3 per cent, of American negroes. The American negro has an average incidence of the sickle-cell trait, which is dependent on another abnormal haemoglobin, of about 8 per cent⁴. The sickle-cell gene was brought to America from Africa by the slave trade; it seems possible that the same may be true of the gene for haemoglobin C. In West Africa, Edington and Lehmann⁵ found haemoglobin C to be present in 12 per cent and sickling in 20 per cent of two hundred negro out-patients. Thus the incidence of haemoglobin C in African populations, for many of which the sickling incidences are known, will be of interest.

The 'coloured' population of Cape Town is derived from European, Hottentot, Bantu and Malay elements. In the seventeenth century also one shipload of slaves from West Africa was imported into the Cape settlement. The Bantu elements came chiefly from Madagascar and Mozambique, while the 'Malays' were from India and Ceylon as well as from the Malay Archipelago⁶. The incidence of sickling in the coloured population is 0.6 per cent⁷.

Blood specimens sent to the laboratory for routine serological tests were examined for abnormal haemoglobins by paper electrophoresis. All age-groups and both sexes were represented among the subjects, but adult females predominated. A modified apparatus of Kunkel and Tiselius⁸ was used, with Whatman's No. 1 filter paper and a barbitone buffer of pH 8.6 containing 1.84 gm. diethylbarbituric acid and 10.3 gm. per litre of its sodium salt. Washed packed red cells were diluted with approximately two volumes of buffer and lysed by freezing and thawing. The haemoglobin preparations were run for 3 hr. at a potential gradient of about 12 V./cm., and the patterns stained with bromphenol blue. In 219 examinations, two examples of a haemoglobin of similar mobility to haemoglobin C were found. In each case the abnormal haemoglobin was associated with a normal component, in the typical form of the haemoglobin C trait. Both occurred in clinically healthy females attending an antenatal clinic, and the findings were verified by repeated runs alongside specimens from known carriers of sickle-cell haemoglobin. Fig. 1 shows three typical patterns.

The incidence of haemoglobin C in the Cape coloured population thus appears to be about 0.9 per cent, that is, of the same order as the sickling incidence. Further studies of this and other African groups are in progress.

Fig. 1. Electrophoretic patterns from bearers of the haemoglobin C trait (the arrow points to the C component), the sickle-cell trait (S.C.T.) and a patient with sickle-cell anaemia (S.C.A.)

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THE discovery of haemoglobin C has recently been followed by that of haemoglobin E¹. Haemoglobin C is usually identified by its behaviour on paper electrophoresis in alkaline buffer. Haemoglobin E behaves so similarly in this investigation that a newly found abnormal haemoglobin showing the properties of haemoglobin C can only be identified as such after comparison with both E and C. This seemed particularly important when Dr. P. Brain discovered the haemoglobin C trait in Cape coloured individuals. Haemoglobin C has been found in American negroes and in the Gold Coast, but so far it has not yet been possible to demonstrate its presence in East Africa. On the other hand, haemoglobin E has been found in Asiatics, particularly in Siam² and recently in Ceylon³. As the Malays have contributed considerably to the Cape coloured element, it was important to see whether the haemoglobin C was in fact C and not E. By the kindness of Miss Virginia Minnich, a sample of haemoglobin E trait was made available, and it was possible to ascertain that what has been described as haemoglobin C in West Africa⁴, and particularly the newly found haemoglobin C of Dr. Brain, were in fact haemoglobin C.

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Endoparasitism in Trombiculid Mites

ENDOPARASITISM has hitherto been considered exceptional among the trombiculid mites and confined to the two genera *Hannemania* and *Endotrombicula*, the larvae of which bury themselves in the skin of amphibians. Recent discoveries have, however, shown that endoparasitism is much more widespread among the Trombiculidae than has been suspected. Some of the endoparasitic forms are indeed very common but have been overlooked. Two distinct habits are recognized: burrowing in the skin, and living in the nasal cavities.

Intranasal species of trombiculids were first found by one of us while searching for pulmonary mites