change color together with a wide strip of hair on the back, leaving black hair only on the top of the head and on the area around the base of the tail. Finally the last-mentioned parts also become gray.

If such rats are returned to the stock diet their hair generally regains the original coloration. First the skin under the gray hair becomes blue-black and then a deposition of the pigment in the hair takes place, accompanied by a gradual disappearance of the blue-black color of the skin which becomes white again. Nevertheless, the tip and the lower third part of the hair remain gray for a certain period of time. In all cases the dark coloration of the skin precedes the darkening of the hair. (This is in line with Saccardi's histological studies on production of pigment in rabbits.)[3] The hairs become dark in the same sequence as they turned gray. First lower neck, portion around eyes, belly and outer parts of the extremities, then the whole back and finally the top of the head and the region around the tail become black. In rats whose diet was changed when blackish spots still remained on the top of the head and on the area around the base of the tail the color in these places was intensified simultaneously with its restoration at the parts where it normally appeared first. These changes were found very easy to follow when rats were made hairless by a diet consisting of one part by weight of honey and one part by volume of milk, although in this case the sequence was somewhat changed.

In order to ascertain whether the hemoglobin level bears any relation to the darkening of the skin, hemoglobin reading was taken simultaneously with the first appearance of the skin pigmentation. The coloration of the skin of a rat which had 8 gms of hemoglobin per 100 cc of blood appeared two days after the rat was put on the stock diet. A rat which had 3.4 gms of hemoglobin per 100 cc of blood showed first signs of darkening six days later when the hemoglobin reading was equal to 7.5 gm per 100 cc. One may consider such a coincidence at least suggestive, if not significant, since iron was found in melanin compounds.[4] Pough[5] discovered that ferrous salts in small quantity hasten the production of melanine, and Cohen and Elvehjem[6] demonstrated the importance of copper in an increase of the oxidase test of the liver tissue of anemic rats.

Then the question arises as to why these changes do not occur simultaneously over all the body but are localized to certain areas, anterior parts being, it appears at least, preferential. In rats, the young are born white (red), no matter whether the parents are black or white. Pigmentation appears a few days later and starts on the anterior and lateral parts of the body, so far as the writer noticed. One is tempted to make the suggestion that this sequence in repigmentation is just a phylogenetic factor.

Not only does the hair of rats put on a milk diet become gray, but the front teeth become white as well. This is noticeable first at the end of the third week of the milk diet. The brown color of incisors begins to disappear from the base of the teeth and at the end of the fifth week of the milk diet they are usually completely white or only a small brown spot can be seen on the distal parts of the incisors. When such rats are put back on the stock diet their incisors become brown again in a 5 to 6 weeks' period. The brown color appears at the base and proceeds distally, which signifies that the pigment is deposited at the roots of the teeth.

In order to find out whether iron and copper (directly or indirectly) are responsible for the changes in the color of teeth of anemic rats a pair of such rats was changed to the iron-copper-milk diet. Unfortunately one of them died on the second day. The incisors of the other rat became normally brown nine weeks after the change of the diet. One may conclude that this experiment is suggestive enough to warrant further investigations.

It is interesting to note that when teeth first appear in a new-born rat, they are white and only later gradually become brown. It is possible that the brown pigment of incisors in Rodentia has something to do with the strength of these teeth in that family.

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