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Biological Science

OBSERVATIONS ON BIRD LIFE AT THE COLLEGE OF ST. BENEDICT

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ABSTRACT

The two-hundred acre grounds of the College of St. Benedict furnish different kinds of bird habitats. These include a wood lot, an open meadow, farm and pasture lands, a farm yard, a few marshes and swamps and a small lake. Each of these natural features attracts certain species of birds. Interest in bird life is increasing on the campus and efforts have been made to attract birds to the grounds immediately surrounding the buildings. Factors responsible for a certain measure of success in this undertaking include: the placing of bird houses and bird baths, maintaining feeding stations, and the planting of shrubs and trees, the fruits of which provide natural food for the birds throughout the year.

A hundred and twenty species were recognized during the year from June 1, 1943, to June 1, 1944. Seventy were summer residents; four came down from the north to spend the winter; twelve were permanent residents and thirty-four were here only during migration.

Different birds showed marked preferences for certain of the available natural foods. The fruits of trees that proved most popular were those of the red cedar, hackberry, mulberry, basswood and the seeds of the scrub pine, *Arbor vitae* and honey locust. Some preferred elderberries, honeysuckle and flowering dogwood while others ate the buds and flowers of the elm, maple, and cottonwood poplar. One, the ruby-throated hummingbird, obtained its food chiefly from the flowers of the lilac, honeysuckle and golden currant.

The courting dance of the purple finch, as observed, is described.

It is our hope that we may soon speak of our grounds as St. Benedict's Bird Sanctuary.

MORTALITY RATES IN *ZINNIA* AS RELATED TO THE INTERACTION BETWEEN VARIED X-RAY DOSAGES AND AGE OF SEEDLING

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THE MORPHOLOGICAL EFFECTS OF THE
INTERACTION OF THE GENES PYGMY
AND DWARF-I IN MAIZE

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OBSERVATIONS ON INJURY AND REPAIR OF
PERIPHERAL NERVES*

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* Published in Amer. Jour. Physiol., 140: 107-114, 1943.

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THE USE OF RADIOACTIVE PHOSPHORUS IN THE
STUDY OF MUSCLE DURING SHOCK

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ABSTRACT

The amount of phosphate entering the muscle from the plasma one hour after intravenous administration of sodium diphosphate containing radioactive phosphorus was determined in seven different groups of rats. The preliminary treatment of each group was as follows: 1) no preliminary treatment; 2) complete occlusion of the circulation of the left thigh and leg by a tightly placed rubber band for one hour, the band being removed at the time of the injection of the sodium phosphate; 3) occlusion of the left thigh and both forelegs for one hour released at time of injection; 4) occlusion of the left thigh for four hours released at time of injection; 5) occlusion of the left thigh for 3.5 hours with release for one hour previous to administration of sodium diphosphate; 6) occlusion of the left thigh and both forelegs for four hours and administration of phosphate at the time of release; 7) occlusion of the left thigh and both forelegs for 3.5 hours with release for one hour previous to administration of phosphate. Animals treated similarly to groups 6 and 7 developed fatal shock with marked hemoconcentration and decreased blood pressure. Animals similar to groups 2, 3, 4, 5 did not develop shock and showed only moderate hemoconcentration in groups 4 and 5.

The amount of phosphate entering the unoccluded muscle of

groups 2 to 7 was 58, 45, 83, 96, 83 and 86 per cent of the amount entering similar muscle of normal animals. The amount entering the muscle which had been previously occluded in each of these groups was 96, 83, 169, 224, 162 and 134 per cent of the normal calculated on a basis of dry weight of muscle. Considerable elevation of the phosphate content of the plasma occurred in groups 4, 5, 6 and 7. If the elevated phosphate of the plasma is considered it appears that the unoccluded muscle is much less permeable to plasma phosphate than normal and that the muscle previously occluded is permeable about as much as normal except in groups 6 and 7 when the blood pressure was greatly reduced.

CLASSIFICATION OF LAKE WATERS UPON THE BASIS OF HARDNESS

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Chemically, hardness is a measure of the soap-consuming power of water. Calcium, magnesium, and to a lesser extent iron and aluminum are the principal metals which in fresh waters form insoluble compounds with soap. The amount of soap used before suds are formed can be taken as an index of the total concentration of these metals. Although water hardness is of two types, temporary hardness due to carbonate salts and permanent hardness due to sulphate salts, hardness is always expressed as parts per million of calcium carbonate. Temporary hardness is so called because heating the water precipitates the dissolved carbonates as scale. Sulphate salts which cause permanent hardness are not affected by heating. From the point of view of utilization for public and industrial water supply, Theroux, Eldridge and Mallman (1943) classify waters as follows:

	<i>Total hardness expressed as p.p.m. calcium carbonate</i>
Sufficiently soft for ordinary use	Less than 50 to 75 p.p.m.
Moderately hard	75 to 100 p.p.m.
Hardness noticeable to most persons	Greater than 150 p.p.m.
Water softeners often necessary	Greater than 200 p.p.m.

Since this classification is designed primarily for the use of water supply engineers, it is of limited value to workers in the fields of limnology and fisheries.

It has long been recognized that hard carbonate waters are often more productive of aquatic life than soft carbonate waters, and because of this several schemes have been devised by biological workers for the classification of waters upon the basis of hardness. It should be remembered that in most fresh waters the concentra-