

# Journal of the Minnesota Academy of Science

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Volume 15 | Number 1

Article 4

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4-1947

## Abstract Papers

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### Recommended Citation

(1947). Abstract Papers. *Journal of the Minnesota Academy of Science*, Vol. 15 No. 1, 120-124.  
Retrieved from <https://digitalcommons.morris.umn.edu/jmas/vol15/iss1/4>

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(snail), 2 Chironomidae pupae (midge), 2 Corixidae (water boatman).

The other four specimens were fingerling brown trout naturally reared in the stream the previous autumn. They were found mostly in a long pool near the headwaters of the stream. They averaged  $3\frac{5}{8}$  inches in length and  $\frac{1}{2}$  ounce in weight. Their stomachs contained: 210 Baetis nymphs (May-fly) in 4 specimens, 21 Simuliidae larvae (black fly) in 1 specimen, 5 Chironomidae larvae (midge) in 3 specimens, 2 Chironomidae pupae (midge) in 1 specimen, 2 Tipulidae larvae (crane fly) in 1 specimen, 2 Physa (snail) in 1 specimen, 1 Dytiscidae adult (diving beetle) in 1 specimen. The outstanding factor here was the abundance of May-fly nymphs and black fly larvae which had been practically absent from all previously studied stomach contents. Both of these insects are riffle dwellers. Several explanations can be given for this variation in trout diet. First, the May-fly nymphs are quite abundant at this time of the season and the trout naturally adapt their diet to the food available. Second, the fingerling trout may prefer a different diet to the larger ones.

In conclusion it may be said that all the stomach contents analyzed had some food in them. In fact, most of the trout had an abundance of specimens. Of the 20 stomachs examined in 1946, a grand total of 1622 specimens were identified. This gives an average of 81 specimens per trout stomach. Therefore it was not surprising to find that the ratio of length and weight of the trout found in Gilmore Valley Creek compared favorably with the standard.

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## THE ORIGIN OF CERTAIN TUMORS IN DROSOPHILA

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### ABSTRACT

This report concerns two tumors: one a lethal, occurring in one-half of the males and killing same; another, appearing in both males and females and always benign.

The sex-linked tumor, occurring at any time during the larval life, always interfering with further metamorphosis and eventually killing the larva, is derived from groups of tiny embryonic cells, destined to form some internal organ of the adult stage. Those of the digestive tract are located just outside of the epithelium and have been found to enlarge by rapid proliferation of their cells and to break away from their original positions, developing into tumors one-fourth as large as the larva itself.

The benign tumor which is due to genes located in the second, third, and possibly the fourth chromosomes is therefore not sex-

linked. When it takes its origin from the embryonic rests of the digestive tract, the central cells of very young tumors are epitheloid in character surrounded by connective tissue cells. As the tumor grows older, the number of concentric rows of connective tissue cells increases and the central epitheloid cells degenerate. It is quite evident that the central epitheloid cells derived from the embryonic rests had begun to differentiate precociously and the new growth of connective tissue cells about them caused their degeneration.

The differences between the lethal and benign tumors just considered agree with one of the prevailing theories that the cells of benign tumors show varying degrees of differentiation while those of malignant growths have lost all power of differentiation. The lethal tumor just considered is derived from embryonic cells incapable of differentiation while the benign, when developed from the same cells, does show a degree of differentiation.

The fact that these tumors are derived from resting embryonic cells supports, also, the modern embryonal theory of development of tumors, i.e., the development of tumors from embryonic rests as proposed by Connheim and others.

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## FURTHER STUDIES OF LUNG VOLUME AND THE INTRAPULMONARY DISTRIBUTION OF INHALED GASES\*

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\* Papers covering this material are to be published elsewhere.

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## THE EFFECT OF SMOKING ON THE VASODILATATION PRODUCED BY THE ORAL ADMINISTRATION OF 95 PER CENT ETHYL ALCOHOL OR A SUBSTANTIAL MEAL\*\*

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\*\* Published in *American Heart Journal*, 33: 654-662 (May) 1947.

## CERCARIAE OF *Stagnicola emarginata serrata* IN LAKE BEMIDJI

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### ABSTRACT

Public swimming beaches on Lake Bemidji, Minnesota, were studied relative to the trematode infection found in *Stagnicola emarginata serrata* (Say), a pulmonate snail commonly found on these beaches.

It was known that certain of these larval trematodes were responsible for schistosome dermatitis, a rash acquired when these worms attempted to bore through the skin of bathers. By making a survey to determine the percentage of snails infected we hoped to be able to predict the likelihood of Schistosome dermatitis occurring on these beaches.

Two beaches in the vicinity of the City of Bemidji were found to have infections ranging from 20 to 25% during July. Subsequently many cases of schistosome dermatitis were reported. Two beaches on the north end of Lake Bemidji had infections ranging from 5 to 10%. Few cases of infection were reported from these beaches during the summer.

Intensive study was also made in regard to the development of the cercaria into the metacercaria of *Cotylurus flabelliformis* in these snails. Developmental stages found closely resembled those described by Szidat for *Cotylurus cornutus* (Rud.), a closely related European species. When the cercaria penetrates the snail the tail is shed and the body bores into the internal organs. Here a remarkable growth occurs culminating in a large, motile form which has many rudiments of organs found in the adult. Next, there occurs a condensation, the parasite becoming smaller, rounder, and thicker. Finally there results a small pear-shaped, heavy walled metacercaria which, when ingested by a duck, is able to develop into the adult form.

## EFFECT OF CERTAIN ANTIBIOTICS ON THE GROWTH OF PROTOZOA

ALFRED M. ELLIOTT AND DAVID MYERCHIN  
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## ANTAGONISM OF THE DIABETOGENIC ACTION OF ALLOXAN BY PENTNUCLEOTIDE AND BY THE THYMUS GLAND IN THE RAT

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### ABSTRACT

The antagonism of nucleotides from yeast nucleic acid (Pent-nucleotide, N.N.R.) to the diabetogenic action of alloxan in the rat has been explored in respect to route of administration, time lapse between injection of nucleotides and alloxan, and the dosage level of nucleotides. It has been demonstrated that the nucleotides of ribonucleic acid are prophylactic against the diabetogenic action of alloxan and that this antagonism is a graded response with a definite latent period. Thymectomy, on the other hand, has been shown to intensify the diabetogenic action of alloxan.

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## A SURVEY OF PLANT AND ANIMAL COMMUNITIES ON A SANDBAR ISLAND IN DULUTH HARBOR

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### ABSTRACT

The six-acre sandbar island in Superior Bay, Duluth, Minnesota, was made in the summer of 1934 by dredging operations of the navigation channel. It is situated about 100 feet off the shore of Minnesota Point, opposite the 19th to 24th blocks of Minnesota Avenue. Its surface features of ridges, mounds, and depressions have been formed by winds, waves, and developing vegetation.

The island has a dense cover of vegetation except in the exposed spots of the interior and the western shore where the soil unstabilized. Its vegetation of some 170 species falls into definite patterns or zones, depending on the nature of the particular habitat. A community of cat-tail and bulrush, (*Typha-Scirpus*) occurs in the small bay on the leeward side facing Minnesota Point; bordering this marsh is a stand of willows and poplars merging into a zone of shrubs and rich undergrowth of herbs along the entire length of the island; the high dry ridges are populated by shrub willows with dominance of *Salix longifolia* and *S. lucida*; the low depressions of moist soil are controlled by sedges and grasses, forming dense mats; the bare spots are colonized by various annuals and biennials, e.g. *Polygonella articulata* and *Artemisia caudata*. About one-third of

the species found on the island are monocots representing ten families. The twenty-six families of dicots are dominated by *Compositae* with over thirty established species.

The most striking faunistic feature is the community of nesting shorebirds in the bare areas of the island, consisting of common tern (*Sternus hirundo* L.), piping plover (*Charadrius melodus*), killdeer and spotted sandpiper. Various song birds nest in the shrubs and the marsh. Associated with vegetation and the soil is a rich insect life. Eight families have been tentatively identified. Observations point to presence of mice and rabbits but no collections have been made.

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## STAGES OF DEVELOPMENT IN THE FOX

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and

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*University of Wisconsin*