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ANIMAL TRACKS, FOOD AND DISPOSITION. IS THERE ANY RELATION?

E. L. PALMER

"He that runs may read" but he that runs may also be read and the reading of the tracks of birds and animals may lead to some very interesting observations. When speeding all animals move essentially alike so the following conclusions are based upon the method of locomotion adopted by the animal when moving slowly. This is shown in the first line of tracks under those given for each species.

A study of the tracks shown in the plate will make it plain that there are apparently three types based upon the behavior of the limbs,—particularly the hind limbs. The rabbit, squirrel and deer-mouse all move the hind limbs in unison while the front may or may not work together. In these animals the hind limbs are also plantigrade. The cat and the shrew move the hind limbs alternately as they do also their fore limbs. When speeding, however, their hind limbs are moved simultaneously. The cat at least is digitigrade. The rat and the muskrat vary from each of these types. In these animals, the hind limbs may or may not be moved in unison and there is apparently no attempt to follow any definite plan of behavior for the fore limbs. This probably accounts in part for the peculiar irregularly rolling gait which these animals show.

Possibly the above classification might not be of interest but when we consider the food habits of each of these animals we find that they readily classify themselves into the same groups. The rabbit, squirrel and deer-mouse are essentially plant eaters. The cat and shrew are out and out carnivores while the muskrat and rat are plainly omnivorous. In connection with the food habits it would appear logical to expect different methods of locomotion. Carnivores are called upon to use caution in approaching their prey while this would be unnecessary on the part of herbivores. Sudden movements such as would arise from using the hind limbs simultaneously would jeopardize their chances of securing their prey by surprise. Herbivores do not need to exercise caution in securing a meal but do need to be able to move rapidly in escaping from an enemy. It would seem natural then to expect that movements on their part might readily

PLATE of ANIMAL and BIRD TRACKS.

Direction →

1st line moving slowly; 2nd, speeding.

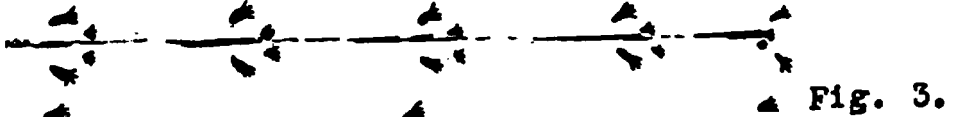
Cotton-tail Rabbit. 1 ft.



Fox Squirrel. 1 ft.



White-footed Deer Mouse, 1 in.



Domestic Cat. 1 ft.



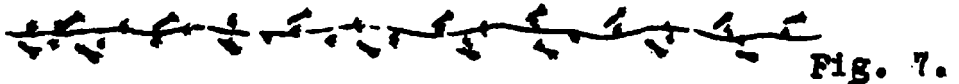
Short-tailed Shrew 6 in.



Muskrat. 6 in.



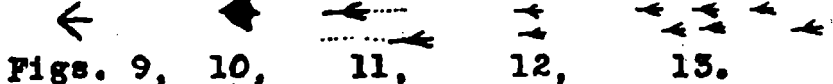
Common House Rat. 6 in.



Common Skunk. 1 ft.



Chicken, Duck, Crow, Sparrow, Robin.



resemble that employed by a majority of animals when speeding. An examination of the tracks shown in the plate would show this to be so. The omnivorous muskrat and rat seem to combine these types of locomotion as well as their types of food. The skunk, which is an animal-eater, nevertheless confines its food to the smaller forms like insects, crayfish and the like and does not need to exercise the caution in their apprehension which animals who capture forms more nearly their own size need to show. The gait does not then clearly resemble the carnivorous type. An examination of the skunk's tracks also shows that the animal persistently drags its feet. This certainly would indicate lack of caution which has undoubtedly arisen from the facts that its food is easily obtained and that for obvious reasons it need show little fear of its enemies. From this it would seem that besides the relation between the types of locomotion and food there might also be a relation between types of track and the animal's disposition. Very probably, however, the disposition is largely governed by the ease with which the animal can secure a living and the liability of its capture by its enemies.

Bird tracks as well as animal tracks indicate something of the food habits and disposition. The chicken and duck, which are not perching birds, do not show the track of the hind toes. The chicken at least would find this toe a disadvantage in scratching for food and one might expect all scratching birds to be of this type. The aquatic habit of the duck is of course shown in the web. The other birds shown in the plate indicate that they are perching birds by the presence of the hind toes which enable the bird to cling more securely to its perch. It is interesting to note that the crow drags its toes in a careless manner. Possibly if it were not gregarious but had to depend entirely upon its own alertness in detecting foes these tracks might not possess this characteristic. The sparrow, which is an out and out seed eater, differs quite markedly from the omnivorous robin in the method of locomotion. Besides mixing its diet the robin combines hopping, skipping and jumping. Very probably, however, the clear distinctions evident in the tracks of mammals will not be noticeable in the tracks of birds.

Unquestionably there can be exceptions cited to the general observations made above. The ungulate animals like the horse and cow certainly do not move their limbs like the rabbit and squirrel but their great size serves as a protection from a majority of the carnivores. The red squirrel is largely carnivorous but this is not a habit common to the group. Most of its near kin are essentially herbivorous. It retains the method of locomotion common to its

kin. It might also be remarked that while it is highly carnivorous, at least for a squirrel, it preys largely upon helpless forms and does not need to use great caution in capturing them. The meadow mouse, which is largely herbivorous, commonly uses its hind limbs alternately but the nature of its habitat might readily account for this as it would be difficult for an animal which lives under low hanging herbage or obstructions of any kind to go by means of hopping. Aside from these exceptions, however, it would certainly seem that in those smaller forms which live in the open in places not remarkably secluded there must be some relation between the types of tracks, food and disposition.

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