

The
**VICTORIA
NATURALIST**

Vol. 5, No. 6

December, 1948



(Photo by B.C. Government Travel Bureau.)

Hairtrigger Lake, Forbidden Plateau.

Published by the
VICTORIA NATURAL HISTORY SOCIETY
VICTORIA, B.C.

Report of the November Meeting

Following the adoption of the minutes of the previous meeting Mr. Hardy welcomed new members including Mr. and Mrs. P. M. Monckton and Prof. and Mrs. Edgar Stansfield. As specimens for examination Mrs. M. Leveson-Gower submitted a small collection of beautifully prepared local shells which were greatly admired. The Chairman gave some details concerning the habits of the molluscs represented and urged that the members bring more specimens to the general meetings.

Mr. Hardy then introduced Mr. N. C. Stewart, Surveyor-General, who presented a talk briefly outlined as follows:

"Surveying and Mapping British Columbia"

Surveys and maps are fundamental to all other functions of the Government. The cadastral survey outlines the boundaries of various types of properties, rights of ways, easements, etc. A map is a picture, a graphic representation of the natural and artificial features of a portion of the earth's surface. Maps are of many types such as cadastral, topographic, road, forest-cover, soil, aeronautical, electoral, geological and even distributional such as those to show duck populations.

Early surveyors included Joseph Despard Pemberton who was Surveyor-General of Vancouver Island in 1859 and Sir Joseph Trutch who was Surveyor-General, first of the Colony of British Columbia in 1864 and then of the Union of the Colonies of Vancouver Island and British Columbia in 1866. In 1871, when British Columbia became a Province, M.B.W. Pearce became Surveyor-General. Since then there have been eight

holders of the position, of which only Mr. F.C. Green is still living.

The speaker showed photos of many types of country in which surveys are being carried on and outlined the work of the various divisions. Topographic maps now cover approximately 70,000 square miles of the Province, leaving some 29,600 yet to be done. At the same rate as this year it will require 140 years to complete the one mile to the inch mapping of the Province. Less accurate interim maps are being prepared by the Air Surveys and Geographic Divisions. In this work some 55,000 prints were made in the Air Surveys processing room in the past year.

In the air photo work nearly half of the Province has been covered by vertical photography while during 1948, a poor season for photography, 2,529 lineal miles were covered by the trimetrogon method using three cameras simultaneously.

A helicopter was used experimentally by the Topographic Division for transporting men and equipment to mountain tops. Radar and other electronic devices also may be used in the future.

A sincere vote of thanks was extended to Mr. Stewart by Mr. Ernest Smith after which the meeting was adjourned.

G.C.C.

GLACIAL POT HOLES

by A. H. Marrion.

When a stream of water falls over a rock precipice a foot or more high, grains of sand and any pebbles carried by the flowing water, are caused to strike the hard floor below. Continued action causes a depression in which boulders gather. The depression becomes a round hole. The escaping sand erodes a lip or channel at the top, by which the water flows out of the hole. The imprisoned boulders become rounded like canon balls due to the swirling action of the water and sand. The resulting formation is known as a "pot hole".

Sometimes as in sandstone formations the stream can readily cut a new channel for itself and leave the pot hole "high and dry" or erosion in the stream bed may cause a pot hole to be cut vertically in half. Examples of present day pot holes may be found in almost any stream bed where the water course lies over a rugged or uneven rock bed, causing water falls. Fine examples may be seen along Englishman's River, north of Nanaimo and along the Leach River in the Goldstream district.

Around Victoria are several most interesting examples of pot holes, formed by glacial streams during the ice ages. These are found on the crests and sides of rock outcrops where to-day there is not a stream to be found within a mile or two.

When a glacier reaches the lower levels of a valley or a region where summer suns are able to produce sufficient heat to melt the glacier's surface, streams are formed which carry along freed material such as clay, sand and gravel. Deep cracks in the ice, caused generally by the ice bending over a ridge of rock, permit the water to fall to the solid rock below, causing the formation of the holes. The water, being warmer than the ice melts a sub glacial channel, often seen at the snout or melting front of

a glacier. The water gushes forth, white in colour (if charged with clay and sand) coming upwards between the boulders and gravel.

Judging by the size of Victoria's pot holes the "moulin" or ice crack must have remained stationary for a considerable length of time or the grinding must have been very rapid.

Albert Head pot hole is situated on the crest of an outcrop of solid rock. (Metchosin volcanics). It is about fifty feet south of a trail and a hundred feet from the end of a road leading to Albert Head lighthouse. It is perhaps sixteen feet above high tide level. The hole measures about 30 inches across, and about the same depth. Its sides are very smooth, as is the very well developed lip, which was eroded outwards in an easterly direction, (the shore line is about 75 feet north). There is an erratic, or glacial granitic boulder about three feet in diameter, 50 feet to the east, slightly south of the hole.

Esquimalt Holes are situated on the southern slope of an extensive rock outcrop which extends northwards from the E. and N. Railway just east of the officers' quarters. The holes (one small one draining into a large one) are on a narrow shelf of the ice plucked rock face, which drops downwards about twelve feet to a gently sloping field of glacial debris and clay. Much weathered but recognizable ice grooves can be seen running north and south with perhaps a more westerly trend than those on Mount Tolmie. The smaller hole may be younger or older than the large one. It is about one foot across, a few inches deep and lies north of the larger hole which is perhaps three feet deep and of similar width. It has a well developed lip on the south or sea side. The nearest water is south-west at the dry dock.

The Victoria West pot holes are situated on the south-west slope of a rock outcrop, across the road at the west side of St. Saviour's Church. The upper hole, near the apex of the rock, is shaped like a

basin 18 inches by 12 inches and 7 inches deep. Its lip is towards the west, and the stream which flowed outwards cut a distinct depression or channel into the downward sloping surface of the solid rock about 7 inches wide and $\frac{1}{2}$ inch deep. Six or seven feet downwards, the stream made a right turn and fell about one foot and formed a second pot hole, rounder and deeper than the first.

Across a small gully, northwards, is one other small circular hole a few inches deep.

These holes are similar to the Esquimalt holes in that they were formed on the south, ice plucked slope of solid rock, about 12 feet from ground surface below.

Sooke pot hole. The remains of a pot hole are to be found to the right of the highway leading to Sooke on the rock cliff face about ten feet above the roadway. The front half of the pot hole was probably eroded by the ice removal, or plucking of the rock face. The hole was originally perhaps 30 inches by 30 inches.

Burnside Road. A pot hole is reported to be present in the vicinity of Strawberry Vale.

Cadboro Bay Shore. A hole in this area has not been examined.

The writer will be pleased to learn of any other glacial pot holes on southern Vancouver Island.

REPORT OF THE 5th ANNUAL FUNGUS FORAY

by George A. Hardy, Provincial Museum

Thirty members and friends gathered for the occasion on October 16th at the Mt. Tolmie gravel pit, thence proceeding to the end of Cromwell road where it abruptly ends at the Hudson Bay woods.

A combination of perfect weather and of fungi in just sufficient numbers to keep members on the alert for new finds, was conducive to a most profitable and enjoyable afternoon.

We are indebted to the kindness of Mr. & Mrs. L. Hooper for the use of their grounds as headquarters, to which members repaired on their return from exploring the woods in search of specimens. Here collections were arranged according to species and discussed; in the meantime members partook of a social cup of tea efficiently prepared and dispensed by our genial editor Dr. G. C. Carl.

The valued and authoritative help of Mr. Arch Nicholls in the sorting and identification of the specimens was greatly appreciated. Over 80 species of mushrooms and other fungi were noted, 70 of which it was possible to name specifically at the time. The display was almost bewildering in the variety of form and colour, ranging in size from Polyporus Berkleyi measuring 2 feet across and weighing 12 pounds, to the minute Elf Caps, Mycena sp. less than one quarter inch in diameter, and in colours of all conceivable shades and tones.

A complete list of the species would take too much space; suffice it to say that practically all types of mushrooms were present to illustrate at first hand the chief characteristics of the group.

The importance of this direct contact with the fungi in their native haunts can hardly be overrated,

for such first-hand experiences are likely to be long remembered.

A PROBLEM FOR NATURALISTS

by Morris Jackson, Fanny Bay, B. C.

Are some birds capable of conscious, but indirect action, taken to achieve an eventual result?

As an affirmative reply would attribute rational thought where it is not supposed to exist, the question can not be answered from our present knowledge.

But, last summer, my wife and I were confronted by the question.

Among the robins which visited us was one which in some manner - probably from fighting - had lost some crown feathers. About one eighth of an inch of white skin showed clearly against the glossy black crown. To distinguish him from the other robins we called him "Spothead". Both he and his mate came to us daily for the worms we dug for them from a small shaded patch of ground which we kept well watered for this purpose.

One day he had just been given a nice large worm, when his mate ran to him opening her beak and fluttering her wings, begging for it in the manner of a juvenile. He was plainly reluctant to give it to her, and kept turning away. Finally, however, he put the worm down and broke it in two pieces; of which, she promptly snatched one. The next day, when she, herself, had made up a little bundle of pieces of earth-worms, "Spothead" ran up to her and forced her to relinquish to him the entire bundle. He wasted no time on pretty coaxing, but just took them away! The rest of the day, he left her undisturbed.

On each of the two following days, he repeated this performance. But, although they stayed with us for

several more weeks, we never saw any more "borrowing".

Two questions arise out of this incident. The first one: If it was a case of mate robbing mate, why did it occur only once during each of three days? The second: If he really did it to teach her a lesson why did he yield to her in the first place?

I think the answer to this last one may be buried in the ruins of the temple which Samson pulled down at Gaza.

Ed.Note: The answer to the above problem could probably be found in the results of studies by I.P. Pavlov, world renowned Russian scientist.

His theory of conditioned reflexes might give an explanation something like this: During the fledgeling period of her brood, the hen robin found the simulation of the fledgeling's actions produced food from the cock when she was hungry. These same actions constituted a conditioned reflex in the cock to surrender food. Such reflexes can be maintained for some time under controlled conditions, but natural environment tends to break them quickly, which is all for the best, or we might see all our female birds develop into parasites on the males.

The action of the cock in taking worms from the hen would seem to be a reflex that needs no conditioning but just the stimulus of the sight of food and the strength to take it.

W.T.

DABLERS AND DIVERS

by C. J. Guiguet, Provincial Museum

The Mallard:

This species needs no introduction to the people of Victoria. (See illustration A) Common throughout the province it is readily observed feeding and raising young, even in our city parks, where it has become fully adapted to the presence of man.

Conversely, in the field, during the open season, the mallard is an elusive and wary individual. This, coupled with its beauty and edibility makes it one of our top ranking game species, eagerly sought by the wild-fowler.

Laying from eight to twelve eggs and with a wide range of distribution, this aristocrat of the duck world will more than hold its own, providing existing optimum and near optimum habitats are preserved.

Relatively large populations winter in British Columbia, chiefly on the lower mainland, Gulf of Georgia, Queen Charlotte Islands and the Coastal strip.

The Golden-Eye:

The two species illustrated (B) occur here. Males are easily distinguished in the field by the shape of the white face spots, crescent shaped in Barrow's and oval in the American. Females and juveniles are more difficult to distinguish in the field but are comparatively easy in the hand. On the plan view the bill of the American is broad to the tip, while that of Barrow's tapers from base to tip.

Seldom occurring in flocks as the mallard does, scattered individuals, pairs and small groups may be seen along our sea shores and rivers throughout the fall, spring and winter months.

Although not so palatable as the mallard and thus not considered a top game bird, the golden-eye is noted for the startling beauty of the male and for the sharp whistling of the wing as it bores through the air, features which are a constant source of wonder and enjoyment to the bird lover.

The mallard exemplifies well that group of ducks commonly known as the dabbling or river ducks. Members of this group are distinguished from the diving or sea ducks primarily by the unwebbed hind toe. They differ markedly in habits; the dabbler is often seen feeding in the fields and upon grassy swards. When feeding in the water they tilt up, tail pointing to the sky and neck down stretched to the aqueous plants. On being flushed these birds arise directly from the water.

The golden-eye is of the group termed the diving ducks. These have the hind toe webbed and are seldom seen on land except in the nesting season. As their name implies they feed by diving, many feeding upon marine animal life which renders their meat unpalatable to the average taste. In taking wing the divers usually run along the surface of the water for a short distance, wings and feet moving rapidly in unison until finally the bird is air-borne in low rising flight.

NEW BOOKLET:

"Fresh-water Fishes of British Columbia"
by G. C. Carl and W. A. Clemens.
Prov. Museum Handbook No. 5, 1948. Price 50¢

Following a generalized section dealing with structure, distribution and economic importance each species known to be present in the Province is dealt with in some detail. Each fish is illustrated, some in colour; a glossary, bibliography and appendix are provided.

Back issues of "The Victoria Naturalist":

Copies of most of the back issues of "The Victoria Naturalist" are still available. To members of the current year who have not received all numbers, copies of issues missing from their series will be supplied free on request. Other copies may be obtained at 15 cents apiece.

Note re Meetings of Geology Group:

Mr. George E. Winkler, Chairman of the Geology Group, announces that an excellent programme of talks on the architecture of the earth has been arranged for the winter months. Speakers include Dr. J. S. Stevenson, Dr. William Mathews, Mr. A. H. Marrion and Mr. George E. Winkler. The second meeting in the series will take place in January of the new year. Interested members are invited to attend.

NOTICE OF MEETINGS

TUESDAY MARINE ZOOLOGY GROUP, Provincial Museum
Dec. 7: at 8 p.m. Mr. G. A. Hardy.

TUESDAY GENERAL MEETING, Reading Room of the
Dec. 14: Provincial Library at 8 p.m.
Speaker: Mr. Albert A. DeMezey,
Consulting Engineer, Victoria.
Topic: "A Natural History Excursion into
the Trans-sylvanian Alps".

SATURDAYS

Dec. 11,

Dec. 18: JUNIORS will meet on these two Saturdays
as usual after which there will be
no meeting until Jan. 8, 1949.

MONDAY AUDUBON SCREEN TOUR: Prince Robert House
Jan. 10: Auditorium at 8 p.m.
Carl W. Buchheister, "Wildlife Down East."

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