other hemolytic anemias and in anemia due to hemorrhage have shown that young red cells are characteristically different from mature cells. The concentration of total fatty acids related to the surface of normal cells is the same in both, but the younger cells have a relatively high amount of saturated fatty acids. In comparing the 2 cases of PNH the outstanding difference is in the amount of saturated fatty acid. It is at the top of the normal range in case B, and at the bottom in case A. The difference is one that might be due to the ages of the cells rather than the severity of the PNH lesions.

Summary. The extracted lipids from the red cells of 2 patients were analyzed for cholesterol, unsaturated and saturated fatty acids. The ratios of the various lipids were established and the values were related to the total lipids and also to the surface area of the red cells. Compared with normal red cells the PNH cells showed an increased concentration of arachidonic and pentaenoic acids and a decreased concentration of oleic acid. These results suggest that the lipid pattern of the lipoproteins in the stroma of PNH cells is abnormal.

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Hypothermic Effect of Chlorpromazine, Histamine and Serotonin, and Acclimatization to Cold. (23514)

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Recent studies have shown serotonin and histamine to be some of the products of secretion of mast cells(1). We have reported definite changes in the appearance and abundance of these cells in animals exposed to low temperatures(2). Since chlorpromazine is believed to be a "serotonin liberator"(3), its effect was tested in animals which had been exposed to cold for varied periods of time. Similarly the effect of cold acclimatization on the body temperature response to serotonin and histamine was investigated.

Methods. Each group of animals was composed of 8 male rats weighing approximately 150 g. All injections were intraperitoneal in a 1% solution. In the first experiment 4 groups, after being exposed to cold (6°C) for 0, 1, 7 and 28 days respectively, were maintained at 21°C for 1 day and were then given an injection of 10 mg/kg chlorpromazine. In a second experiment 2 groups exposed to cold (6°C) for 0 and 28 days were injected simultaneously with 100 mg/kg of histamine phosphate and 2 mg/kg of serotonin. Immediately following these 2 injections, 4 doses of 2 mg/kg of serotonin were injected at 5 minute intervals. In a third experiment with 2 groups exposed to cold (6°C) for 0 and 24 days, 5 doses of 32.4 mg/rat of histamine phosphate, were injected at ½ hour intervals. The body temperature was measured with a thermocouple inserted at a depth of 40 mm.

Results. Fig. 1 shows that the intensity and duration of the hypothermic effect of chlorpromazine is greatly decreased by pre-exposing animals to cold for 7 and 28 days. No attempt was made to quantitate the chlorpromazine effect in terms of serotonin and histamine response. However, as shown in Fig. 1, the effect of acclimatization on the body tem-

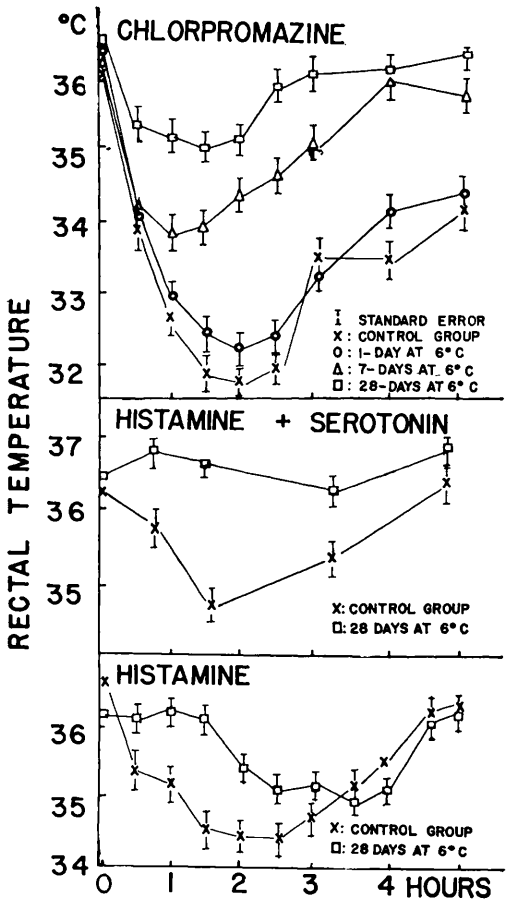

FIG. 1. Rectal temperature of rats previously exposed to cold, measured at 21°C following injections of chlorpromazine, histamine and serotonin.

perature response to histamine alone or combined with serotonin is qualitatively the same as the one observed with chlorpromazine. With the dose of chlorpromazine employed all control animals were unable to stand on their 4 legs, whereas the cold acclimatized animals (7 and 28 days) were able to walk.

Discussion. If the depressing effect of chlorpromazine on body temperature were due to a release of histamine and serotonin from mast cells, the alleviating effect of acclimatization would be caused by a decreased secretion of these substances, a diminished response of the organism to them, or by a combination of these 2 conditions. Since the effect of serotonin and histamine injections is also alleviated by acclimatization, it would seem then that the diminished response of the organism to these hypothermic substances is an important reason for the observed loss of hypothermic effect of chlorpromazine after cold acclimatization. Decreased endogenous production of serotonin and histamine is not excluded, but may not be needed to explain the effect of cold acclimatization on chlorpromazine. In conjunction with this it is interesting to note that in a recent study we have shown that mast cells, except in the extremities, increase in number in acclimatized animals(2). This result could indicate that a sufficient amount of serotonin and histamine is available in acclimatized animals to allow the hypothermic effect of chlorpromazine to take place.

Summary. The hypothermic effect of chlorpromazine, serotonin and histamine was investigated in rats at 21°C after acclimatization at 6°C for 1 to 28 days. The response to chlorpromazine was greatly reduced in animals acclimatized to cold for 7 and 28 days. Similarly, the fall in body temperature observed with serotonin and histamine was not as pronounced in acclimatized as in control animals.

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