

Soap and a Snail Killer

An accident of modern medicine may end a world health problem.

An African doctor noticed dead snails in the wash water—and may have written the end to one of the world's worst health problems—bilharzia, a parasite-borne disease also called schistosoma.

The berries of the endod plant are used in Ethiopia for many medical purposes—as a purgative, a cure for worms, inducing abortion, and as an insecticide. They are also used as soap; farm wives believe they wash clothes cleaner than ordinary soap, as well as leaving then free of vermin.

The endod plant, *Phytolacca dodecandra*, remained just another useful part of the folk pharmacopoeia until Dr. Aklilu Lemma saw the dead snails in the wash water; he realized that endod might be the weapon with which to attack the worm that causes bilharzia, during that part of its life cycle spent inside snails.

No snails, no worms. No worms, no bilharzia.

Dr. Aklilu, Dean of the Faculty of Science of Haile Selassie I University in Addis Ababa, Ethiopia, tested extracts of the ripe berries and found that they killed snails within 24 hours down to a concentration of 10 parts per million. By comparison, copper sulphate and sodium pentachlorophinate, the two most widely used molluscicides, act in pure form at 10 ppm.

A cheap, powerful molluscicide is desperately needed—the World Health Organization has estimated that 150 million people suffer from the disease.

It infects up to 90 percent of the rural population in tropical countries like Egypt, where irrigation is widespread and sanitation minimal. It is a serious problem from China to tropical Africa, and has even infected tourists swimming in Caribbean islands.

Bilharzia is spread when an infected person voids feces containing the eggs of the parasite into water used for swimming or drinking. The eggs develop into larva-like micracidia, which infect certain species of snail. These develop into a free-swimming cercaria armed with enzymes that enable them to penetrate human skin. The worms migrate through the circulatory system, mate, and eventually lay their eggs in the lungs, liver, digestive tract, or around the bladder, depending on the species of worm.

The result is a chronic, debilitating disease almost invariably found in com-

ination with malnutrition, or any of a dozen other tropical complaints. In many areas, almost everyone is infected in childhood while swimming in streams or irrigation ditches. They think everybody normally has cough, diarrhea, and pain in the lower abdomen, and do not realize what a toll this disease is exacting from their daily efficiency. Moreover, bilharzia is often very difficult to diagnose.

In any case, doctors rarely see a case of pure bilharzia. They do not know with any precision how many people suffer from it or even exactly how the disease causes death. In most cases, bilharzia apparently sets the stage for some other fatal infection.

Cures exist for bilharzia, but they are dangerous and not completely effective. In any event, curing the patients will not help if they are immediately reinfected. Better sanitation would solve the problem, but this will take many years to establish. In the meantime, new irrigation projects spread the disease to areas where it was never before a problem. There is also some chance that monkeys or other mammals may also harbor the parasite and serve as reservoir hosts.

The key to the bilharzia problem is thus to eradicate the carrier snail. This is exactly what Ethiopian public health officials hope that endod will eventually be able to do, perhaps simply by being planted along infected bodies of water. Much research remains to be done. Endod's active ingredient must be isolated, and its effects on livestock and drinking water tested. Endod may in fact be so powerful that it may disrupt the whole balance of aquatic life. If it works, however, Dr. Aklilu, trained at Johns Hopkins University, Baltimore, Md. will have shown that an African scientist working in his own country with minimal facilities, can make an inestimable contribution to developing countries all over the world.

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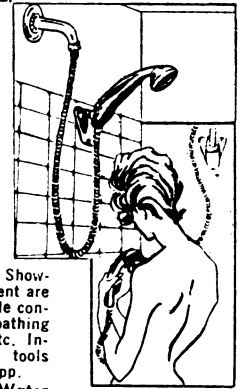
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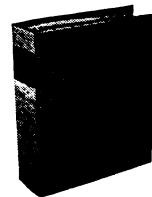
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