie said in Science, 152:1701, 1966.

The dry part of the dark green protein contains 9% to 11% nitrogen, 20% to 25% lipid, 5% to 10% starch and a trace of ash.

This leaf protein appears to be nutritionally better than seed proteins, such as those of wheat and barley and as good as the protein one gets from eating meats.

This leaf protein may become a major foodstuff of the world, especially in the tropics where plants grow rapidly.

Leaf-pressing machines already being used in Jamaica, India and Israel, are about to be used in Uganda and New Guinea.

Up to now funds for research and machinery in this field have not been readily available. Rich countries such as Britain and the United States have not been enough in need of protein to finance the research. Countries that are most in need of new sources of protein, especially wet tropical lands, are too impoverished to support such research.

Yet the value of processing leaf protein is being more recognized today as nations search for new sources of food.

The dark green color and faint spinach- or tea-like flavor do not at first seem attractive, but these foods are already part of the normal diet in countries such as India, West Africa, Southeast Asia and New Guinea. For special needs, the leaf protein has been encased in some sort of pasta and served as ravioli, rissoles and similar dishes.

Protein was recognized as a component of leaves in the late 1700's, 150 years before it was seriously investigated. Work on leaf protein started in

England in the tense period after the fall of France when it looked as if Britain would have to depend on her own resources for food. For the next 20 years machinery was developed for processing fresh leaves into acceptable foodstuffs.

More research needs to be done on perfecting the pressing and pulping machines, and on testing protein extraction from leaves such as jute, sugar cane, sweet potato and water hyacinth.

With adequate research in this matter, Dr. Pirie believes that eventually the wet tropical lands could become nutritionally self-sufficient.

• Science News, 90:43 July 16, 1966

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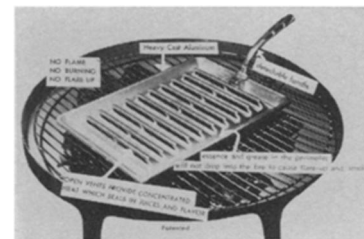
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