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OLD-AGE MOULT IN THE COMMON SHREW  
*SOREX ARANEUS* LINNAEUS, 1758

LINKA STARCZA *SOREX ARANEUS* LINNAEUS, 1758

In my publication of 1952 (Borowski, 1952) I stated that shrews, having overwintered and changed their winter coats for summer coats in the spring of the second calendar year of life, do not undergo the normal autumn moult. However, they take part in a kind of residual moult, which consists in the growth of new short summer hair in some places of the body, most frequently in its dorsal part.

Now that I have incomparably richer materials at my disposal (Table 1) than in 1952, I have been able to study the process of old-age moulting in detail and to complete the description then offered with several new essential observations.

**Table 1.**

Occurrence of specimens in old-age moult in particular months of annual cycle.

	Month									Total
	V	VI	VII	VIII	IX	X	XI	XII	I-II	
No. of individuals studied	136	433	306	444	425	151	31	5	4	1935
No. of individuals moult	22	39	14	22	34	9	1	-	-	41
% of moulting individuals	16.2	9.2	4.6	4.9	8.0	6.0	3.2	-	-	7.3

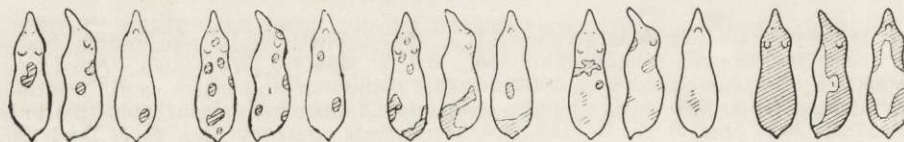


Fig. 1. Different stages of old-age moult in *S. araneus* (places of the growth of new hair are shown hatched).

The old-age moult lasts generally from May to November. In some individuals it may appear almost immediately after the completion of the spring moult. Then a relatively high percentage of adult animals (16.2%, Table 1) show these changes. The intensity of the process decreases in June and in a few following months the number of the moulting animals does not exceed 5%. The second peak of intensity of the old-age moult takes place in the autumn, in September and October. Specimens with signs of old-age moult were met with very rarely in the small late-autumn material.

The old-age moulting begins as a rule on the back (very seldom on the ventral side of the body) in the form of a few or somewhat more small (16.2%,  $n = 136$ ) dark insular patches observed on the flesh side of the skin (Fig. 1). Occasionally the moulting may involve as much as three quarters of the body surface area. The change of hair takes place within these patches. The new hair is generally shorter than the summer hair by 1 member, and "white" hairs constitute a relatively high percentage.

The old-age moult does not bring about changes "advantageous" to the animal, resulting in the longer winter hair.

Attempts were made to determine the age of adults entering into the period of old-age moulting. The individuals moulting in May, for instance, are older than the remaining shrews, which are not moulting at that time. I suppose they are at most of the second, if not of the first litter of the previous year, and consequently they have lived for about 12 months.

The old-age moult is probably the summer moult described by Ognev (1928). Unluckily, the data given in his monograph do not explain whether the author dealt with juveniles or with adult animals, which had lived out the winter; presumably, with the latter. I did not find any signs of moulting in the material of juveniles caught in the summer time (about 15000 specimens). The first moult of young shrews that have left the nest occurs as late as the autumn (October). Basing on her laboratory observations Dunayeva (1955) states the occurrence of moulting shrews in summer. After the results obtained by me in laboratory breeding (Borowski, in the press) it seems certain that the moult observed by her at mid-summer was induced by the artificial shortening of the day length. Crowcroft (1957) has also recorded the presence of a residual moult in adult shrews. He thought, however, that those "grey patches" on the skin were rather connected with the growth of white hairs and confined only to females.

The occurrence of the old-age moult in the high summer (from May to September) seems to suggest that this process is not governed by the day length or seasonal changes of the weather. This may be connected with the observations of Becker (1952), who proved the dependence of moulting in the rat upon the general physiological conditions of the organism. The old-age moult may also reflect hormonal disturbances (Stein, 1954, 1960).

Judging by the direction of the process of old-age moulting, it rather resembles the autumnal change of hair. Under laboratory conditions it even led to the complete replacement of the summer hair with the winter hair (Borowski, in the press). Never, however, a full third (old-age) moult was observed in shrews in the wild. Even the overwintering animals caught on 8 and 10 February 1949 (Coll. Nos. 7739, 7740, 7743) were in summer coat.

In view of these observations it becomes necessary to continue experimental studies on the course and effects, as well as the biological significance of the old-age moult in different environmental conditions.

#### REFERENCES

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