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THE WHEELER EXPEDITIONS TO THE SOUTHWESTERN UNITED STATES, 1869 - 1876

by F. MARTIN BROWN

The various expeditions lead by Lieut. WILLIAM MONTAGUE WHEELER, Corps of Engineers, U. S. A., sent to explore and map the territory west of the 100th meridian were the source of much new material in all fields of natural history. They are of particular interest to students of butterflies since many specimens brought back were made the types of species described by WILLIAM H. EDWARDS. Detailed information about where these specimens were collected often is lacking in the original descriptions and on the types themselves. Thus it is important that the routes travelled and the time table of the travels be established with as great accuracy as possible for the use of specialists in need of this information. Off and on during the past twenty years I have spent many hours and days studying all aspects of the expeditions and following their routes through the west. Dr. CHARLES L. REMINGTON has asked me to prepare this information for publication and thus make it available to those who need it.

This is a short outline of the work done by the various field parties. Each of the parties for which I have been able to gather sufficient information will be treated in detail with the necessary maps to show the routes followed in succeeding papers.

SEASON OF 1869—There were no naturalists on the reconnaisance party that in 1869 made a rapid survey of southeastern Nevada and western Utah. The Utah section of the survey was inconsequential, less than 2% of the season's work, and it covered only 400 square miles. I know of no material collected during this trip. However there is an abundance of notes of ecological importance in the various reports that were derived from the trip.

SEASON OF 1870—There was no field work this year.

SEASON OF 1871—The staff of the expedition included three naturalists for the season of 1871. Acting Assistant Surgeon WALTER J. HOFFMAN, a doctor with geological interests, was designated naturalist for the Survey. He had as assistants Mr. FERDINAND BISCHOFF, officially a hospital orderly, and Mr. FRANCIS KLETT, officially an assistant topographer. Dr. HOFFMAN joined the party at Carlin, Nevada, and remained with it until it reached Tucson, Arizona. BISCHOFF and KLETT were with the party throughout the season. Almost all of the biological material was collected by BISCHOFF; KLETT contributed a few specimens. The geological material was collected by HOFFMAN.

The various parties into which the Expedition's personnel was divided covered southwestern Nevada, southern Nevada, California adjacent to Death Valley—the valley of Owens River—, northwestern Arizona, and central Arizona. A small section of Utah was examined in the vicinity of St. George. The party was in the field from May 3rd to December 11th when it broke up at Fort Lowell (Tucson, Arizona). THEODORE L. MEAD was a quasi-member of the Expedition and collected butterflies in Colorado during this season.

SEASON OF 1872—The naturalist for this year was Acting Assistant Surgeon H. C. YARROW, a zoologist, and his assistant was Mr. H. W. HENSHAW. This year the Expedition concentrated its efforts in Utah. About 10% of the effort was devoted to Nevada and 20% to Arizona. Several accidents destroyed some of the material collected.

SEASON OF 1873—This year the naturalist was a botanist, Acting Assistant Surgeon J. T. ROTHROCK, and his assistant was H. W. HENSHAW. While the main party operated primarily in Arizona, areas in Colorado, New Mexico, and Utah were examined. No mishaps occurred, and a large quantity of material was brought east for study. This included 288 butterflies caught primarily by HENSHAW. His party left Fort Wingate, New Mexico, on July 12th and terminated at Fort Apache, Arizona, on August 30th.

SEASON OF 1874—It was in this year that the largest number of naturalists were assigned to the Expedition. There were three naturalists, all Acting Assistant Surgeons, H. C. YARROW, zoologist, J. T. ROTHROCK, botanist and C. G. NEWBERRY, zoologist. The three assistant naturalists were Dr. JOHN WOLF, botanist, H. W. HENSHAW, zoologist, and GEORGE M. KEASBY, paleontologist. ROTHROCK and WOLF operated together out of Denver with Lieut. MARSHALL'S party. YARROW, HENSHAW, and KEASBY were with the main party headed by WHEELER and based at Pueblo, Colorado. Lieut. HOXIE, whose party was based at Salt Lake City, Utah, did not have an official naturalist assigned to him according to the published records. I believe that NEWBERRY worked with this party. CHARLES E. AIKEN joined the Pueblo party as ornithological collector some time during the season. HENSHAW, at least, wandered as far as Fort Apache, Arizona, although assigned to the southern Colorado party. The records for this summer's collections are somewhat confused. As an example, the summary of results indicates that no butterflies were collected, but the body of the report notes three new species that resulted from examination of the material brought in.

SEASON OF 1875—The field of operation this year was divided into three geographic areas, Colorado, New Mexico, and southern California. There were eight field parties in Colorado operating under Lieut. MARSHALL. The New Mexico party was commanded by Lieut. WHEELER and the California party by Lieut. ERIC BERGLUND. The naturalists were Acting Assistant Surgeons ROTHROCK and YARROW. They were assisted by HENSHAW and SERENO WATSON, a botanist. The report on natural history for this

season was prepared under the command of Lieut. W. L. CARPENTER. Although the season was reported as a banner year for butterflies, I have seen very little in print about what was taken. Nothing collected in this season is reported in the *Zoology* section of the Wheeler reports.

SEASON OF 1876—I have been able to find no information about the naturalists assigned to the expedition for this or the following years. All that this means is that I must dig deeper into the official Army records in Washington. The season's work centered around the California-Nevada border somewhat north of the region studied in 1871. A little work was done in New Mexico and Colorado.

SEASON OF 1877—The year's effort was scattered over the entire Great Basin and southern Rocky Mountain regions, tieing together loose ends.

SEASON OF 1878—Most of the explorations made during 1878 were in California, with one party working eastward from New Mexico into Texas.

SEASON OF 1879—Work stopped on the grand plan on June 30th because no funds had been appropriated for fiscal 1879-1880. From this time on, the work was transferred from the Corps of Engineers to various more specialized government agencies, notably the newly formed U. S. Geological Survey. As might be expected, the field work became more geological and economic, to the almost total exclusion of other fields of study.

The detailed accounts of the travels and collections made by the various field parties that will be published in future articles are based upon careful study of the data on specimens collected, reports of the Chief of the Corps of Engineers, the official reports of the Wheeler Survey, and a multitude of scientific papers published as a result of study of the material brought back by the Expedition. The most helpful of these will be cited with each particular field-party study. The maps that accompany these studies are based upon the 1:500,000 Aeronautical Charts. The routes themselves were plotted from the Wheeler Atlas, reports of parties, bits gleened here and there in the various volumes of the Wheeler Survey report, and from actual retracing of the routes taken.

The official tally of specimens of insects that were collected by the Expedition is not accurate, as I have just pointed out. However it may be worth presenting if for no other reason than to emphasize the caution that must be used with the published reports.

ORDER	FIELD YEAR					
	1871	1872	1873	1874	1875	1876
Coleoptera	1300	100	4500	4200	1200	2000
Orthoptera	135	5	240	211	18	34
Lepidoptera	....	....	288	....	483	....
Hemiptera	....	....	.	....	....	....
Diptera, Neuroptera	....	....	50	....	....	....
Hymenoptera	....	....	450	....	790	50

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