which preserves most of its aboriginal culture intact. From here we flew to Santa Elena, a mission station near the Brazilian border in the region of Mount Roroimá.[2] Since the Indians of this region are very, and the flora and fauna fairly well-known, we spent only about ten days here, obtaining comparative observations for the study of our Camarata materials.

During all the work in Venezuela the writer was accompanied by his wife, Dr. Anne Roe Simpson, who collected mainly recent mammals for the museum and ran our camp when we were working independently.

Except for the botanical collections, which will remain in Caracas for study and preservation, all the material collected, paleontological, mammalogical and ethnological, will be sent to New York for preparation and study, which has already begun as regards part of it. When this is completed, the collections will be divided between New York and Caracas, where they will form the nucleus of a national collection of fossil vertebrates. The results already obtained show that Venezuela is a very promising and still almost untouched field for such studies.

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SCIENTIFIC BOOKS

MALARIA IN PANAMA

Malaria in Panama. By Lieutenant Colonel J. S. SIMMONS, Medical Corps, U. S. Army with the collaboration of Lieutenant Colonel G. R. Callender, Medical Corps, U. S. Army; Major D. P. Curry, Medical Reserve Corps, U. S. Army; Lieutenant Colonel S. C. Schwartz, Medical Corps, U. S. Army, and Lieutenant Colonel R. Randall, Veterinary Corps, U. S. Army. *The American Journal of Hygiene,* Monographic Series No. 13. The Johns Hopkins Press, Baltimore, 1939. $1.10 net, postpaid.

WORKERS in public health, tropical medicine and parasitology, in general, and in malariology, in particular, welcome source books regarding malaria in any region. The present volume is particularly important because it deals with Panama, a region of outstanding importance in the development of methods of malaria control and yet one which is often misunderstood.

The book is divided into three main sections. Part 1, which deals with malaria on the Isthmus from 1501 to 1938, gives in one chapter a most interesting series of notes on the history of the disease and in another an account of the present distribution of malaria in the Republic of Panama. Part 2 is a more detailed consideration of malaria in the Canal Zone from 1904 to 1938. Its seven chapters give information of the utmost importance on various geographic features, meteorology, Health Department and vital statistics of the Zone; malaria among the canal employees; malaria carriers in the Zone, Anopheline mosquitoes, and sanitary methods used for the control of malaria in the Zone. Part 3 is concerned with malaria in the military forces on the Zone and in four chapters considers malaria among U. S. troops; distribution among the various military posts; factors concerned in the relatively high incidence of the disease among the troops, and an evaluation of methods used to control the disease among the troops.

Each chapter is a compendium of material taken from a wide variety of sources, including many official records and results of the authors' own research. Much of this material is stated in synoptic form, but at the end of most chapters a concise, readable comment is given. Finally, there is a terminal résumé in which the authors give their main conclusions in five pages. With such a mass of detail it is possible to select only a few conclusions of general interest.

According to the available data, malaria seems to have been common on the Isthmus for several centuries, and recent surveys show conclusively that the disease is widely spread in all the provinces of the Republic of Panama. This wide-spread distribution serves as a reservoir of potential infection for the sanitated regions. At the present time the sanitated areas are situated chiefly around the terminals of the Canal (including the cities of Colon and Panama in the Republic) and the locks. In these locations most of the Canal employees, military forces and their families are concentrated. Elsewhere on the Zone, where there is no anti-mosquito work or general sanitation, the employees are furnished with thoroughly screened quarters. Within the sanitated areas, the records are conclusive in showing that control measures have been effective in reducing the incidence of the disease among the employees since 1904, when Gorgas, Carter, LePrince and their associates arrived on the Zone. At the same time they also show why, even with the extensive resources at hand, it has been impossible to control the breeding of *Anopheles* in many bodies of water and why it has proved possible to sanitate only relatively small areas near the principal towns occupied by employees and around military posts. For example, Gatun Lake presents a tremendous problem, since from it mosquitoes can apparently fly into the sanitated areas at certain times of the year. This 165-square-mile lake, built as a necessary part of the high level lockage system of the Panama Canal, is relatively shallow, and vast areas of it harbor aquatic plants. These plants, especially in the dry season, are exposed in surface mats level with the water's surface and appear to be ideal breeding places for *Anopheles albimanus* and *A. albitarsis.* The former appears to be the chief malarial vector. No satisfactory means of controlling the growth of

[2] Widely, but incorrectly, publicized as Roraima.

these plants and of the mosquitoes breeding among them have, as yet, been devised. The detailed descriptions of the sanitary methods used for the control of malaria in the Zone will be of particular interest to students of malaria. Chief reliance has been placed on screening and on reducing mosquitoes by larvicides, by drainage and by filling. The situation among the troops stationed on the Canal Zone is noteworthy. Although malaria has declined among them since 1911, when they were first stationed on the Zone, the morbidity rates are higher than among the civilian employees of the Canal or among U. S. troops stationed elsewhere. Inasmuch as the barracks are located in well-sanitated areas, the authors believe the higher rate to be due to infection at night during official and unofficial visits in the Republic of Panama, in unsanitated areas of the Zone and, even to a certain extent, in sanitated areas of the Zone.

The entire book is written from the standpoint of the most up-to-date conception of malarial control and leaves little room for criticism. One disappointing feature is the untrustworthy nature of the older records—which is obviously no fault of the authors. The book, besides supplying a much needed source book on Panama, is another demonstration of the difficulty of controlling malaria in the tropics at a reasonable cost and the imperative need of further research. It is to be hoped that the various agencies carrying on research in the Republic of Panama and the Canal Zone will continue their excellent work.

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SOCIETIES AND MEETINGS

THE NORTH CAROLINA ACADEMY OF SCIENCE

THE thirty-eighth annual meeting of the North Carolina Academy of Science was held at Wake Forest College, N. C., on May 5 and 6. About 250 members and visitors attended the meeting. Seventy-three papers and several exhibits made up the program.

The general section met the first day with the president, John W. Lasley, Jr., presiding. This meeting consisted mostly of the reading of papers of general interest and continued, except for the luncheon hour, till 4:30 P.M., when the annual business meeting was held.

At the business meeting reports of the various committees were called for. The executive committee reported the election of 33 new members and the reinstatement of 6 former members. The losses in membership were reported as follows: from non-payment of dues, 12 members; from resignation, 2 members; from death, 1 member. The committee announced the acceptance of the invitation from Davidson College to hold the thirty-ninth annual meeting at Davidson, N. C., in 1940. The committee also recommended that H. B. Arbuckle, department of chemistry, Davidson College, and W. C. Coker, department of botany, the University of North Carolina, be made life members.

The committee on high-school science reported that in the essay contest sponsored by the academy, first prize for 1939 had been awarded to Alfred Gallant, of the Central High School, Charlotte, N. C., for his essay entitled "Quartz Crystals for Radio Transmitters." The committee also reported the nomination of Ralph Kiser, Central High School, Charlotte, and Miss Eugenia Cox, Old Town High School, Winston-Salem, for junior membership in the American Association for the Advancement of Science.

In the report of the conservation committee resolutions were presented as follows: (1) that the Conservation Committee of the North Carolina Academy cooperate with the Virginia Academy "to arrange and carry out such cooperation as may be of mutual benefit to the two academies in the proposed study of the Dismal Swamp Area"; (2) that the two areas which make up the "Primeval Forest" at Highlands, N. C., be preserved and that, therefore, the U. S. Forest Service and the National Forest Reservation Commission be urged to acquire this tract immediately and add it to the Nantahala National Forest.

The committee of the American Association for the Advancement of Science research grant reported that the grant for 1939 had been awarded to F. H. McCutcheon, department of zoology, North Carolina State College, for use in his "investigation of possible experimentally induced seasonal variations in the oxygen affinity of hemoglobin in mammals."

The committee on the academy medal reported that the 1939 medal had been awarded to F. H. McCutcheon, department of zoology, North Carolina State College, for his paper entitled "The Respiratory Mechanism of the Grasshopper."

The following officers of the academy were elected for 1940: *President,* H. L. Blomquist, Duke University; *Vice-president,* John N. Couch, the University of North Carolina; *Secretary-Treasurer* (three years), Bert Cunningham, Duke University; *Member of the Executive Committee,* Earl H. Hall, Woman's College of the University of North Carolina; *Representative to the Academy Conference and the Council of the A. A. A S.,* Bert Cunningham, Duke University.

After the reading of a memorial report honoring