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Summary of scientific research

My chief subject has been the protozoological aspects of malaria parasites, paying nearly as much attention to those occurring in apes, monkeys, lemurs, and other mammals, birds and reptiles, as to the four species found in man. My research was directed to the completion of the life cycle of the parasite and I showed, in Kenya, in 1947, that the unknown cycle occurred in the parenchyma cells of the liver of African monkeys infected with *Plasmodium* (= *Hepatocystis*) *kochi*. Then with Col. H.E. Shortt FRS in London, we found that the liver was the site also of *P. cynomolgi* of monkeys, and *P. vivax* and the *P. falciparum* in man. I continued to work for the next 20 years on this problem, singly or with collaborators, and showed that the liver stages were likewise to be found in 15 other species each with its own characteristic features. With R.B. Heisch, we demonstrated the unique development of *P. kochi* in the brain of *Culicoides* instead of on the gut of mosquitoes.

I made the first observations on the ultrastructure of the motile stages of malaria parasites with R.G. Bird in the decade starting 1960 and this led to a new classification of the whole group. From 1967 and earlier, I had delved deeply into the mystery of relapses in malaria, but it was not until 1980 that with Wojciech Krotoski and collaborators we solved the problem by demonstrating a

new stage (the hypnozoite) in the life cycle of certain parasites (*P. vivax*, etc.).

During 60 years devoted to research I have studied other parasitic protozoa of man and animals and rarely heminithic parasites: with my assistant, J.P. McMahon, we were successful in completely eliminating the severe disease, onchocerciasis, from the whole of the country (Kenya), for the first and only time, by eradicating the vector (*Simulium neavei*) which transmits the causative parasite.