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NESTING OF DOUBLE CRESTED CORMORANTS

BALLINGALL ISLAND, B. C.

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The February monthly meeting of the Society was held in the Museum on February 18th, Dr. Carl taking the chair. After the usual business there was a short quiz. Dr. Carl produced a black skin of a red squirrel and informed the club that such freak results of over-pigmentation are not unknown.

The speaker of the evening was Mr. R. G. Roe who gave an intensive summary of his researches into "American Bison". The prototype of the historic bison, said Mr. Roe, is the northern wood buffalo, which is becoming lost through mingling with the prairie buffalo. The northern wood buffalo is somewhat like the European buffalo. The bulls average around 2500 lbs. in weight. Even those animals found in more southern latitudes have heavy fur.

Fossils show 15-20 different species of buffalo. The first scientific record of bison is for Texas in the sixteenth century. There is also a record for the Gulf of Mexico in 1568, Wisconsin in 1661 and Nova Scotia in 1691.

The life cycle of the buffalo is similar to that of domestic cattle. Calves are born in April to May. In spring both cows and bulls are naked for a short time while changing coats and during that time they are in the habit of wallowing in dust or mud. These wallows could be a mile across. The bison is a stupid animal and nearly half the calves born, die young. Many died when calves were taken to a ford they were too small to negotiate. Wolves also destroyed many. An average buffalo hide used to be worth about $10.00.

Much has been recorded about the great numbers of buffalo which used to exist. In 1839 it was reported that from a hill which commanded a view of fifteen miles in all directions, so many buffalo were seen that the land itself was not visible. A Colonel Dodge in

1871, hunting in the Arkansas Valley, records that he travelled for 25 miles through a herd. Dr. Hornaday estimated that a large herd could include 4000000 animals.

The great buffalo-hunting event used to be the Red River Hunt which took place every year about 600 miles west of Red River. The last of these was held in 1874. Mr. Roe holds the view that the Indians were not to blame for the decimation of the herds, though they may have been wasteful. They did observe a closed season. The advent of the railways led to wholesale destruction of the herds. It is estimated that in four years about 8000000 buffalo were killed. In U.S.A. at least, destruction of the herds was part of a policy to subjugate the Indians by causing them to starve.

Mr. Roe does not believe that there was ever any regular migration of herds, certainly not in the south. In the northern latitudes the animals moved north from the plains in winter, to gain shelter in the hills and scrub from the bitter winds.

As early as 1840-1848 the Reverend Robert Rundle reported starvation among Indians due to the irregular wanderings of the Buffalo. There would seem to have been no certainty of seeing them in any one spot at certain times.

The evening came to a close with the showing of a film taken of buffalo in one of the National Parks.

CRETACEOUS ROCKS OF SOUTHERN VANCOUVER ISLAND

All the Cretaceous rocks of southern Vancouver Island are sedimentary. They occur mainly in three gentle troughs known as the Comox, the Nanaimo, and the Cowichan basins.

The Comox basin extends along the eastern coast of Vancouver Island from Sable River to Northwest Bay and reaches inland for distances up to 10 miles. Rocks of this basin make up all of Denman and Hornby Islands. Part of the Comox basin is submerged beneath the waters of the Strait of Georgia, but remnants of the eastern edge occur on Texada, Lasqueti, and a few small islands nearby.

The Comox basin is separated from the Nanaimo basin which lies to the southeast by rocks of the Sicker series and Vancouver volcanics in the neighbourhood of Nanoose Harbour. From Departure Bay the Nanaimo basin continues southeastward along the eastern coast of Vancouver Island to the vicinity of Crofton, reaching inland for distances up to 10 miles. Rocks of this basin make up most of the Gulf Islands and extend into the northern part of the San Juan Islands of Washington. Much of the eastern and southern portions of the basin lie beneath the Strait of Georgia and possibly beneath part of the Fraser Delta. When travelling between Victoria and Vancouver by day-boat, one may easily observe interstratified conglomerates, sandstones, and shales of the Nanaimo basin along the coasts of Galiano and Mayne Islands at Active Pass.

The Cowichan basin extends from the northwestern end of Cowichan Lake, across the northern end of the Saanich peninsula- where the rocks may be seen readily along the shore- into the northern part of the San Juan Islands.

Cretaceous rocks occur not only in the Comox, Nanaimo, and Cowichan basins, but also in a small basin in the upper part of the Koksilah Valley about 7 miles west of Shawnigan Lake, in a large basin in the vicinity of Alberni, and in several small areas on the Forbidden Plateau.

The sedimentary rocks comprise mainly conglomerates, sandstones, and shales, but also include some coal and calcareous rocks. The conglomerates show considerable variation but generally consist of well-rounded fragments of older rocks of the district in a matrix of sand. The sandstones are mainly yellow, grey, or green thickly-bedded rocks which commonly contain concretions. The concretions are nodules of sandstone ranging from an inch to several feet in diameter in which the grains are firmly cemented by ferruginous or calcareous material. Most of the shales are dark coloured, carbonaceous, fairly massive rocks in which sandstone concretions are abundant.

The Cretaceous sediments were deposited in water on a subdued erosion surface having considerable local relief. The total thicknesses of sedimentary rocks occurring in the Comox, Nanaimo, and Cowichan basins have been estimated to be approximately 5,000 feet,more than 10,000 feet, and at least 6,000 feet, respectively. The Cretaceous sediments, following their hardening into rocks, were uplifted, deformed in places, and subsequently eroded to produce the structure and topography observable today.

In comparison with the older rocks, most of the Cretaceous rocks are not highly deformed. In places the structures are broad synclines or troughs interrupted only by gentle rolls, but in other places faults and complicated folds are found.

The Cretaceous rocks are less resistant to erosion than the adjacent older rocks and, since the time they were raised above the water, have been reduced to a lowland. This lowland in places is a surface of considerable relief with valleys underlain by soft rocks and with ridges marking the outcrops of resistant beds.

Bituminous coal is interbedded with the other Cretaceous sediments as seams some of which are several feet thick. Mining has been restricted almost entirely to the Comox and Nanaimo basins. Coal production on southern Vancouver Island began near Nanaimo in 1852

and for several years since 1900 exceeded a million tons annually. In 1945, the Comox basin yielded 285,913 tons of coal and the Nanaimo basin 271,865 tons.

A very small amount of coal was obtained years ago from a narrow seam at Coal Point on the western side of the Saanich peninsula. Near this locality, concretionary sandstones are well-exposed along the shore and fragments of fossil trees may be seen.

The Cretaceous rocks of southern Vancouver Island, the Gulf Islands, and the San Juan Islands locally contain many fossils. Among these have been recognized more than 150 species of invertebrates, several species of plants, and at least one vertebrate. The most numerous invertebrates are pelecypods (mainly clam-like shells), aquatic gastropods (snails), and cephalopods including chiefly coiled forms called ammonites and a few species of nautilus. The invertebrates also comprise a few crustaceans, among which are crabs, a few brachiopods including one genus similar to Terebratulina which lives in the sea near Victoria today, and a coral.

The plant remains consist of fragments of wood and imprints of leaves and ferns. Trees allied to the modern cypress, yew, oak, birch, and poplar have been recognized.

The fossils found in the Cretaceous rocks of southern Vancouver Island indicate that their age is Upper Cretaceous. The association of fossils of marine animals and of land plants in the rocks suggests that the sediments were deposited under fluctuating marine and estuarine or lagoonal conditions.

Most of the published information on the Cretaceous rocks of southern Vancouver Island is contained in reports of the Geological Survey of Canada. The Survey began work on the Cretaceous rocks in 1871 with reconnaissance by James Richardson which lasted until 1875, continued work between 1908 and 1913 with reconnaissance and detailed studies by C. H. Clapp, and is pursuing work at present with very detailed investigations by A. F. Buckham and J. L. Usher.

K. De P. Watson.

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INVENTORY OF WATERFOWL

A continent-wide inventory of waterfowl was made recently under the direction of the National Parks Bureau of Canada and the United States.

Taking part locally were Messrs.K.E.Christiansen, J.O. Clay, A.L. Meugens, H.A. Munson and R.P. Taylor. Between January 7th and 14th the following lakes were visited:- Swan, Beaver, Elk, Lost and those at Beacon Hill Park. The foreshores at Sidney, Shoal Bay, James Bay and Sooke Harbour were also visited.

The weather was still and cold and, with the exception of Elk and Lost Lakes, all sheets of fresh water were frozen.

A table giving the numbers of the different varieties is shown below:

Hutchins Goose	36	Mallard	414
Baldpate	2977	Eur. Widgeon	1
Green-wing. Teal	75	Shoveller	490
Pintail	76	Canvas-back	46
Great.Scaup	1180	Less.Scaup	422
Amer.Golden Eye	749	Bufflehead	638
Old Squaw	1	Harlequin	10
Ruddy Duck	1	White-winged Scoter	2
Surf Scoter	50	Am. Merganser	5
Red-breasted Merganser	8	Coot	167

Note:- The largest group of Baldpate was found at Elk Lake; of both Scaup, American Golden-eye and Bufflehead at Sooke Harbour. The one Old Squaw was seen at Shoal Bay and the one Ruddy duck at Elk Lake.

J.O. Clay.

REPORT OF JANUARY BIRD GROUP MEETING

The Ornithology Group met at the home of Mr.A.L. Meugens on January 21st, to hear Mr. Meugens explain the technique of egg-collecting and to see his collection of eggs. Those present also had the pleasure of seeing some of Mr. Meugens' very beautiful photos of birds and their young.

The following equipment is recommended for those who intend to take up egg-collecting:- cigar boxes padded with cotton wool to hold the nests and eggs; climbing irons; a belt fitted with rings; a dentist's drill; a hypodermic syringe. This last is for blowing small eggs. If an egg is in an "advanced state" it should first have an injection of soap and water.

To preserve nests, insert a wad of cotton wool and then bind the nest with cotton or silk. When well bound remove the wad. The nest can then be handled without disintegrating.

The size of eggs is very constant for certain species. Measuring, with a special instrument, is the only sure way of determining difference in size.

The serial number of the egg should be marked with "Higgins Eternal Ink" near the hole of the egg. Index cards of all eggs should be kept.

There are five shapes in eggs. It is likely that originally all eggs were white. Those laid in holes are still generally white. Those of the dove are white but in this case both parents participate in incubation.

If eggs are hard to identify this can be done by examining the small feathers in the nest.

The Red-wing is polygamous, one male to about eight females.

The familiar Bufflehead nests in trees.

REPORT OF THE ZOOLOGY GROUP MEETING

The Zoology Group met on January 28th at the home of Mrs. Kenneth Drury to hear Dr.Carl speak on the subject of Reptiles. Various stuffed reptiles and a live turtle were passed round for inspection.

A snake has no eyelids but can regulate the amount of light entering by shutting the irises. Lizards have ears but snakes have not. Pit vipers are so-called because they have pits in their heads. Some snakes boas have vestigial legs. Snakes came from stock which had legs. On the other hand some lizards have no legs. A lizard has eyelids and a pectoral girdle. The so-called glass snake is a lizard. Lizards are found everywhere except the Arctic and Antarctic. Some get on their hind legs and race on the surface of water. Nearly all lay eggs. In B.C. rattle snakes and lizards are born alive. All our lizards shed their tails.

Reptiles are cold-blooded, i.e. their blood varies in temperature with their surroundings. They can increase their size or change their colour to feel heat less. Lizards are important as carriers of ticks.

The turtle spends most of its time in water but the tortoise is a land animal. Turtles, especially the males, have nails. They are used in courting. Aquatic turtles have limbs like oars.

Editor's Note:- The report of the Botany Group meeting of Feb.11th will appear in our next issue.

JUNIORS' PAGE

Hello Juniors:

Juniors, please bring in something for the magazine or this page will not be kept for us.

Nature Notes:

Sunday, Feb. 16th:

This afternoon we went up on Rocky Hill at Shoal Bay and saw our first Blue-eyed Grass (purple Satin Flower) this year. The Shooting Stars have very small buds deep in the leaves. We did not see any Easter lilies on our walk, we can usually find some buds by Feb. 15th. The Oregon Grape buds are showing a pretty orange colour. Chickweed is flowering in sheltered spots by rocks and bushes. With Miner's Lettuce leaves up about three inches we ate some, but thought it would be better with salt. The gorse had lovely brown velvet buds and on some of the larger bushes, beautiful yellow flowers. The Ladybirds were out enjoying the sun.

We saw a hawk flying very fast, a robin, a flicker and a chipping sparrow. Also there were signs of pheasants around the broom bushes and something had dug around Camass bulbs and eaten the tops.

On the Sunday after the big storm at about 8:30 a.m., a hummingbird flew over the house. Feb.18th. A hawk was sitting in the bushes behind the house, it was quite big. It flew away low down when we left for school. The Stellar's jays seem to have gone away; I hope they have not frightened our Seattle wrens who have nested in a knot hole in our house for six or seven years.

Carol Stevens.

NOTICE OF MEETINGS

MONTHLY MEETING

Tuesday Mar.11th: The Annual General Meeting will be held in the Museum at 8 p.m. Officers for the new year, commencing on April 1st, will be elected at this meeting. It is hoped that members will make a special effort to attend. Speaker: Dr. J.S. Stevenson, his subject -- "The Geology of B.C." The talk will be illustrated by slides.

GROUP MEETINGS

Tuesday March 4: Ornithology Group will meet at the home of Dr.E.C.Hart, 1513 Laural Lane, (off St.Charles Street), at 8 p.m.
Speaker: Mr.J. Stevenson, Game Warden for Southern Vancouver Island.

Tuesday March 18: Marine Biology Group will meet at the home of Mrs. E.J. Read, 1025 Bewdley Ave., at 8 p.m. Speaker: Mr. G.A. Hardy.

Tuesday March 25: Entomology Group will meet at the Entomology Laboratory, Superior Street, at 8 p.m.

Tuesday April 1st: Ornithology Group will meet at the home of Mrs. Hobson, 2284 Windsor Rd., at 8 p.m. Speaker will be announced later.

Members are reminded that subscriptions for the year 1946-1947 have been due since April 1st, 1946. Subscriptions for the coming year are payable from April 1947.
The annual subscription of $2.00 entitles members to nine copies of the magazine, all monthly meetings, all group meetings, all field trips. Family subscription is $3.00 per family.
Extra copies of the magazine can be bought for 15 cents or two for 25 cents.

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