necessary with regard to particular strains which yield high percentages of quinine.

The price of quinine at present is very high—£1 9s. 6d. per lb.—so high as practically to prohibit extensive anti-malarial measures. On this subject the Royal Commission on Agriculture in India in its report (1928) stated: "If India is to embark on any large campaign for fighting malaria, we are convinced that it will be first necessary to reduce considerably the price of quinine within India, and this can only be effected if India is self-supporting

in production. To achieve this self-sufficiency a considerable extension to the present area under cinchona will be required. . . . We are satisfied that, in view of the great importance of extending cinchona cultivation and cheapening quinine, much more scientific investigation is called for than has been undertaken in the past."

Dr. Cowan has done well in summarising the present position and in pointing out the great importance to a large section of the human race of the development of quinine production.

Obituary.

SIR ARCHDALL REID, K.B.E.

SIR ARCHDALL REID, whose writings on heredity aroused considerable interest among the medical and general public between 1900 and the outbreak of the War, died suddenly on Nov. 18, at Southsea, at sixty-nine years of age.

Sir Archdall Reid was born at Roorkee, N.W. Provinces, India, on April 7, 1860, and was the only son of Capt. C. A. Reid of the 20th Bengal Native Infantry, and therefore originally in the service of the Hon. East India Co. He was in his earlier years educated privately, and then studied medicine in the University of Edinburgh, where he took the degree of M.B. For some years after that he led a roving and adventurous life in India, New Zealand, the Pacific, and America, before settling down to general practice at Southsea. He there devoted most of the hard-earned leisure which his professional work left him to the study of heredity, and published several volumes of considerable length on the subject, as well as articles and communications to *NATURE*. The books are: "The Present Evolution of Man", 1896; "Alcoholism, a Study in Heredity", 1901; "Principles of Heredity", 1905; and "Laws of Heredity", 1910. These writings show that their author possessed an active, independent, and original mind and much ingenuity, but unfortunately the want of a first-hand practical and experimental knowledge in biology prevented him from fully appreciating the technical points of his subject. His point of view was that of the medical man, and he based his arguments chiefly on his knowledge of human disease and immunity.

Sir Archdall's general views of heredity and evolution were adopted from Weismann. He assumed that the differences between organisms were in general adaptive, and that evolution was due to natural selection acting on spontaneous variations, the effects of external stimuli never being inherited. He relied too much on verbal subtleties, which when carefully examined only put what was described before in other words; for example, his distinction between characters developed under the stimulus of nutrition, and those developed under the stimuli of use and injury, which comes ultimately to the same thing as inherited characters and acquired characters. He waged hopeless warfare against the facts and conclusions of Mendelism, which were then arousing

enthusiasm among many biologists. One of his attempts to explain away the importance of the Mendelian results was obviously unreasonable. Mendelism was just beginning to consider whether the differentiation of sex was not a Mendelian segregation, when Sir Archdall maintained that "Mendelian inheritance is a human creation, and the right interpretation appears to be that nature treats mutations, when man interferes and presents them to her, as sexual characters". The excuse for this is of course that the genetics of sex and the relation of sex-limited characters to hormones were not then understood as they are now.

Many biologists, however, who reject the possibility of the effects of external conditions being inherited, would probably accept Sir Archdall's facts and conclusions concerning alcoholism and disease as perfectly sound. His view was that "susceptibility to the charm of alcohol" was an innate character and tends as such to be inherited in the same sense as the shape of a person's head; that, as in all innate characters, variation occurs in the tendency to intemperance in drinking alcohol, so that all degrees of it may be said to occur in any population. As in other cases, these variations are subject to natural selection, which means in this case that the worst drunkards are killed off or leave fewer children. The consequence is that peoples which have been exposed to the temptations of alcohol for the longest time are the most naturally temperate, while peoples who have had little or no experience of alcohol, when it is first introduced among them, drink without restraint. This, according to Sir Archdall Reid, is the explanation of the facts that in southern Europe, where the vine has been cultivated from early times, the people are temperate, and that northern peoples, such as Russians, Germans, and English, are more given to drunkenness. Similar arguments and conclusions were maintained by Sir Archdall with much ability and command of language with regard to resistance to disease. "Every race", he wrote, "is resistant to lethal disease in proportion to its past experience of it, but the resisting power is such that it can only have been evolved through Natural Selection."

Throughout the War, Sir Archdall served as medical officer and was made a K.B.E. in 1919.

J. T. CUNNINGHAM.