1907

Biological Station Summer Session, 1907

University of Montana (Missoula, Mont. : 1893-1913)

Flathead Lake Biological Station

Bulletin University of Montana No. 41
Biological Series No. 13.

NINTH ANNUAL ANNOUNCEMENT

OF THE

University of Montana Biological Station

At Flathead Lake, Bigfork, Montana

Fig. 124. MacDougal and Norton mountains, visited anuually. Around the snow banks are great beds of beautiful spring flowers.

NINTH SESSION, JULY 9 to AUGUST 15, 1907.

Oscar J. Craig, President, University of Montana, Lecturer.

Morton J. Elrod, Professor of Biology, University of Montana, General Zoology and Botany.

P. M. Silloway, Superintendent of Schools, Lewistown, Montana, Bird Study, The Forest.

Maurice Ricker, Principal, West Des Moines High School, Photography, Nature Study.

Mrs. Edith Ricker, Station Artist.

C. H. Scherf, Science, Flathead County High School, Physiography.

Entered August 24, 1901, at Missoula, Montana, as second class matter, under an Act of Congress, July 16, 1894.

PURPOSES OF THE STATION.

The University of Montana Biological Station, located at Bigfork, at the head of Flathead Lake, was designed to serve as a field for research work for the instructors and for others who may wish to attend; to afford opportunity to teachers to collect material for class use and for their own laboratories; to afford a place where teachers and students of biology may meet; to give opportunity for studying the biology of Flathead Lake; for giving instruction in biological subjects.

COURSES OF STUDY.

The following scheme will give those who wish to attend an idea of the kind and character of the work that may be done.

Zoology:—

(a) General Zoology, principally field work, instructions in methods of study and observation, illustrating the influence of environment. An observational study, full of suggestion, very helpful to those who have had no such opportunity for study. Material will be collected and worked up in the laboratory.

(b) Field and laboratory course in Entomology. Instruction in collecting, preserving and labelling insects. Dissection and study of type specimens. A study of injurious insects.

(c) Ichthyology. Special course devoted particularly to the lake and river fishes and their food supply. The course will include plankton study.

(d) Ornithology. A study of birds, with methods of collecting, making and preserving skins; habits and lives of birds of the rich avian region adjacent. Each student should be provided with field glass.

(e) Plankton. A study of the microscopic life of Flathead Lake.

Botany:—

(a) Laboratory and Field Course. Study of type forms of Algae, Fungi, Lichens, Bryophytes, Pteridophytes, and Spermatophytes. Especial attention will be given to the Conifers of the vicinity. There will also be collecting trips in the field, where the various type forms may be found. In the laboratory, attention will be given to the classification of the more common species, to the study of Plant Morphology, to the methods of preparation of Herbarium specimens, and to the methods of preservation in liquid for immediate or permanent use.

(b) Ecology. A general course including local ecological problems and local plant geography. This region offers quite a diversity in plant societies.

Photography:—

The region offers rare opportunities for this branch of study. The work will include a study of lenses, plates and developers. The use of the ray filter will be explained, and the many errors which may fall to the lot of the beginner will be pointed out. The course will include the selection of subject, development, printing one or two kinds of paper, and transparencies.

Students in photography must supply their own cameras and material. There is a dark room at the laboratory and the scenery in the vicinity gives ample scope for a series of negatives either in landscape or of scientific subjects.

Nature Study:—

A course of study and practical work will be outlined which will afford both a fund of information on which to draw during school work and at the same time secure a collection of material to be used in illustration. The scope of the work will include zoology, botany, geology, and physiography of the region.

Physiography:—

Largely field work. The region furnishes examples of all of the important types of erosion, weathering, ice work, running water, shore work, etc. An attempt will be made to trace the history of a stream, the effects of glaciation on a region, the method of mountain formation, results of sedimentation, and coast forms. Some reading will be done in the field. Besides this there will be offered a series of illustrated lectures covering the important topics in physiography. The slides will represent types selected from all parts of the world. This course should be of particular interest to those who teach physical geography, either in the high school or in the grades.

Research Work:—

Students who desire to do so may, if qualified, enter upon the study of some faunal, ecological, or other problem, and will be afforded every facility of the station.

The above courses are outlined for those who may attend, to indicate the work that may be pursued. Several points of Flathead Lake will be visited, possibly a week being spent at each place, to which plan the above courses will be accommodated. Those attending will thus be assured of excellent opportunity for out-door study by this plan.

LOCATION.

The University of Montana Biological Station was opened in 1899. For the past eight summers the station has been occupied from June until September or October. During this time some fifteen states have been represented. The Station has become well known to many American naturalists, and all are enthusiastic in their praise of opportunities afforded in the vicinity of Montana's large inland lake.

For scenery the vicinity cannot be surpassed. Few places offer more varied points of interest. The roaring rapids of Swan river are at the door of the building. Flathead lake, covering more than 300 square miles of territory, with its beautiful islands and precipitous shores, has great attractions. The Mission range, beginning on the burnt hills by the laboratory, and rising higher and higher as they extend southward, culminate in snow-capped peaks 10,000 feet in height. A few miles to the east is the Swan range, its high summits constantly in view. These two mountain ranges afford some of the most beautiful panoramas to be seen in the Rocky Mountains, and rival the Alps in magnificent scenery. Farther to the east, reached in a short time by pack train, the main chain of the Rocky Mountains breaks the horizon with lofty peaks and precipitous summits. Untrod summits invite the courageous naturalist who seeks the unknown animal and vegetable life. West of Flathead lake are the almost unexplored Cabinets. Within a few miles are many lakes—Swan, Echo, Rost, and others—while many ponds and swamps are in the immediate vicinity. The waters of Swan and Flathead rivers supply Flathead lake, the former at the laboratory door, the latter but two miles distant. East and south of the laboratory the forests extend unbroken for a hundred miles, with here and there a settler's cabin. Such a combination of lakes, rivers, mountains, forests, at elevations from 3,000 to 10,000 feet, one will find in few places in America.

The present site of the Station was chosen because of the advantages mentioned above. The seaside will always have its attractions and its devotees. But there are those who love the mountains, who delight in craggy heights, and who find abundance of material for study because it is new and the field unexplored. There are many who cannot take long trips to the sea shore, others who wish to spend a summer on the inland lakes, in the primeval forest, and among the snow-clad hills. Then there is the home field. Montana needs a wider dissemination of knowledge of outdoor study. Here may be had healthful recreation, beautiful surroundings, congenial associates, and rare opportunities for observation and study.

The climate is delightful. Rarely does it rain in July and August. In the shade it is always pleasant. Long trips may be planned without danger from the elements. One may sleep out without fear. In a day from the laboratory one may reach huge snow banks in middle August. There is an abundance of sunshine, no fogs nor dreary days, and few days of excessive heat.

EQUIPMENT.

The building is a convenient out-door laboratory, with tables for a dozen students. The station work has entirely outgrown the building. Many of the lectures are given out of doors in the yard. The fine summer weather permits of much laboratory work out of doors. There is a dark room for photography. The laboratory has a 16-foot gasoline boat with three horse power engine. This is at the service of those attending the station, and with it various portions of Flathead Lake and Flathead River are easily accessible.

Fig. 125. Hunting things in the woods near Swan Lake, on the trail. Such trails are the only roads through hundreds of miles of forest.

There is a row-boat, and canvas boat for the mountain lakes, property of the Station. Other boats may be had at any time. Microscopes, glassware, books and utensils will be supplied from the University. Botanical collecting and drying material will be supplied.

Students in Ornithology must supply their own guns or field glasses. Students in Photography will furnish their own cameras and plates. The necessary chemicals for development will be supplied free. Students who live in tents will supply their own tents and bedding.

UNIVERSITY CREDITS.

Students from the University may pursue study at the Station and receive credit for such work as may be equivalent to University courses. Students taking elementary study may receive preparatory credits.

METHODS OF INSTRUCTION.

The work will consist very largely of field collecting and observation, study of relation to environment, supplemented by laboratory dissections and microscopic examination. The general courses will enable teachers to familiarize themselves with methods of field work, and the manipulation of laboratory material.

The expeditions are primarily to give opportunity for the study of animals and plants in their natural environment. By this means more lasting interest is aroused, and more accurate information is obtained.

LECTURES.

Occasional lectures of a general nature are given by the Station staff. To these the public is invited. Some of these have been printed by the University as a bulletin. Many of them are illustrated with stereopticon.

Fig. 126. Resting in the woods, on the way up the mountain. Note the luxuriance of the forest.

EXCURSIONS.

Collecting excursions to more remote places are taken weekly. During past years excursions have been taken to Swan Lake, eight miles distant and twelve miles long; camp was made at the upper end; to Rost Lake, in the forest at the base of the Swan range; to the summit of MacDougal Peak, over an Indian trail, to altitude 7700 feet, in the realm of perennial snow; to various portions of Flathead Lake. After the Station work is over a pack horse trip into the deep mountains has been annually undertaken, a small party of a half dozen or so making a collecting and exploring trip.

These trips will be under the personal supervision of the Director of the Station. Those taking the trips must bear a proportionate share of the expense necessary. Such trips will prove of great value and interest biol g-

Fig. 127. Lunch at Swan Lake. Photograph shows the beautiful paperbirch trees on the shore. Photo by M. J. E.

ically aside from the pleasures they bring. These trips are not for mere pleasure, but for scientific study. Daily conferences are held to report on observations and to make suggestions.

HOW TO REACH THE STATION.

Students via Northern Pacific will get off at Ravalli. Stage tri-weekly runs to Flathead Lake (35 miles), connecting with steamer Klondyke which runs across the lake. Stage fare, one way, $3.00, round trip, $5.00, trunks extra. Boat fare across the lake, one way, $3.00, round trip, $5.00. Stage leaves Ravalli on Mondays, Wednesdays and Fridays, connecting with the steamer, returning the same day. A daily stage, carrying mail and passengers, runs from Ravalli to Polson, via Mission and Ronan. Passengers may thus travel to Polson daily. Both stages start from Ravalli, reaching Polson by different routes. They are under different managements.

Students via Great Northern will get off at Kalispell, connecting by stage with the steamer Klondyke at Demersville, a short distance from Kalispell. The steamer will land passengers at Bigfork.

The trip either way is full of interest. No one should hesitate because they must ride in a stage. The ride from Ravalli is comfortable, the scenery along the way beautiful. The ride from Kalispell is on the winding Flathead river for 30 miles, with charming views at every turn. There are very good hotel accommodations. Every mile of either route is attractive in its surroundings.

Since writing the above an automobile stage has been put on between Ravalli, on the railroad, and Polson, at the foot of Flathead Lake. The trip of 35 miles is made in less than three hours, and the journey made exceptionally easy.

DATE OF OPENING

The laboratory work of the Station will begin Tuesday, July 9, and continue more than five weeks, or until Thursday, August 15. For a week or more before the Station opens some one of the staff will be at or near the Station, and will aid any who may choose to work during such time. The laboratory is at the disposal of students from June 15 to September 1, or even later, if any wish to use it.

BOARD AND ROOM.

Those who desire it may board and room at the hotel at Bigfork. Accommodations may be had at $6.00 per week, board and room, with two in a room, or $7.00 per week with one in a room. Nearly all live in tents and take meals at the hotel. Good day board is furnished at $5.00 per week. Fine weather during July and August makes camping a delight, and tent life is a pleasure. When the collecting trips are taken tents are usually used, as also bedding, making tent life specially desirable. There are no places where board may be secured on trips, and the party must make provision for its own comfort. For those who wish to do their own cooking the stores furnish all the necessaries of life, while the surrounding country supplies an abundance of fruit and vegetables.

RECREATION.

Change is rest. To take a day off and go fishing often gives new lease of life. The tingle of the nerves when the gamey fish tugs at the line is to forget care and to be thoroughly alive. One of the attractions of the place is its natural advantages so as to induce out-door exercise and study. The lake and rivers make rowing a good pastime. The photographer has a field of wondrous richness and varied interest. A fine sand beach makes bathing a delight, and it is indulged in. Unless the lake is stirred by winds the water is warm. The hills and forests afford quiet retreats for study or strolls. The hills and roads give glimpses of scenery of rare beauty. At the proper season hunting is good. Deer have been seen annually a few rods from the labora-

tory. Grouse and pheasants abound in the hills. In season duck shooting is fine. A day's tramp will take one to the home of the Rocky Mountain goat. In a day one may penetrate a pathless forest or stand on craggy heights, where the view presents the jagged Rockies, the backbone of the continent.

BAGGAGE.

Avoid trunks. Pack outfits in rolls, covered by canvas, fastened by large and strong straps or ropes. Hand baggage of any kind is not troublesome. Heavy weight of books is unnecessary. For those who live in tents, as most persons prefer to do, a tent is necessary. This will make a small roll, and for ordinary miner's or wall tents poles are not necessary. They may be cut after arrival.

Fig. 128. The region about the laboratory is rich in material for study.

Those who sleep in tents must remember the nights are always cool. A cheap tick, ready to be filled, and two comforts or heavy blankets over, with whatever is desired under the individual, are necessary. In place of the preceding a sleeping bag is a luxury.

PUBLICATIONS.

The number of publications, based wholly or in part on the work carried on at the laboratory, is considerable. Many are in course of preparation. They cover principally the material in the vicinity. The birds have been listed, and much new information derived on their habits and distribution. The work on butterflies was expanded into a bulletin covering the entire state. The lichens and mosses have been listed, and many papers written on the forestry and botany of the region.

LIFE AT THE STATION.

Some people want a vacation with nothing to do but lie around in a hammock and let some one else get the meals and tote the luggage. They wish for nothing that will stir the blood or the nerves. Such a vacation is of little use. One can have more fun with a definite object in view than with no object sought. Change, not inactivity, is rest for the normal individual. This latter is the keynote to the Station work. There are woods for strolls, mountains for climbs, lakes for rides, rivers for fishing, forests for hunting, and fine views for sketching. Every trip brings something of health, pleasure, and profit. Attention to some object to be attained centers the mind upon

Fig. 129. Swan River as it flows in front of the laboratory. The sound of the rushing river is constant music to our ears. Photo by Ricker.

things other than the body, and weariness and fatigue are forgotten in the pleasure of new pursuits.

Camping is an art. Those who have not camped have missed a great deal—much more than they suspect. The knack of taking care of one's self under trying circumstances of camp life does not desert one in the everyday business of life.

Those attending the Station are offered the following good things:

A chance to study under favorable circumstances, with most helpful conditions and enthusiastic companions.

A delightful camp in a fine climate and a beautiful location.

Views of grand scenery of varied character.

Fig. 130. Mission Mountains, near St. Ignatius, showing alpine scenery in June.

Recreation that is healthful, invigorating, accentuated by freedom from restraint and conventionality.

There are no laboratory dues or fees of any kind, save necessary expenses for board and for trips.

Those who have no knowledge of the subjects presented are as welcome as advanced students.

For any further information address,

MORTON J. ELROD, Director,
Missoula, Montana.

For information concerning the University, its departments, courses of study, etc., address,

OSCAR J. CRAIG, President,
Missoula, Montana.

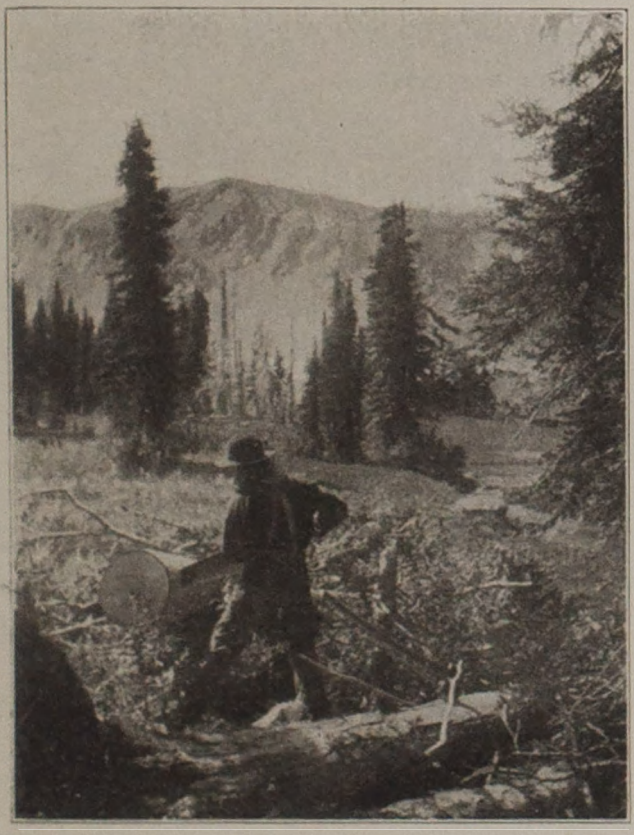

Fig. 131. Taking sections of alpine fir for museum collections. Sections were carried down the mountain on a pack horse.

Fig. 132. A party from the station at the foot of the cliffs, 2700 feet high, on Mt. St. Nicholas, in the main range of the Rockies. Note the beautiful trees, alpine fir and alpine pine. Note also mode of packing. Photo by M. J. E.