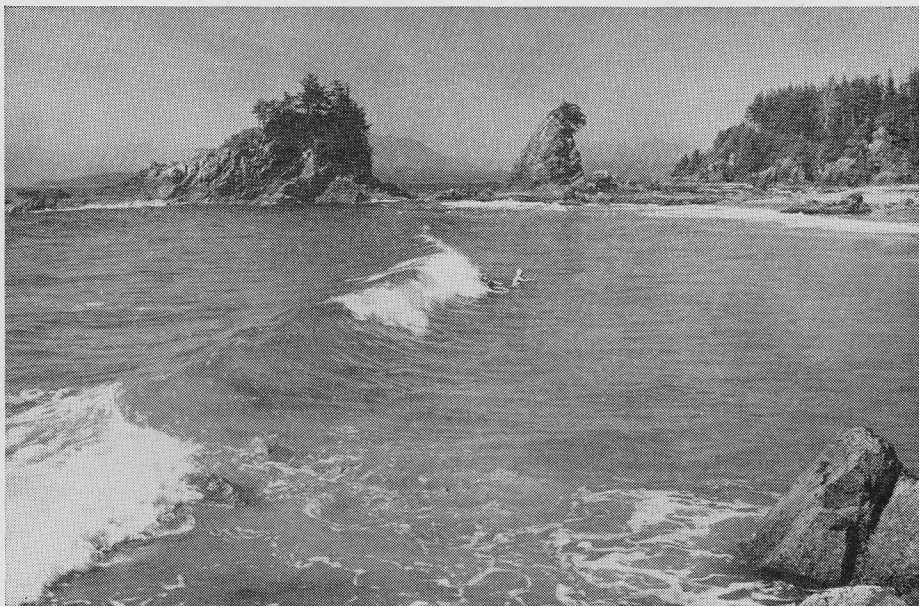


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Beach near Bamfield.

(Courtesy B.C. Government Travel Bureau.)

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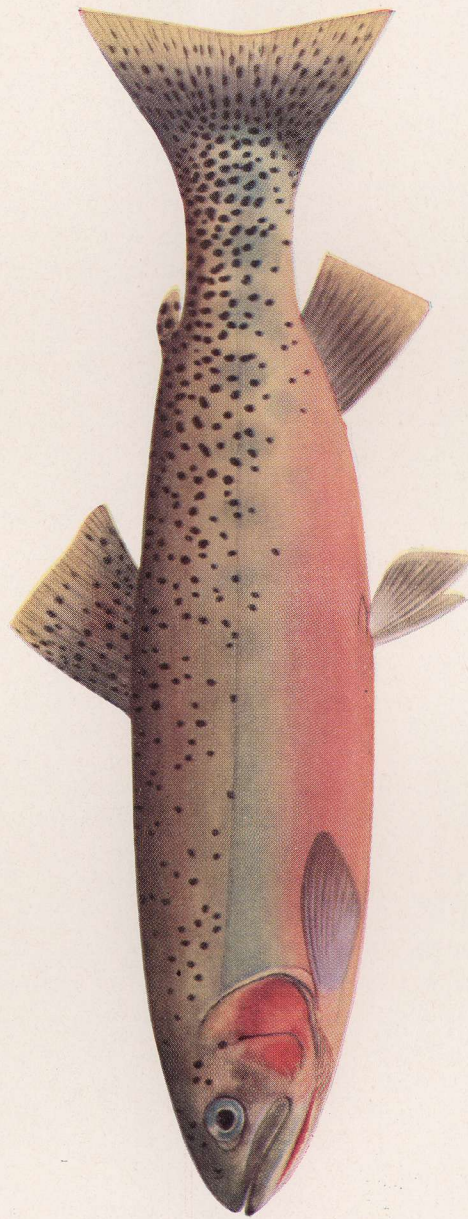
YELLOWSTONE CUT-THROAT TROUT

The Yellowstone Cut-throat Trout (Salmo clarkii lewisi) is one of our smallest game fishes seldom exceeding a length of 12 inches. In addition to the red streak between the lower jaw and the isthmus which is typical of all "cut-throats", this subspecies has red coloration on the sides of the head and front portion of the body making it one of our most colorful fishes. In British Columbia it is found in the streams and lakes of the upper waters of the Kootenay river, including the basins of the Moyie and Elk rivers in the south-east portion of the Province. Spawning occurs about the middle of April. Males mature at eight inches, and females at ten and a half inches in length. A ten-ounce fish produces about 500 eggs.

G.C.C.

BOTANY GROUP MEETING

The Botany Group enjoyed a most entertaining "get-together" at the home of Mr. and Mrs. Edgar Stansfield at Topaz Avenue. After a short wait for the stragglers, which gave everyone a chance to get acquainted, the 34 members present moved up to a large room on the second floor which gave ample space for everyone to view Professor Lowe's slides of prairie flowers and hear his talk upon the ecological and floral features of that area of Canada lying between the Northern Ontario waste-lands and the foothills of the Rockies. The extent and diversity of the flora as shown came as a surprise even to many of those who have lived in the area but have no eyes for the beauty they trample underfoot. Professor Lowe is most eminently qualified to instruct us on the flora of this area, particularly on the eastern section from Eastern Manitoba to the Lake Agassiz escarpment where the



YELLOWSTONE CUT-THROAT TROUT.
Salmo clarkii lewisi (Girard).

floras of east, west, south and north meet and overlap. Since 1921 he has devoted a good deal of his working and practically all his free time to the study of this broad field.

After viewing this lovely set of flower slides and spending some time discussing them with Professor Lowe the guests moved down to the Stansfield's pleasant and friendly living room for tea, biscuits and talk, all of which were greatly enjoyed. The thanks of the groups were extended to Mr. and Mrs. Stansfield for their gracious hospitality.

W.T.

A TRIP THROUGH THE DRY BELT BY CAR

The end of September is not the best time for touring the Province in the hope of seeing bird-life. What was seen, however, may be of interest here. The valley of the Fraser on September 22 was thick with forest smoke and of peat burning beside the road. Here, as in many places further up the Fraser gorge, were small flocks of migrating robins. In the mountains south of Lytton were seen our first magpies and Clark's nutcrackers. Subsequently throughout the trip magpies were often seen. In the woods north of Lytton were robins, nutcrackers, mountain bluebirds, the latter mostly immature or females, and Audubon warblers. Throughout our trip we saw hungry flighty Audubon warblers. In three places north of Lytton a Peregrine falcon was seen. By mimicking the cry of one bird I made him leave his high pinnacle to make a round of our car.

North of Clinton we deviated slightly to view the Painted Chasm, brilliant in autumn tints. En route to Lac la Hache we met Western bluebirds and, of course, Audubon warblers. Near 70 Mile House, among farm buildings, were scores of Brewer blackbirds closely feeding. Though we passed several lakes no water birds were seen between Lac la Hache in the Cariboo and Vaseaux Lake in the S. Okanagan. On the way south from the Cariboo at

Cache Creek were more mountain bluebirds. At Okanagan Landing Gambel sparrows were seen drinking beside the road, preening and warming themselves in the morning sun after a first frost. At Summerland Experimental Farm were pipits, red-breasted nuthatches, Steller jays, Audubon warblers, and red-shafted flickers. In Kelowna orchards we came across more Audubon warblers, difficult to watch. On the mountain above Naramata were flickers, black-capped chickadees, Steller jays, and grey-ruffed grouse. Here we heard a magpie imitating the prelude whistle of an olive-backed thrush, then the 'chup' call of a varied thrush, followed by its own derisive chuckle.

At Vaseaux Lake were six snow-geese, a few Barrow golden-eye and widgeon, several dozen Canada-geese, and scores of coot. Soaring above the great bluff north of McIntyre Creek were two turkey-vultures. In one yellow pine, below, I saw a sparrow-hawk being ragged by two gay magpies and a Steller jay, a pretty sight. Worthy of comment, too, were the brilliantly red clumps of sumac and of dwarf maple on the hillsides, especially in the Similkameen.

J.O. Clay.

NOVEMBER MEETING

At 8 p.m. in the Provincial Library the November General Meeting was called to order by the president; Miss Kirby read a very complete set of minutes of the previous meeting.

The business of the meeting was mainly concerned with viewing the very decorative and suitable scrap and snapshot book which Mrs. Stevens had obtained. Material of general interest, provided by the members, will be mounted in this by Mrs. Stevens and be on view at all general meetings.

Mrs. Hobson suggested that better use would be made of the exchange publications which we are receiving if they were brought to the general meetings. Interested members could then take them away to read and return them to the secretary at the next meeting.

The exchange list at present consists of the "Blue Jay" quarterly of the Saskatchewan Natural History Society, "Countryside", British Empire Naturalist Association, and Hamilton Nature Club's "Wood duck".

Dr. Coleman of Saanichton came down with a sudden bout of 'flu, so his talk on "Rural Life in India" had to be cancelled at the last minute, and as usual, the ever reliable Museum was asked to come to the rescue. No one listening to Dr. Carl's lecture on water and the running commentary with which he accompanied his film on marsh life, would ever have believed that the speaker had only had a few hours' warning!

It was pointed out that the people of North America use the greatest quantity of water per capita in the history of the world. From the experience of New York during last winter's shortage it might be truer to say that we are the most prodigious wasters of water. As Dr. Carl pointed out, we can exist for a fair length of time without food, and can dispense altogether with many things that we have come to think of as necessities, but a day is about the limit we could exist in the complete absence of water.

The film, which consisted mainly of the activities of birds and animals of the marsh lands, was up to the usual high standard that we expect from our most efficient Museum staff.

Mr. Stewart expressed the thanks of the meeting and the feeling of gratitude which the Society feels for the ready help we can always depend on from Dr. Carl and all his staff at the Provincial Museum of Natural History.

W.T.

MINES AT MOUNT SICKER

In the Mount Sicker area near Duncan several old mines named from east to west, Lenora, Tyee and Richard III, have been operated from time to time for more than half a century. According to data published in 1945 by John S. Stevenson, 253,000 tons of ore were produced between 1898 and 1909. Amalgamated under the name Twin "J" Mines Limited, production from these properties was renewed in July 1943

with values mainly in zinc and copper and minor values in gold, silver and lead.

On September 7, 1951, the Geology Group of the Victoria Natural History Society visited the locality under the leadership of Mr. J.H. Whitehouse. The mine buildings are situated about 8 miles by road, north-east from Duncan at an elevation of 1500 feet above sea level. Mr. Whitehouse requested my co-operation in preparing a report on our observations. As this was my first visit to the locality I shall draw largely from the reports of Stevenson and from an earlier report by C.H. Clapp and H.C. Cooke.

The Mount Sicker Mine is operated at present by Base Metals Company of Toronto, from their Vancouver office. The mine manager at Mount Sicker showed us the mine maps and explained them. There are over two miles of underground workings, many levels and shafts of which are now caved or inaccessible. The main shaft of the Tyee mine is 1486 feet deep having an elevation of 1686 feet at the collar and 200 feet above sea level at the bottom. The ore bodies however, lie at shallower depths, little pay ore being known below the 300 foot level.

No attempt was made to go underground as the working faces are at considerable distances and there was time enough only for geological observations at the surface, and a visit to the mill. The mine manager kindly arranged for the mill foreman to take us through and explain the operations.

The ore is trammed to a grizzly or screen leading to a crusher. It is then placed in a ball mill where it is ground finely enough to enter the flotation boxes. By means of special solutions through which air is blown, a bubbly condition causes the ore minerals to adhere to the bubbles and float to the surface, from which it is scraped off mechanically. In this way several operations are accomplished. The zinc-bearing minerals are separated from those holding the lead, copper and iron. Thus two kinds of concentrates are obtained. At the same time the valueless minerals such as quartz, barite, calcite and pyrite are removed.

At the time of our visit the mine output was 90 tons per day with 50 men employed. The concentrates are transported by truck about 8 miles to Port Osborn for

shipment. The zinc ore concentrate is sent to Trail and the copper-lead concentrate to Tacoma, Wash.

The zinc-bearing concentrate contains about 60% sphalerite (ZnS) with some gold. The other is composed of the copper sulphide chalcopyrite (CuFeS₂) galena (PbS) lead sulphide and considerable sphalerite which, due to the nature of the ore, does not separate as is desired, and is found in both concentrates.

The ore is a mixture of pyrite (FeS) the iron sulphide, chalcopyrite (CuFeS₂) copper iron sulphide, sphalerite (ZnS) Zinc sulphide and galena (PbS) lead sulphide. In addition there are the "gangue" or useless minerals, barite (BaSO₄) quartz (SiO₂) and calcite (CaCO₃) which accompany the ore in the vein.

The ore has a purplish blue-gray colour streaked with the brassy colours of the iron and copper sulphides. The sulphides are very fine grained with interlocking crystals, making separation for the concentrates difficult.

Compiling an average of 8 assays given in Stevenson's report of the ore from the Tyee mine, mainly from the north ore body, the following figures are obtained:-

Gold: oz. per ton, .054. Silver: oz. per ton, 2.50.
Copper: 2.48%. Lead: 0.9%. Zinc: 10.36%.

The value of the ore at current prices is about \$60.36 per ton, less milling and smelting losses. Prices vary from time to time and the tenor of the ore differs from place to place in the ore body.

Stevenson described the ore bodies as follows: "The ore occurs as two separate easterly trending bodies about 150 feet apart. The north orebody is 1700 feet long, 120 feet down the dip and 1 to 10 feet thick. The south orebody has a length of 2100 feet, a vertical extent of 150 feet and a thickness of 20 feet.

There are two main faults striking east and west with vertical dips. The north fault is between the orebodies and along this fault the south orebody is uplifted about 200 feet."

According to the mine manager the ore is frequently associated with the black schist, and we collected specimens showing it filled with veins of ore minerals.

Age and Origin of the Ore:

The intrusive diorite is described by Stevenson to be

older than the sediments, so that the ore minerals must have a source in some intrusive not found at the mine. Three miles north of Mount Sicker, at Mount Brenton, is an outcrop of granodiorite, mapped by Clapp and Cooke as younger than any of the rocks at Mount Sicker. This granitic rock is found also four miles southeast of Mount Sicker. Stevenson therefore postulates the possibility that this younger granite may lie below the orebodies at no great depth. Vapours or solutions from such a source could carry the metals upward along fissures already formed by previous folding, and veins or replacements be formed in the rock. This younger rock has been named Saanich Grano-diorite.

Stevenson states:- "Narrow veins of barite ore that cut folded sediments indicate a post folding age, and unreplaced fragments of schistose sediments within the ore indicate a post-metamorphism age."

The geological age of most of the rocks involved is Mesozoic. Formerly the great extent of intrusive granitic rocks which are named the Coast Range in British Columbia, the Sierra Nevada in the United States and form the high mountains of Lower California were thought to be of Jurassic age, but more recent investigations indicate that most if not all of them are younger, probably of Lower Cretaceous age.

Many great mines have been developed from ore bodies formed along this continuation of granitic batholiths. The Mother Lode in California, one of the world's greatest gold mines, and the Sullivan in British Columbia, one of the greatest zinc mines, border rocks of this age. There is good reason to be optimistic for future discoveries, as there is a vast region to be prospected, especially on Vancouver Island.

Albert O. Hayes.

Correction: On page 53 of the November issue, line 15 the name Veratrum viride was ascribed to the orchid family instead of the lily. The writer was thinking of another false hellebore Epipactis helleborine with which he is familiar and did not check the name. On line three of the same page also, is a missprint Kalmia polifolia is spelt Malmia polifolia.
W.T.

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JUNIOR NATURAL HISTORY PAGE Nov. 1951.

Editors:
 Marie Mitcham and George Merrick.

RED LEGGED FROGS
 -by George Merrick

I have six red-legged frogs. They were caught as small frogs. They range from two to three inches. I caught them at Goldstream in a small pool. They eat young mice, small snakes and grasshoppers and worms.

DUCKS -
 by Simon Wade

The mallard is easy to spot because of the green head and white line around the neck. There are many mallards around here. (Beacon Hill Park, November 10th).

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 Sept. to Sept.1952

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NOTICE OF MEETINGS

1951

Tuesday

Dec.11:

GENERAL MEETING: Dr. L.C.Coleman will give an illustrated lecture on "Rural Life in India". Provincial Library Reading Room, 8p.m. Dr. Coleman was Director of the Department of Agriculture for the state of Mysore for 26 years.

On a recent visit to the Marionette I was surprised to see how many books of interest to naturalists were available. There were numerous "How To Know" books for youngsters and a wide range of more adult publications. The latest book by Roderick Haig Brown, "The Turn Of The Year", would make an ideal gift for anyone who appreciates the well-written account of the day to day observations of one who loves nature in all its phases. Another book which treats a subject with charm and readability that might be dry as dust from another pen, is "The Sea Around Us". This takes as its subject the origins of life and makes it more interesting than a good number of best sellers.

Another book by the well-known nature writer Roger Tory Peterson is due for publication under the title "Wildlife in Color". This contains 450 illustrations mostly taken from poster stamps originally used by the National Wildlife Federation of the U.S.A.

The editor wishes all his readers a most enjoyable holiday at Christmas and New Year.

W. Tildesley.

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To