PARASITOLOGY

Snails Help Fight Disease

Snails housed in special finger-bowl dishes are primary research tools in fight against schistosomiasis, disease that afflicts one-twelfth of world's population.

➤ SNAILS ARE playing a major role in medical science's fight against a disease which infects about one-twelfth of the world's population.

This disease is schistosomiasis. Estimates of its incidence run as high as 144,000,000 people.

There are three types of schistosomiasis, and at least one of them is found in Africa, South America and the Orient. There are areas in Africa and Egypt where 80% of the population suffer from the disease.

Schistosomiasis is a very unpleasant disease. It is caused by tropical worms, known as schistosomes. In humans, the worm eggs often puncture the walls of the veins and arteries, causing leaks in the blood stream. Frequently those afflicted with the disease show pronounced swelling of the abdomen, and there is a high death rate in acute cases.

Similar to most parasitic diseases, schistosomiasis has a cycle of reinfection, going from man to a host and then back to man again. In this case, the middle creature, or host, is a mollusk. The worm parasite passes in feces from man to snails, who in turn infect the water in which they live. Another person will complete the cycle by swimming, drinking or even stepping into the infected water.

Treatment for this disease consists of injections of arsenic and antimony compounds, but these drugs, while effective in some instances, are highly toxic. So the search for something safer and more effective has been under way for several years.

At Lederle Laboratories, Pearl River, N. Y., Dr. Redginal Hewitt and his associates, operate a snail "farm." Over 15,000 of these creatures are raised to provide hosts for schistosomes. Infected snails are kept in special finger-bowl dishes for five weeks in order to allow the embryonic worms to develop. The snails are then isolated in a small amount of water for six or seven hours, where they obligingly shed the young worm parasites. Young white mice are then inoculated with at least 100 worms, and in six to eight weeks the baby worms grow to adult schistosomes. The adult worm is usually about one-eighth of an inch long, although some grow to half an inch. They live in the bloodstream.

The mice are then divided into groups of ten and put into special containers. Dr. Hewitt and his assistants then inject, or administer orally, the various drugs to be tested.

The problems of caring for 15,000 snails are many and varied, Lederle's parasitologist reports. Harmful algae often grow in their aquariums and kill them. An even temperature must be maintained, their aquariums kept clean and free from dust, and overcrowding must be avoided. Some snails can be used over and over until they die of old age, which is usually eight months to a year.

Feeding is a simple procedure. Small pieces of lettuce are dropped into their watery quarters three times a week.

Snails are bisexual and usually hang their eggs on the sides of the tanks. Under proper heat, eggs hatch in about 12 days. As many as 50 baby snails result from one batch of eggs.

Several years ago Dr. Hewitt and his associates developed Hetrazan, the drug which successfully controls filariasis, or elephantiasis, which affects about 400,000,000 people.

Dr. Hewitt is on a round-the-world tour for field research on these and other parasitic diseases.

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SNAIL "FARM" — Special finger-bowl dishes house the more than 15,000 snails used for research to find ways of combatting schistosomiasis, a disease which infects about one-twelfth of the world's population. Dr. Redginal Hewitt of Lederle Laboratories in Pearl River, N. Y., is shown here at work with a few of these snails, hosts for the tropical worms that cause the disease.

NATURAL RESOURCES

Discover Sulfur Deposits

➤ THE NEWLY discovered sulfur deposit in Louisiana, if of sufficient extent, will play an important part in the economy of America and also that of the free world. It will relieve the present world shortage of sulfuric acid, a chemical of first importance in many industrial processes.

The United States produces annually nearly 5,000,000 tons of sulfur, exports much, but utilizes some 3,500,000 tons in this country. It is used in chemicals, fertilizers, insecticides, pulp and paper, explosives, dyes and coal-tar products, rubber, paint and varnish, food products and other materials.

About three-fourths of the sulfur consumed in America is converted into sulfuric acid before entering its ultimate use. By far the largest use of this acid is in making superphosphate fertilizers, an essential in producing enough food to maintain the American people at present standards. American consumption of sulfuric acid in making fertilizer is approaching 4,000,000 tons a year.

The second largest use of this acid is in the manufacture of other chemicals, including explosives needed in war and in industrial activities. Some 2,000,000 tons are used each year for this purpose. Petroleum refining is the third largest consumer, using over 1,000,000 tons a year. A very important use of sulfuric acid is in the iron and steel industry. Without it, essential steels for national defense and civilian uses would be produced with difficulty.

There are several processes for making sulfuric acid from natural sulfur. In one the sulfur is burned to make sulfur dioxide which is then converted to sulfur trioxide by the addition of oxygen. When the sulfur trioxide is dissolved in water, sulfuric acid results.

The natural sulfur found some 900 feet under the surface of the earth in Louisiana and Texas can not be obtained by ordinary mining methods as it is in other parts of the world. It is obtained by boring holes down into the deposit. In each hole, a pipe is inserted through which superheated steam reaches the sulfur. The steam is hot enough to melt the sulfur, and sulfur-laden water comes to the surface, assisted by high-pressure air also released at the bottom of the borehole.

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