

**LIFE HISTORY STUDIES ON MONTANA
TREMATODES; THESIS, SUBMITTED IN
PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY IN ZOOLOGY**

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Life History Studies on Montana Trematodes; Thesis, Submitted in Partial Fulfilment of the Requirements for the Degree of Doctor of Philosophy in Zoology by Ernest Carroll Faust

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ERNEST CARROLL FAUST

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**LIFE HISTORY STUDIES ON MONTANA
TREMATODES**

BY

ERNEST CARROLL FAUST

A. B. Oberlin College, 1912

A. M. University of Illinois, 1914

THESIS

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LIFE HISTORY STUDIES ON MONTANA TREMATODES

WITH 9 PLATES AND
1 TEXT FIGURE

BY
ERNEST CARROLL FAUST

Contributions from the
Zoological Laboratory of the University of Illinois
under the direction of Henry B. Ward, No. 98

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INTRODUCTION

During a two years' residence at Missoula, Montana, from 1914 to 1916 the writer became acquainted with the biology of the inter-mountain region of the Bitter Root valley. The heavy trematode infection of the animals in this locality has led to an investigation of the life history of the trematodes of the region.

An opportunity is taken at this place to express appreciation to all who have aided in this study, but especially to Professor Henry B. Ward whose kindness and sincere interest have made the work possible.

METHODS OF INVESTIGATION

This study is confined to the trematodes infecting mollusks. The majority of the collections were made by Mr. Norbert Sager of Missoula. A sketch map (text-fig. 1) indicates the location of each collection. The snails were shipped in damp green moss and arrived in excellent condition.

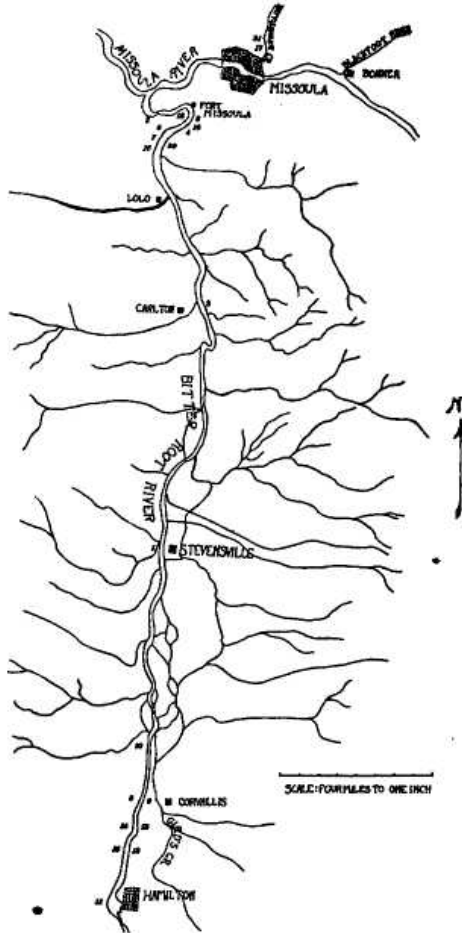
These observations on living material gave data on the stages of development within the mollusk, on the methods of locomotion, on encystment, and on the excretory system.

The worms were removed from the infected tissue and placed in a watch glass in 0.3 per cent saline solution. The change from the host tissue to the saline medium usually caused rapid movement.

It is essential that the excretory system be studied in the living material as, aside from the vesicle and the main trunks of this system, very little can be made out in the preserved material. The delicate structure of the flame cells and the finer capillaries makes it necessary that these organs be examined in living specimens, for in fixation they are likely to collapse, even with the most careful technic.

The organs of the digestive system come out equally well in living and preserved mounts. Some systems, as a rule, can be made out only from preserved and stained material. The most important of these is the genital complex. For all ordinary purposes the material was fixed in Gilson's reagent, altho equally good results were obtained from a corrosive-acetic fixing agent. From the preserved material toto mounts and sections were made, using Delafield's hematoxylin and Ehrlich's acid hematoxylin as stains. A strong counter-stain of eosin in the sections brought out remarkably well the nerve fibers of the worms. Wax models were made of the mature and immature stages of the nervous system of cercariae and parthenitae.

Care was taken to keep the mounts acid-free, and for that purpose all reagents except the destaining fluid were made slightly alkaline with desiccated



Text-figure 1. Sketch map of the Bitter Root Valley, Montana, showing localities where collections were made.