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Occurrence of Shock Disease Among Young Snowshoe Hares.*

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The term, shock disease,[1] has been introduced to describe a disease of snowshoe hares which is associated with the periodic die-off of these animals in the wild. Hares afflicted with this condition have a disturbance of carbohydrate metabolism resulting from liver degeneration. Shock disease has been observed among adult hares in their natural environment, and its presence in hare populations has been demonstrated during the winter months by trapping and holding animals in captivity. Hares taken from certain areas succumbed rapidly from the shock of unnatural conditions, and death was usually accompanied by an extremely low blood sugar level.

The recognition of shock disease among adult hares during winter months raised the question of whether this disease occurs in young hares during the warm months. To gain this information, adult hares were placed in a fenced area of natural habitat in the spring of 1936 and, together with the young subsequently born, were kept under close observation throughout the summer. The fenced area, called "Range A", consisted of 1.7 acres enclosed with wire of ¾" mesh to prevent the escape of young hares. Forty-one females were introduced into this range, most of them in the latter part of April. Six males were entered in April, 3 in May, and 1 in June. Natural forage was available throughout the study, with daily supplemental feeding of carrots, oats, cut aspen, and willow. The young were born in 3 groups: 36 from May 3 to 18; 51 from May 28 to June 26; and 28 between July 1 and 17. Most of them were banded with ear tags at an age of 3 to 5 days, while still in the nest.

Losses, due principally to shock disease, were heavy among both adult and young hares in this range. At the conclusion of the investigation, on November 9, 20 of the 41 females and 8 of the 10 males had died. Only 8 young, 7% of those born, survived the study. The carcasses of 82 young hares were recovered for examination.

During the course of the experiment, diagnoses of shock disease

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[1] Green, R. G., and Larson, C. L., *Am. J. Physiol.*, 1937, **119**, 319.

were made on a basis of blood sugar determinations in addition to recognition of symptoms and postmortem findings.

Adult hare, band No. 4274, was found sick with typical shock symptoms in Range A on September 17. This male hare had been released in the pen on May 26 and developed shock 114 days after entrance. When discovered, it was taken into the field laboratory and bled. Its blood sugar content was less than 10 mk per 100 cc, and necropsy findings were characteristic of shock disease.

The occurrence of shock disease in young hares was rigidly demonstrated by studies on hare No. 4237. This animal was born on May 6, 1936. On July 1 it was captured in order that a sample of blood might be taken. Its blood sugar level was normal. The hare was returned to the range, and at 9:30 the following morning was found huddled up, indifferent to the approach of an observer. At 11:15 it was lying on its side, too weak to assume a normal posture, and when picked up and carried into the laboratory, it developed convulsions. Its blood contained 3 mg sugar per 100 cc. This hare, born in the range and living under essentially natural conditions, died from shock disease 57 days after birth.

Many young hares that had never been handled except during the brief process of ear-banding, died of shock disease, typical both as to symptoms and postmortem findings. The second group of hares born, a total of 51, suffered a mortality of 25 animals or 49% when the hares were 5, 6, and 7 weeks old.

These studies were made during the second year in which Range A was used to hold adult and young hares. As the mortality during the second year was much increased over that of the first year, it would seem that the factor causing shock disease became accentuated with repeated use of the same area for holding concentrated populations. The experiment not only establishes the occurrence of shock disease during summer months but also demonstrates that young hares may die of this disease within 6 weeks of birth.