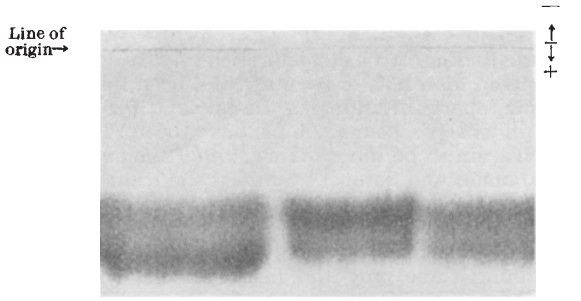

Fig. 2. Comparison by paper electrophoresis at pH 8·6 of the hæmoglobin of horse and mule, and of a mixture from horse and donkey ('hanging strip' technique, ref. 4). The mixture of horse and donkey hæmoglobins resemble mule hæmoglobin in its electrophoretic behaviour. The 'fast' component of the horse pigment moves in this mixture like the 'fast' component in the mule

was added to horse hæmoglobin so that the proportion of the 'fast' horse component was 38 per cent of the total, then the mixture showed an electrophoretic pattern identical with that of mule or jennet hæmoglobin (Fig. 2). When the fast-moving fraction of mule hæmoglobin or of the donkey/horse mixture was eluted and added to an eluted solution of 'slow' horse hæmoglobin, this mixture produced a pattern identical with that found in horse. Although we have not achieved a resolution of mule and jennet hæmoglobin into three fractions (one donkey and two horse hæmoglobins), it seems to us that there is circumstantial evidence that three hæmoglobins are in fact present.

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The Diego Blood Group System

In previous communications we reported the presence of the blood group antigen *Di*^{a} in Chippewa Indians in North America and in Japanese[1], and its absence in 156 Eskimos of the eastern Canadian Arctic[2]. Since then Layrisse and Arends[3] and Junqueira and Wishart[4] have reported the absence of *Di*^{a} in 107 and in 150 pure blood Negroes, while Simmons[5] has reported its absence in 80 eastern Polynesians, 162 Australian aborigines, 23 Papuans and 74 natives of New Britain.

We have now had an opportunity of studying, through the kindness of Dr. Eric Nation of the Canadian Red Cross Blood Transfusion Service, 50 specimens from Blood Indians living in southern Alberta, finding 3 to be *Di*(a+), while Dr. J. Hildes, of the Department of Physiology and Medical Research of the University of Manitoba, recently collected for us another 68 specimens from Eskimos of the eastern Canadian Arctic; like the first 156, these were all *Di*(a−). Dr. Hildes's specimens were distributed as follows: east central Baffinland 49, south Baffinland 11, south shore of Davis Strait 8. The Blood Indians were not selected to rule out close relatives whereas the Eskimos were.

Layrisse and Arends[6] found 5 of 100 Chinese (5 per cent) and 8 of 65 Japanese (12·3 per cent) to be *Di*(a+); we[7] found 10 out of 145 Japanese (6·9 per cent) to be *Di*(a+), while Dr. Mitsuo Yokayama of the Blood Typing Laboratory, University of Tokyo, informs us that he has found the percentage in Japanese to be 5–7. It seems probable that *Di*^{a} is about as common both in large Asiatic and large American Indian populations as *Kell* is in Whites; no high-frequency area for *Kell* has been reported which compares with the high frequencies found in certain South America Indian tribes by Layrisse and Arends[8] and by Junqueira *et al.*[9]. The apparent absence of *Di*^{a} in Eskimos of the eastern Canadian Arctic continues to intrigue us.

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Separation of Carotenoid Synthesis from Fat Synthesis in *Rhodotorula gracilis* by Diphenylamine

In the fat-synthesizing red yeast *Rhodotorula gracilis* Rennerfelt fat synthesis occurs simultaneously with carotenoid synthesis. Since Turian[1] and Goodwin[2] found that carotenogenesis in *Mycobacterium phlei* and in *Phycomyces blakesleeanus* can be inhibited by diphenylamine, we thought it of interest to see whether carotenoid and fat synthesis in *R. gracilis* might be separated by the action of diphenylamine.

The cells of *R. gracilis* were grown aerobically at 25° C. for three days in a synthetic medium[3] containing various amounts of diphenylamine. The concentrations of diphenylamine tested and the final dry-weight determinations of the cells are given in Table 1. The results show that with up to 45 mgm. of diphenylamine in 1,000 ml. of the cultivation medium there is no inhibition of growth of *R. gracilis* to be noted, although it could be observed that the colour of the cells diminished gradually with increasing concentrations of diphenylamine. With 40 and 45 mgm. diphenylamine in 1,000 ml. medium, the cells are colourless and do not contain any