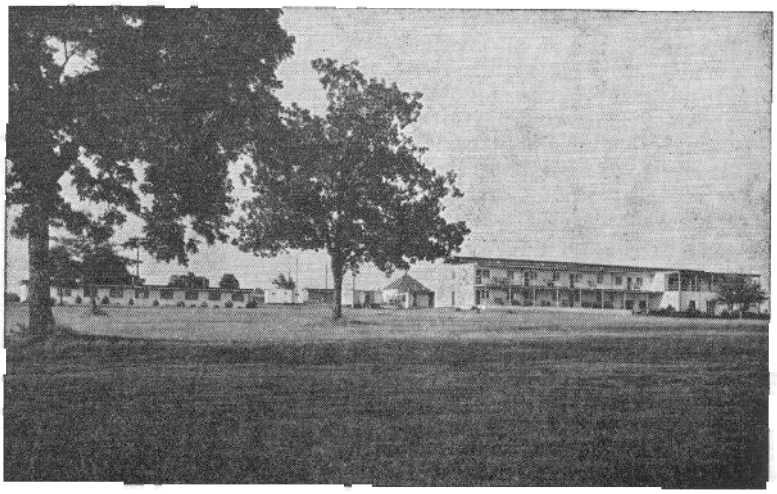


THE UNIVERSITY OF OKLAHOMA BIOLOGICAL STATION

By Carl D. Riggs, Director

The University of Oklahoma Biological Station is a permanent field station designed and operated to offer opportunities for study and research in ecology and natural history, and those phases of taxonomy, evolution, morphology, and physiology that require extensive study of organisms in their natural habitats. Annual summer sessions are held in June, July, and early August. Though located 125 miles from the main campus of the University of Oklahoma, the Biological Station is an instructional and research unit of that institution and subject to the general rules and regulations thereof. It was established in 1950 on the north shore of the Red River arm of Lake Texoma at the mouth of Buncombe Creek, two miles east of Willis, and 14 miles south of Madill, Marshall County, Oklahoma. From the standpoint of biological study, its central location on the lake is ideal, putting it in close proximity to many types of habitats both terrestrial and aquatic.

Lake Texoma is an impoundment of the Red and Washita rivers, formed by the Denison Dam, at Denison, Texas. The reservoir was filled to power pool level (617 feet above sea level) by 1945. The lake at power pool level has a surface area of 93,080 acres, a capacity of 5,715,700 acre feet, and a shoreline of approximately 700 miles. Its drainage basin occupies 38,291 square miles in Oklahoma and Texas.

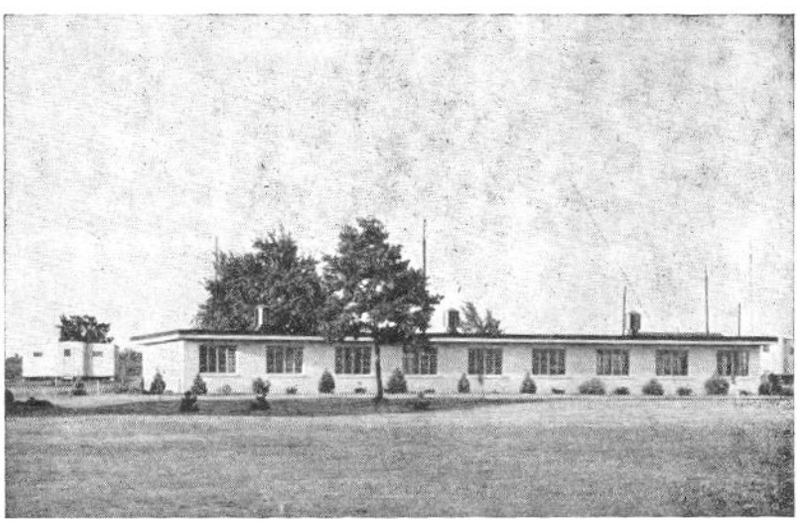
Since the lake is primarily for flood control and also used for hydro-electric power, areas of its shoreline are alternately inundated during periods of high water, and exposed by drawdown. The constantly changing environment created by these water fluctuations offers many interesting and vital ecological problems.

The biotic province in which Lake Texoma and the surrounding region are located is characterized by tall grass prairies and blackpack-post oak forests. Bottom land and flood plain vegetation is found along many of the tributary streams. Low limestone hills covered with sand, clay, loam, or a mixture of these, often with extensive stone outcrops, are abundant as are plains and valleys with similar soil types. Cultivated fields of various crops, eroded areas in beginning to advanced stages, permanent and intermittent streams, farm ponds, and marginal wet lands all abound in the vicinity.

The fact that this station is located on a man-made lake in an area with a great variety of both aquatic and terrestial environments where there has been little biological investigation, greatly enhances the research opportunities which are unlimited for both botanical and zoological study. The biology of reservoirs such as Lake Texoma is only slightly known including such fields as fishery biology, limnology, aquatic entomology, aquatic botany, and invertebrate zoology. Its large and diverse fish population accompanied by many aquatic or water-haunting birds and mammals offer many vital problems for taxonomists and ecologists as well as a wide and relatively unexploited field for parasitologists. Several large, well isolated islands in the lake, each occupied by extensive flora and fauna, including fish, amphibians, reptiles, birds, and mammals, are ideal for population studies. On the largest of these islands are five small lakes or ponds, and several inlets which become isolated from the main lake at times of low water.

It is impossible at the present time to list the number of species of plants and animals that occur in the region. Too little is known. Intensive collecting and research in the area began in the summer of 1949 and many species of plants and animals, both invertebrate and vertebrate, were new records for the county or even for the state. Collections made by both staff members and students since 1949 have extended the ranges of many species and added several new records.

The Biological Station herbarium now contains over 500 species of flow-



New Laboratories

ering plants representing 274 genera and 92 families. Additional forms are added almost every field trip.

The study of the parasites of animals in the region has revealed many new host and distributional records, as well as new species records of parasites. It has been possible to make studies of only a few of the many host species available. Since few parasite studies have been made in the state, opportunities for taxonomic, distributional, and life-cycle studies on parasites are practically unlimited.

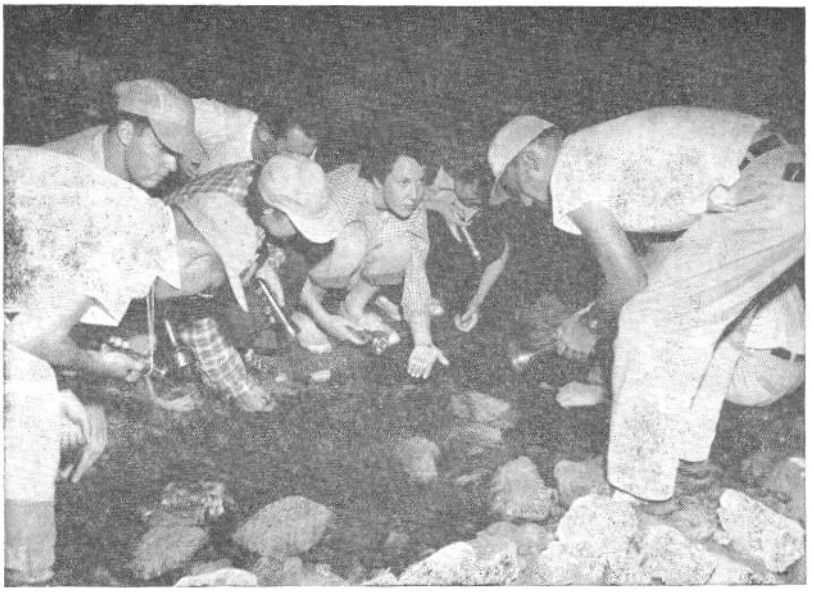
Several thousand insect specimens have been classified representing well over 150 families. Numerous inconspicuous forms remain completely unclassified as yet — especially among the flies, caddisflies, and beetles. No detailed taxonomic work has yet been undertaken. Among the many groups of invertebrates collected, a small beginning has been made toward a study of the spiders, scorpions, crayfishes, and snails. At present, the insect and invertebrate collections are in a pioneer stage, as yet uncatalogued. To the student, this is not a detriment, but a challenge, since he can find something "new" at every turn and can feel with sincerity that he is contributing to knowledge of the fauna of Oklahoma.

Of the vertebrates, 67 species of fishes, 16 of amphibians, 42 of reptiles, 154 of birds, and 32 of mammals, including beaver, armadillo, coyote, and whitetail deer were seen or collected and comprise an excellent beginning for the vertebrate faunal list. Many of these were new records for the area and even for the state.

Available Facilities for Teaching and Research

The physical plant of the Biological Station consists of eighteen buildings. The most important of these are: the main building, which includes two laboratories and accessory rooms, a photographic darkroom, an aquarium with outdoor and indoor tanks, a kitchen and a dining hall, men's and women's dormitories, a library, and study and work rooms for advanced students; the laboratory building, containing three new laboratories (all laboratories are large and well-equipped for most types of ecological and taxonomic research); the faculty apartment building; ten living units

Invertebrate Natural History Class in the field



Night work for the Vertebrate Natural History Class

for married students and families; the water filtration plant; and the boathouse.

Laboratory equipment includes compound and dissecting microscopes, microtomes, centrifuges, drying and preparation ovens, electrical resistance thermometer, spectrophotometer, pH meter, conductivity bridge, glassware, chemicals, and many other items.

Field equipment consists of launch, boats with outboard motors, cameras, field glasses, collecting equipment, cages and pens, chemistry kits, and much other ecological and limnological equipment.

The collections previously mentioned are teaching and research collections. These collections will be expanded until complete, and students and investigators are encouraged to add to the collections whenever possible.

With very few exceptions, transportation by boat or truck is furnished without extra cost for all class field trips. The commissary provides meals on such trips. Although field trips usually extend through a half-day or a day, overnight trips are also taken.

The facilities of the University of Oklahoma Biological Station are available to independent investigators during the regular sessions, and at all other times during the year. Faculty members of the Station are available for advice and help on research problems, and consultation with all staff members of the departments of Plant Sciences and Zoological Sciences, at Norman, may be had by correspondence or personal contact.

General Living Conditions

A sincere attempt has been made to create and maintain adequate and comfortable living conditions. Although often plain and simple, necessary facilities for health and comfort are available. Cats and dogs cannot be kept at the Station, and firearms are prohibited except on written permission by the director.

Students and investigators live in dormitories equipped with running

Parasitology Class at work in the laboratory

water, electricity, and heat. Showers, lavatories, and toilets are furnished as are beds, lockers or closets, chairs, tables, mirrors, and other minor furnishings. Bedding, such as sheets, pillow cases, and blankets, and toilet articles including towels and wash cloths must be provided by the occupants. The dormitory for women is divided into two- and three-room units. The one for men is a single large unit.

Meals are served cafeteria style in a large dining hall. Board is provided by the commissary and is supervised by the Counselor of Women and the Commissary Committee. Lunches are provided for field trips and certain recreational activities.

Outdoor recreation such as fishing, boating, swimming, softball, volleyball, badminton, horseshoes, hiking, and picnicking is readily available and necessary equipment is furnished. The dining room is used for movies, lectures, music, dancing, and indoor games. A lounge and sundecks are also provided.

A first aid station with facilities for care of minor ailments and injuries is available. A doctor in Madill is on call at all times.

The Counselor of Women for the Station is in charge of the dining room and organized recreation. She also supervises the women's living quarters and is available for advice and counsel.

Private automobiles may be kept at the Station and used subject to liberal regulations. They are useful for private field trips, church going, and town trips. Cover for private automobiles is not provided by the Station. Transportation for all regularly scheduled class field trips is furnished by the Station. A free taxi service is furnished for those arriving by bus or train, but only at time of arrival.

Fees and Expenses

A general fee covering normal laboratory supplies, library, and regular field trips, must be paid at registration by each student. The fee for each regular session at the Biological Station is $40 for all students. Non-residents must pay an additional fee of $60. There is no reduction in the fee for

students registering for less than the full program. The general fee for independent investigators is $40 for the full session. Investigators attending for less than the full session must pay a fee of $5 each week. Investigators have full access to all privileges and facilities of the Station.

The Biological Station Commissary provides board and room at a cost of $110 for the regular session for adults and children over eight years old. The charge is $65 for children 5-8 years old, and $45 for children 3-5 years of age when food for the latter is provided by the commissary. There is no regular charge for children under three. When special diets are required, additional charges may be levied. Dependents of students and investigators must pay a room fee of $12 for the full session or $2 each week if attendance is only part-time. The board and room fee must be deposited at registration. Refunds of the unusued part of the fee will be made to those who do not remain for the full session.

A social fee of $1 for each adult and child over 8 years old, and of 50 cents for each child 2-8 years old is collected by the Social Committee at registration. This is to cover the cost of organized entertainment and recreational equipment.

Assistantships, Scholarships, and Employment

At least three assistantships are available to graduate students each summer at the Biological Station. These pay the non-resident fee, and a monthly salary, the amount of which depends on the academic level of the student.

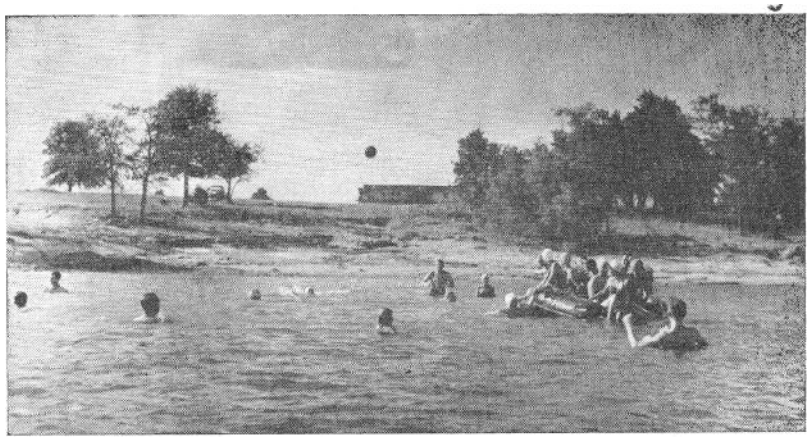
Several scholarships of $150 each, provided by the University of Oklahoma Foundation, are available to both undergraduates and graduates each summer at the Biological Station.

Both the assistantships and scholarships are awarded on the basis of need, academic record, and recommendations.

Kitchen employment paying an amount equivalent to the cost of board and room for the entire session ($110) is available. Students interested in such employment, or in applying for assistantships or scholarships should write to the director. Early application is advisable.

Curriculum

The curriculum of the Biological Station includes 14 formal courses and seven research courses. Additional courses will be added. The botany courses now offered are: Principles of



Recreation

Plant Ecology, Taxonomy and Ecology of Freshwater Algae, Identification of Vascular Plants, and Ecology of Aquatic Plants; Investigations in Plant Sciences, and Research for the Master's Thesis and Research for the Doctor's Thesis are also offered. Staff members teaching botany include: Drs. George J. Goodman and Elroy L. Rice of the University of Oklahoma, and Mr. William C. Vinyard of Michigan State College.

Zoology courses offered are: Mammalogy, Herpetology, Natural History of Invertebrates, Natural History of Vertebrates, Field Entomology, Parasitology, Helminthology, Limnology, and Fishery Biology; also, Investigations in Zoology, Advanced Zoology, Research for the Master's Thesis, and Research for the Doctor's Thesis. Staff members teaching Zoology are: Drs. J. Teague Self, George M. Sutton, Harley P. Brown, Carl D. Riggs, and Charles C. Carpenter of the University of Oklahoma, Dr. Bryan P. Glass of Oklahoma A. and M. College, and Dr. George H. Bick of Tulane University.

Attendance at the Biological Station is a vital part of the education and training of all biology majors, and especially those who do graduate work. Students who have successfully completed two collegiate laboratory courses in biological sciences may apply for admission to the University of Oklahoma Biological Station. Attendance is restricted to those who apply in advance, and applications are considered on April 10. Those wishing further information should write to: Carl D. Riggs, Director, University of Oklahoma Biological Station, Norman, Oklahoma.

THE ROCKY MOUNTAIN BIOLOGICAL LABORATORY

By John C. Johnson, Director

The 28th annual six-weeks session of the Rocky Mountain Biological Laboratory in the Gunnison National Forest, Crested Butte, Colorado, is scheduled for July 1 through August 11, 1955.

Geology for Biologists will be given in 1955 for the first time, by Dr. A. N. Murray, head of Geology Department, University of Tulsa. This is a very unusual course and should be of special interest to all high school biology teachers, and to all graduate students of zoology and botany, who wish to have a broad understanding of geological principles and the succession of plant and animal life throughout the geological eras.

A *Genetics and Evolutionary Biology Department* will also be added in 1955, for graduate students, and for those wishing to do independent research in this rapidly developing field. This department will be under the supervision of Dr. Colin S. Pittendrigh, Princeton University; Dr. R. P. Levine, Harvard University; Dr. Charles L. Remington, Yale University, and Dr. Edward Novitski, University of Missouri.

The four regular courses will also be given. *Field Botany* will be under the direction of Dr. William A. Weber, University of Colorado; *Parasitology* by Col. George W. Hunter III, Chief, Medical Zoology Section, Fourth Army Area Medical Laboratory, Fort Sam Houston, Texas; *Mammalogy* probably by Dr. B. R. Coonfield, Brooklyn College, New York; and *Ecology*, the instructor still to be selected. This course emphasizes the ecological problems of the Rocky Mountain region.

Conservation Education is scheduled for the fourth time, to be given by the Director, Dr. John C. Johnson. This course considers the fundamental prin-