suming then that the mammal had eaten the larger quantity of poison listed, a hawk like the one tested could eat more than 50 squirrels that had been killed with strychnine; more than 8 that had been killed with arsenic, and about 20 that had died from the effects of thallium, providing it did not obtain any of the ingested poisoned grain.

With this resistance to strychnine the hawk would be practically immune to danger from secondary poisoning from such a toxic agent.

These experiments indicate that the bird would be forced to live entirely for about three weeks on mammals dying from thallium to obtain a lethal dose. This estimate is made disregarding the rate of elimination of poison that would be made by the mammal, which factor should double the number of animals needed to provide a lethal dose for the bird.

These results in laboratory experiments lead to the following conclusions:

Arsenic has no great secondary poisoning hazard, and is too erratic in its results to be a good rodent poison, consequently it is not used in large field-control operations.

Strychnine presents no danger of secondary poisoning to hawks.

Thallium is apparently more hazardous, but even this cumulative poison can kill hawks only in extraordinarily large doses, unlikely to be obtained under field conditions.

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SPREAD OF BROAD FISH TAPEWORM OF MAN

THE finding of *Diphyllobothrium latum* (Linn., 1758), the broad fish tapeworm of man, in Oklahoma should be of interest to parasitologists. It is known that this species was brought to the United States by the Swedes and Finns who settled in Minnesota and North Dakota, where the proper intermediate hosts for its development abound. Hegner, Root and Augustine[1] write: "In the United States *Diphyllobothrium latum* has been considered a rare parasite occurring only in emigrants from European endemic centers. However, a number of indigenous infections have been reported recently from Minnesota, Illinois, Indiana, Michigan and Massachusetts." The above-mentioned states are all in the northern tier of states. The occurrence of this tapeworm in Oklahoma shows a wider distribution for the species.

Recently a thirty-one-year-old laborer called at the Oklahoma Medical School Hospital clinic for treatment. He stated that he believed he had a tapeworm because he recognized the signs and that he knew people got them from eating dried fish in the old country, as he had done. He stated that he was a native of Finland and has been in America fifteen years, coming to Oklahoma three months ago from Louisiana. This is interesting, because the tapeworms taken from him must have had a length of life of over fifteen years, provided of course that he became infected in his native land. Riley[2] stated a Swedish woman was definitely known to carry the infection for thirteen years.

Upon examination he was found to have numerous ova in the stool, to have bloody diarrhea, to be very anemic and weak, with attendant colicy pains. These pains he claimed doubled him up and kept him from work. Dr. A. D. Danielson treated him with oleoresin of aspidium and salts. At the first treatment twelve feet of proglottids was obtained. Later fifteen to twenty feet was obtained. All the segments showed the characteristic grayfish color and coiled brown uterus centrally located. By careful search two heads were found. These were unarmed and had two bothria or slit-like suckers. Upon the patient's release, "feeling much better," he was told to come back in two months to be checked.

As this host came from Finland not more than fifteen years ago, it is evident that carriers are still actively transporting this parasite across the ocean and spreading it farther in the United States, and that the migration of Finns, and perhaps Swedes, in search of work in new areas is a large factor in its spread.

The danger of this species becoming indigenous to the southern states seems remote, due to the absence of cold water lakes and proper intermediate fish hosts. The possibility remains, however, that *D. latum* may adapt itself to different intermediate hosts from those now known for it and hence become endemic in new areas.

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DISCOVERY OF CONODONTS IN THE PHOSPHORIA PERMIAN OF WYOMING

DURING the summer of 1931, the Phosphoria formation along the east front of the Wind River Mountains, Wyoming, was examined for microfossils. The Phosphoria is Pennsylvanian and Permian in age, the boundary coming below the Pustula member. This member contains a bed of low-grade rock phosphate

[1] R. W. Hegner, F. M. Root and D. L. Augustine, "Animal Parasitology," 731 pp. New York, 1929.

[2] Wm. A. Riley, "The Longevity of the Fish Tapeworm of Man, *D. latus*," *Jour. Parasitol.*, 5: 193, 1919.