

Title: Host-Parasite Relationships in Malarias

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Objective — A broad study has been undertaken to investigate the many factors contributing to host-parasite relationships in malarias. During this year investigations have been carried out on the pathophysiology and immune response of the host and the physiology of the parasite itself. Since there are many species of malaria parasites, each with its own host-parasite relationships the overall approach to this long-term program has been a comparative one. This year's report encompasses a descriptive account of host pathophysiology and some aspects of immunity (immunoglobulin and other serum protein alterations) in mesoendemic malaria in humans, in P. falciparum in gibbons, in a natural malaria of gibbons, in P. coatneyi and P. inui in rhesus monkeys. Renal pathophysiology of P. berghei in mice has also been studied. The investigations now in progress are designed to elucidate the mechanisms of some of the physiologic derangements observed in the various hosts. For example, blood volume is being studied in P. coatneyi infections during the haemoconcentration and haemolytic phases. Cholesterol metabolism in infected gibbons is being studied to explain the marked hypocholesterolaemia of that infection. A series of papers under the general title of "Comparative Studies in the Pathology and Host Physiology of Malarias" has been or is being submitted for publication.

The investigations on parasite physiology is also of a comparative nature. This year's work on the pentose cycle in P. berghei has been completed. Much of the time has been occupied in working out a suitable methodology for these studies. Work now in progress is concerned with metabolic processes of primate and human plasmodia.

Because of the rather broad diversity of this program the report is presented as a series of separate but interrelating investigations under their subtitles.