

# medical sciences

Gathered at the Second International Congress of Parasitology in Washington, D.C.

## VACCINES

### Stimulating antibodies: Live larvae . . .

A vaccine immunizing dogs against intestinal hookworm (*Ancylostoma caninum*) was reported by Dr. Thomas A. Miller of the University of Glasgow. Dr. Miller is now in Kansas City, working for Richardson-Merrell, which hopes to get this vaccine on the United States market. Dog hookworm does not invade the human intestine but does burrow into human skin, where its tunnelings produce large raised eczematous areas. Mice spread dog hookworm by carrying the larvae.

An application for license is before the Food and Drug Administration. FDA has refused to license a vaccine against cattle lung worm developed by a similar method at the University of Glasgow and widely used in Great Britain.

Both vaccines are produced by a new technique, using live larvae attenuated by irradiation. The larvae continue to live in the animals into which they are injected. There they may produce antigens that stimulate protective antibodies against the disease. But because they were irradiated the larvae have lost the ability to multiply and so cannot cause disease.

The FDA has not approved attenuation by irradiation because larvae may occasionally survive as disease producers and because some workers think larvae may carry disease-producing bacteria.

Dr. Miller says that he has successfully vaccinated some 5,000 dogs against infections in experimental work in Scotland. He and his associates are now presenting new evidence to FDA that the attenuation method is safe.

## VACCINES

### . . . and synthetic chemicals

While some researchers are using live larvae to stimulate parasite antibodies, many others are now seeking to isolate the antigenic chemicals that such larvae produce, says Dr. Aurel O. Foster, director of the National Animal Parasitology Laboratory of the Department of Agriculture.

The search often begins by growing parasites in culture. Then the cell organs, (nuclei, mitochondria, lysosomes, microsomes) are separated by differential centrifugation. Delicate immunological tests follow to see which of a long series of fractionation products show antigenic properties. Final steps would be to isolate the antigens and identify their chemical structures: Nobody has got this far. It would then be simple to make a chemical vaccine.

## NEMATODES

### Fighting elephantiasis

Filariasis is also called elephantiasis because filarial worms invade lymphatic vessels and connective tissue, often producing grotesque enlargement of legs, scrotum or breast.

The disease is almost impossible to treat once the larvae introduced by mosquito or tick bites grow to 15-

inch worms. It is endemic in many countries, including South Vietnam. The last disease pocket in the United States was in Charleston, S.C., where worms whose ancestors were brought over from Africa were finally wiped out in 1912.

These advances against filariasis were reported:

- Mass treatment with diethylcarbamazine by U.S. Navy groups reduced new infections (microfilariae in the blood stream) to less than one percent on an entire island in American Samoa, according to Dr. John F. Kessel, University of California at Los Angeles.
- Larval densities were reduced 95 percent by spraying a test area in Burma with a larvacide, fenthion, Dr. M. H. M. Abdulkader, World Health Organization, says.
- *Wuchereria bancrofti*, most widespread of the strains producing human disease, has for the first time been established experimentally in an animal (the gerbel), by Dr. Lawrence R. Ash, University of California. This gives investigators a way to find what they say they most need: the early signs of an invader that seldom produces clinical symptoms until it is beyond control.

## BIOLOGICAL TAGGING

### How to tell an old crab

A crabber's tip helped researchers find a way to answer a difficult question. Females of the blue crab move down Chesapeake Bay as they approach maturity. Male crabs wait along their route, capturing and inseminating them. Most of the females reach the mouth of the bay where they hatch their eggs. But in the fall cold water stops some before they reach their spawning grounds. These winter in deep water from which they are scooped in great quantities by commercial crabbers.

For fishery management, researchers wanted to know how many of the caught crabs are old females who had already produced eggs and how many are young females, caught before they had a chance to mate. To find out, the investigators had to examine crabs' legs under a microscope, looking for egg traces.

But according to Dr. Sewell Hopkins of Texas A&M University, a crabber pointed out that female crabs carry a parasite (*Carcinonemertes carcinophila*). These tiny worms lie coiled in crabs' gills, immature and white. When crabs produce eggs, the worms crawl to the abdomen to feed on the eggs. Later they return to the gills, in a well-fed brick-red state visible to the eye. Thus a quick look is enough to tell an old crab from a young one.

## HEART WORMS

### Animal carriers

Dogs and cotton rats have their own strains of *Filaria* (heart worms), recently recognized as producers of human disease in the United States. In the lungs, worms produce lesions often mistaken for other lung diseases on X-rays. Elsewhere they form body lumps that look like tumors. Some 20 percent of Canadian groundhogs examined have *Filaria*, Dr. Ronald C. Ko, University of Guelph, Ontario, reports.