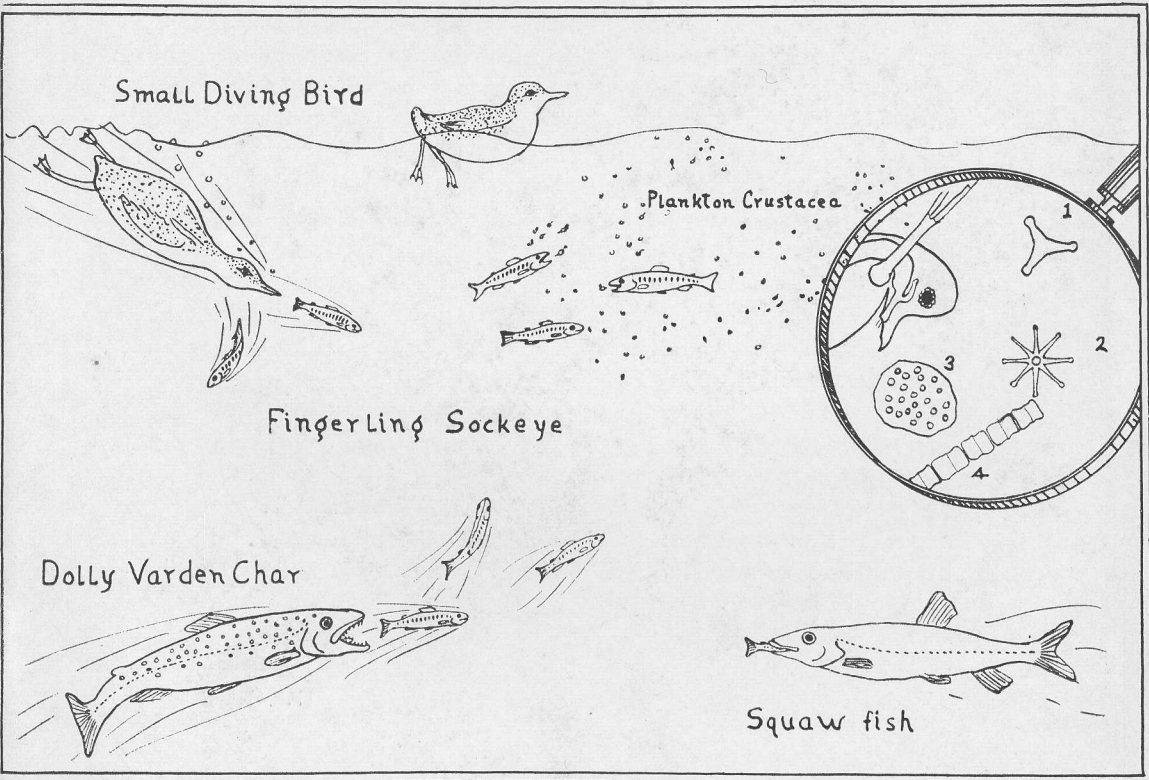


The **VICTORIA NATURALIST**

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Food chain in a lake.

(Courtesy Fisheries Research Board of Canada.)

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FOOD CHAIN IN A LAKE

In a lake as on land the fundamental food organisms are plants. All animals depend upon them or their by-products for food either directly (in the case of herbivorous forms) or indirectly (in the case of omnivorous or carnivorous species).

The plant life of open waters is in the form of diatoms, desmids and other forms of algae (see cover illustration), sometimes as single cells but more often in colonies of many different characteristic shapes. These provide food directly for water fleas, copepods, rotifers and other small animal species or produce great quantities of bacteria when they disintegrate which in turn are a source of food. All these planktonic forms are available for use by small fishes and other animals capable of capturing small forms of life and these in turn become food for the larger predators.

Thus the productivity of a lake can be compared to that of a piece of land; the amount of food that each produces depends upon its "fertility", the climate, and other factors and the type of crop can be varied according to the wishes of the "farmer".

G. C. C.

REPORTS ON MEETINGS

The first General Meeting of the Society for the year 1954 - 1955 was addressed by Mr. L. J. Clark, Professor of Chemistry at the Victoria College. Prof. Clark gave a lucid and interesting account of plant life in British Columbia in its relation to its environment. He dealt briefly with all the groups of the plant kingdom - algae, fungi, mosses, ferns, club-mosses, conifers and common flowering plants. The influence of the environment was briefly and interestingly mentioned. The plants referred to were treated in a systematic and taxonomic order. The whole discourse was illustrated by over one hundred beautiful colour photographs made by Mr. Clark. Many of these pictures were of plants found in recent camping trips to the Forbidden Plateau.

Professor J.A. Cunningham moved a hearty vote of thanks to Mr. Clark.

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On December 14th, Dr. William Newton addressed the General Meeting, his subject being "The Battle against Virus Diseases in Plants". He took as a typical case the Little Berry Disease of cherries, which has caused heavy losses in recent years in the Kootenay district. It was pointed out that virus diseases are often disastrous because they very severely reduce the crop but rarely kill their host. While the exact nature of a virus is not known it has been definitely ascertained that it can be carried from one plant to another by insects, and that it multiplies in the host plant. Spraying to control insects helps to control the virus infection of plants. Attempts are being made to produce new varieties of the host plants that will be immune to the virus.

There was an appropriate discussion after the address, and a number of questions which Dr. Newton answered. A hearty vote of thanks was given to the speaker for his interesting address.

C. W. L.

The General Meeting for February was held on Tuesday the 8th, in the Museum; the speaker on this occasion being Dr. Ferris Neave of the Pacific Biological Station at Departure Bay.

The subject 'Voyage to the North-West Passage' was a most interesting one on a little-known part of Canada. This expedition, whose Canadian starting point was Esquimalt, was undertaken by two U.S. ice-breaking vessels, with scientific personnel from various parts of Canada and the United States.

Pausing at Nome, they then travelled through the Bering Straits, passing between the two Diomed Islands; these small islands are about a mile and a half distant from each other, the international boundary between Alaska and the U.S.S.R. running between them.

Then they proceeded north to the Arctic Circle, about sixty miles north of the Diomedes, and continued to Point Barrow, the northernmost tip of Alaska in latitude 72°, and thence to Banks Island and Melville Sound, their easternmost destination.

The excellent colour photographs shown on the screen by Dr. Neave indicated graphically the heavy ice formations the steel vessels had to break through, and also the topography and vegetation of the islands encountered in their passage. The party circumnavigated Banks Island, which is about 230 miles long by 120 wide, and was then joined by the Canadian ice breaker "Labrador", which had come through to the north-west passage from the east.

The three vessels continued their exploratory work as a team, before returning to the west coast at the close of the arctic season.

Dr. Neave was accorded a hearty vote of thanks for one of the most interesting lectures given to the Society.

A.R.D.

An Extraordinary Christmas Bird Count:

The following is an excerpt from 'The Migrant', a journal devoted to Tennessee birds, being part of their recorded Christmas Count for December 1954:
Reelfoot Lake: 12 observers in 5 parties. 82 species, about 5 million individuals. The blackbird flight to the roosting areas was greater than ever before seen by the parties. The estimates, which were all conservative, were: starling, 250,000; red-winged blackbird, 4 million; grackle, 800,000;

cowbird, 50,000. Other species seen in large numbers were: mallard, 2100; lesser scaup, 1000; crow, 1100.

A.R.D.

STINGING CELLS

Many aquatic animals (hydrozoans, scyphozoans etc.) have specialized stinging cells known as nematocysts from the Greek nemato, a thread and cyst, a bladder. Marine animals with these cells are extremely common, but some types exist in fresh water as well. The stinging cells are sometimes distributed all over the body but are highly concentrated at strategic areas such as tentacles. Only a few of the largest jellyfish and siphonophores carry stings large enough to penetrate the human skin.

Although terrestrial plants such as the nettle may appear to be similarly armed, there is no relationship whatsoever between these two kinds of cells. The nettle armament is vegetative and purely defensive; whereas the nematocyst is part of an animal's offensive equipment. Its primary purpose is to aid in the capture of prey. The animals so armed are usually quite tiny, but all are voracious carnivores.

The typical stinging cell consists of a tiny syringe with a relatively long tube that is tightly coiled inside the bulb. This bulb containing the tube is enclosed in a large surface pore that has very "muscular" walls and a sensitive exterior trigger mechanism. The slightest touch on the trigger causes the muscular walls to contract instantly and squeeze the bulb. The long tube is forced out at high velocity - turning inside out. Much the same as an inverted finger of a rubber glove is shot out by blowing into the glove.

The tube is discharged with such explosive force that it enters the body of the victim and the poison fluid in the capsule is injected through it. The poison from a number of these capsules is sufficient to paralyze a small animal and the tentacles then wrap around it and draw it to the mouth which opens wide to receive it.

The nematocysts can be discharged only once, but used ones are soon replaced. These stinging cells are often found in association with cells containing "thread capsules" which are very similar in operation except that the

everted threads are covered with barbs or are able to wind tightly around small projections. They probably aid in holding the prey.

Most animals armed with stinging cells are very low in the evolutionary scale. However certain small marine slugs (Nudibranchs) belonging to a much higher order have been found with these cells imbedded in projections on their upper surfaces. It was found these cells were present only when the slugs were feeding on animals armed with them (hydroids). The nematocysts in the nudibranchs were identical to the ones found in the hydroids. In their new location their function becomes defensive, but how these sensitive cells become transplanted without being discharged is another mystery of nature.

Marine animals with stinging cells are found in the salt water all around Victoria; in fact, they are present in sea water everywhere, in tide zones, or attached to the bottom, among the plankton, or else fastened to seaweeds and other organisms.

Harland M. Clark.

BIRDS SEEN OUT OF SEASON

On January 24th a hummingbird was seen by Mrs. Thomas B. Curran of 266 Beach Drive. It was picking something, possibly small flies, from the berries of a cotoneaster. No further report of this bird has been heard to date (Feb. 20th).

On January 29th a ruddy turnstone was observed at Clover Point by Charles Mohr and the writer, and one was seen again a few days later by Mrs. Blackden.

An interesting visitor from summer treetops to local feeding tables is the Townsend warbler. In January and February 1953 Miss R. Houston, Admirals Road, fed a female Townsend warbler.

This January and February the following people have fed one or two of these colorful birds:- Capt. W. Redford, 105 Beach Drive; Mrs. A. W. Jones, Sylvan Lane; Mr. and Mrs. G. S. Ford, 3023 Uplands Road; and Miss Ballard, King George Terrace.

Hoffman, in his useful 'Birds of the Pacific States' mentions that it winters sparingly west of the Cascades. Peterson's 'Field Guide to Western Birds' places the wintering range at from Washington southward.

On February 5th eleven greater yellowlegs were reported from Martindale Road by Bernard Pattenden and A. R. Davidson. The same two energetic bird seekers also report eleven goldfinches at Cadboro Bay on February 13th.

J.O.C.

EARLY FLOWERING PLANTS

Miss Melburn reports eighteen plants in flower up to February 9th, seven of them on the first day of the year; surely a mild winter. Last year only six were listed in this period. These plants include skunk cabbage, periwinkle, osoberry, cranesbill and yarrow.

A GATHERING OF TOWHEES

by Morris Jackson, Fanny Bay, B. C.

The 1954 Christmas Bird Count for the Victoria district listed 38 towhees. This is approximately the number that gather on our small property each winter, most of them close to the house. In spring all but a few are gone, forced to spread to nesting territories; for towhees--at anyrate these local ones--are large landowners for such small birds, each pair taking from one to one and a half acres. A peaceable bird, the towhee does not resent intrusion by other varieties of nesting sparrows. It is vigilant, though, to "shoo" across the frontier any interloper of its own species, which it does by display and threatening runs rather than by actual combat.

Fifty years' residence on the British Columbia coast have not, until the past six years of 'towhee cultivation,' discovered to me a larger gathering than, say, four; but usually only two. Now, I can go out some cold mornings and feed peanut-halves to a couple of dozen towhees without moving from my stance. When snow lies on the ground it is possible to coax ten or twelve together from the sheltering brush: a charming sight as their vivid coloring contrasts with the snow. Truly, through peanuts lies the way to a towhee's heart! For 'goobers' chiefly cause this miniature migration.

It started back in 1948 when we discovered a hungry fledgling; no doubt its parent had been killed. We adopted

the placid but suspicious ball of brown fluff and force-fed it for a week, after which it made friends with us and ate readily. (We feel now that we rather overdid the amount of cereal in its ration as young towhees are fed by their parents great numbers of cutworms; indeed, the very young get little else.) When the chick became adolescent we found it relished filberts and we gave it all our 1948 crop; around a pint. The filberts gone, we experimented to see if it liked peanuts. It did.

When liberated, the young bird continued to come sporadically for peanuts and soon a young female came too. From that time it has been our task to provide peanuts to all towhees that come to our home. We also keep three feeding stations supplied all year with clipped oats. These are oats with the coarse outer husk removed and are appreciated by all sparrows, as well as by pheasants or any bird that will eat oats. The current price is \$3.50 per 100 lb. We have tried chicken scratch but find clipped oats are preferred. The towhees 'fill up' at the feeders but get peanuts several times each day. These always are handfed, thrown underhand to the birds when they appear and whenever we hear them call to us. Handfeeding is, of course, a splendid way to get on friendly terms with birds. Feeding these towhees is now our chief hobby.

G E O L O G Y

(continued from January issue)
 by A.O. Hayes

On the solid foundation for the science of geology laid by Hutton and Smith at the beginning of the nineteenth century, Charles Lyell erected a structure equally sound that embraced mineralogy, petrology, stratigraphy, palaeontology and structural geology, so far as they had been developed in 1827 when his original manuscript "Lyell's Principles of Geology" was delivered to the publisher. There were three volumes of it, the first printed in 1830, the second in 1832 and the third in 1833. He had prepared a supplement, but changed it to a separate treatise entitled "Elements of Geology", published in 1838. In this he added considerable new material, as the science was growing fast, and illustrated it with more wood cuts, "in the hope of rendering it more intelligible to the beginner". In this comprehensive

work he met the opposition of some geologists, especially on the continent, and of most of the theologians, who still held to the orthodox interpretation for the creation and the deluge. Fortunately for geology, some editors, and the Royal Societies of London and Edinburgh supported his work as beginning a new era for geology. These two publications written in simple, clear and logical style, refuting erroneous ideas and presenting facts with adequate proof, are acceptable today, and can be read with profit by anyone who enjoys good English and the excellent sketches that Lyell drew during his travels on the continent and in North America, as well as in Great Britain.

In those days nothing was known of radioactivity, and the other methods of measuring geological time, apart from inference that the accumulation of many thousands of feet thickness of sediment, and volcanic rocks, also the slowness of the growth of mountains, was apprehended. Lyell did not attempt to state how long, in years, these geological processes had been in operation, but Hutton, in his "Theory of the Earth", published in 1795, wrote in his discussion of erosion, deposition and the recurrent uplifts of the land:- "The earth may thus be considered as an organized body which has a constitution in which the necessary decay is continually being repaired in the exertion of those productive powers by which it has been formed". His idea of time is expressed in the oft quoted statement "We find no sign of a beginning and no prospect of an end".

The Geological Survey of Canada was established in 1842 with William Edmond Logan (1798-1875) as director. He was born in Montreal and at the age of sixteen sent to the Edinburgh High School. After ten years in London he worked in Wales, preparing geological maps of the coal basins for H.M. Geological Survey. At that time little was known of the oldest rocks and Lyell's term "Primary fossiliferous" was applied to the Cambrian and other Palaeozoic sedimentary rocks. Soon after he began his field studies in Canada he observed that sediments holding Cambrian fossils rested on metamorphic and granitic rocks that had been eroded then submerged, to receive the marine faunas of trilobites and brachiopods. So he informed his colleagues in England that he had discovered pre-primary rocks, and the name of Precambrian was introduced. This was the beginning of a study of the great Cambrian Shield exposed over half the area of Canada, and holding the great deposits of iron, gold, uranium, nickel, asbestos, mica

and many other mineral deposits, of the Precambrian of Canada.

In 1883 Andrew Cowper Lawson joined the staff of the Geological Survey of Canada and worked for three seasons around the Lake of the Woods in Ontario. He discovered that the Laurentian, previously regarded as the oldest known formation and made up of metamorphic rocks, was in reality intrusive into and therefore younger than the metamorphic volcanics and sediments surrounding them. He named the older rocks "Keewatin", and found that they in turn were younger than another sedimentary series, to which he gave the name "Couchiching". The latter he considered to be the oldest of the region.

Lawson was only 25 years old at this time, and his ideas were not acceptable to his superiors of the Survey. But he was confident of his observations and presented them at the International Geological Congress in London in 1888, where his views were accepted as a point of departure for further studies of Precambrian geology.

In this brief historical sketch of four geologists the essentials for success are shown. The rocks themselves must be the source of the facts, and a mind free from bias is needed to interpret them.

THE EVENING GROSBEEK

On a morning last May, I was working in the garden and suddenly heard the call of a bird which I could not recognize at all - a strong clear whistle coming from the top of the enormous broadleafed maple which shadows this part of the property. Naturally I stopped work at once, never a difficult thing to do, and just stood still and watched. Almost immediately from the tree dropped a large bird, all decked out in yellow, black and white, with a very heavy wedge shaped beak - a male evening grosbeak in his wonderful spring plumage. It was the last bird I ever expected to see on my lawn; then down came more, one at a time, until I had right in front of me three male and two female grosbeaks, all very busily eating the old seeds of the maple, with which the grass was fairly well covered, as my garden is rough, and the lawn a disgrace, but very attractive to many birds, which is more important.

The colouring of these birds, on the ground at such close range, was magnificent, the yellow of the head, breast and back merging into a dark orange underneath. The yellow on

the head is edged with black in front, bringing into prominence the large ivory coloured beak. The wings and tail are black with a large patch of white on the inner feathers of the wings. The female has no yellow on the head, and only a little on the sides and neck, its plumage being mostly a pinkish-pearl grey with blackish wings varied with white and grey.

These birds are only occasionally seen in this area, and then generally among the maples, their favourite food being the maple seeds. They are a wandering species, having apparently no regular migrating habits on the coast, but appearing here and there at any time of the year. The last flock, from my observations, occurred here about four years ago.

A.R.D.

A Baffled Gull

Crash, tinkle, tinkle. What on earth was that? Let's investigate this unscheduled shattering of glass in the paved courtyard at the back of Red Cross House. Not a soul in sight, but there are the tell-tale fragments at our feet. If they didn't come from North, South, East or West, they must have come from "up". Aha, sure enough, there's the culprit. Perched on the edge of the roof, a very puzzled-looking seagull, peering down at the remains, cocking its head this way and that, and apparently wondering why such a promising "shell" had yielded no meaty morsel. Alas for all its hopes and expectations. The prize it had dropped was merely a photographer's flash-bulb!

(D.K.J.C.)

BIRDING IN MONTREAL

by Mrs. Gladys E. Soulsby

While visiting in Montreal during Sept. and Oct. of 1954, I called the Redpath Museum by phone for information about a Natural History Society. Mrs. Turnham, the curator, who knows our Dr. Carl, was very helpful, and got me in touch with the Secretary of the "Province of Quebec Society for the Protection of Birds" (P.Q.S.P.B.) From her I received a list of their field days during Sept. and October, and an invitation to attend.

On Saturday, Sept. 19, I got to the appointed rendezvous of St. Anne de Bellevue Station at 9 a.m., and met six men and

six women, most of whom had on long rubber boots. We had had lots of rain, but I only had the shoes that I wear for our field days here. I was immediately hastened off to a nearby home, and fitted up with long rubber boots! We were scheduled to go to the Senneville woods and the Morgan Arboretum. Soon after we started, the rain began to fall, and some turned back but some were for going on, which I did too, and we had a very, very, wet three mile walk through the Arboretum.

This area has been given by the Morgan family, to McGill's McDonald College at St. Anne de Bellevue, and here during the past two years an active programme of development has taken place. Groups of native Canadian trees have been set out forming the beginning of a project which should prove to be of great significance in the development of our woodland resources. Actually all I saw was three black ducks on a small pond in the Arboretum and heard some blue jays, but the walk was well worth while. We went back to the secretary's home in Senneville, Miss Ruth Abbott, and there we were given any dry things needed, as well as hot drinks and warmth, before having our picnic lunches. There was much bird talk, even if we hadn't seen many.

Two subsequent trips had to be cancelled on account of the rain, but on the last listed one, Saturday, Oct. 16, I was taken from Mr. Robinson's house in Westmount (he was leading the trip), across Montreal, over the Jacques Cartier bridge to St. Helen's Isle. It was a lovely fall afternoon and about 25 people were waiting there, some of whom I had met at Senneville. It was easy terrain, and in all 37 varieties were seen as follows:- Pied-billed grebe, double-crested cormorant, great blue heron, black duck, greater scaup, American goldeneye, white-winged scoter, American merganser, rock dove, yellow-bellied sapsucker, northern hairy woodpecker, downy woodpecker, bluejay, crow, blackcapped chickadee, white-breasted nuthatch, brown creeper, house wren, winter wren, eastern robin, olive-backed thrush, golden-crowned kinglet, ruby-crowned kinglet, starling, blue-headed vireo, black-throated blue warbler, myrtle warbler, black-poll warbler, yellow-throat, English sparrow, red-winged blackbird, white-crowned sparrow, song sparrow, slate-colored junco, chipping sparrow and white-throated sparrow.

On Oct. 18, just before I left, I attended a lecture in Montreal by Mr. Chas. Broley, the eagle-banding expert. He had to report that eagles are getting scarcer, especially in Florida, owing to houses being built near their old haunts. Mr. Broley showed an excellent color film of his summer home on the Rideau Lakes. The piece de resistance was a tree swallow which had been tamed, and has come back to them for three successive summers. While visiting in Detroit on way to Montreal I called up Pres. of Audubon Society. No meetings were being held, but I learned laws had been passed in State of Michigan, which protect hawks and owls in that State. They were very jubilant over this.

JUNIOR NATURAL HISTORY PAGE
Gerry Skinner, --- Editor

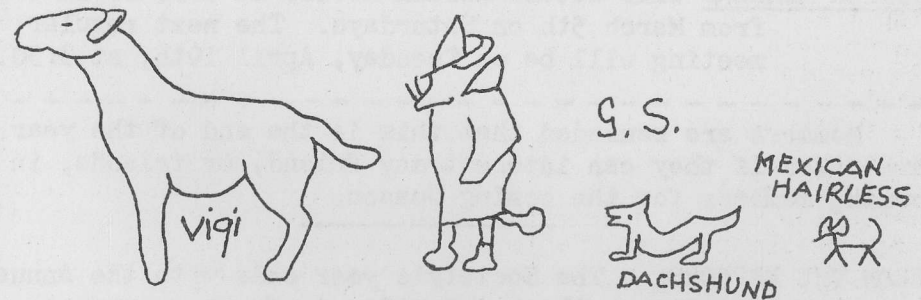
My two turtles which I call "Tardy" and "Terrance" are Florida turtles, and I have a hard time keeping their water warm. They do a lot of sleeping, and when they swim they really swim. Terrance, the smaller of the two is the faster and he can really run and swim.

by Malcolm Harvey.

A FEW DOGS TODAY AND YESTERDAY - G.S.

The healthy, overfed dog of today is almost opposite the mangy flea-bitten thing of a few centuries ago. For instance take Olaf's dog -- Olaf was a long haired Viking. He and his dog Vigi were good friends. Now this hound was grey and tawny, a huge dog with powerful legs.

Then you take the average pet dog of today; the pitiful Mexican hairless and the poodles in their raincoats and rubbers, but let's take the dachshund, a fine pet I must admit, but often overfed so much that their stomachs practically drag along the ground. All modern dogs are not like that though most of the working dogs are respectable canines.



We would like to thank "Pisces" for his poem. We regret to say that since it is a junior page only juniors are allowed to contribute. We will be looking forward to reading it at the next meeting.

The Editor.

NOTICES OF MEETINGS

1955

Tuesday
March 8:

ANNUAL GENERAL MEETING: Following the Election of Officers, Mr. and Mrs. H.A. Dreany of Lake Cowichan B.C., will show a film of their trip to Della Falls, Strathcona Park, B.C. Museum at 8 p.m.

Friday
March 11:

TECHNICAL TALK at the Museum 8 p.m. "ECOLOGICAL INVESTIGATIONS IN B.C.'S COASTAL FORESTS." Lecturer: Ralph Schmidt, B.C. Forest Service.

Tuesday
March 15:

MARINE BIOLOGY GROUP: meet at the Biology Laboratory, Victoria College, 8 p.m. "CLAMS"(cont'd) Prof. J.A. Cunningham.

Saturday
March 19:

BIRD GROUP: Meet at Monterey Cafe 9:30 a.m. or opposite Holy Trinity Church, Patricia Bay at 10:30 a.m. Leader Mr. J. O. Clay.

Friday
March 25:

AUDUBON LECTURE: Fran Wm. Hall, "SOUTH TO SIESTA LAND." Oak Bay Junior High School Auditorium, 8 p.m. Admission 50¢. Students 30¢.

JUNIOR MEMBERS will attend Museum Movies at 9:30 or 11 o'clock from March 5th on Saturdays. The next regular meeting will be on Tuesday, April 19th, at 3:30.

Members are reminded that this is the end of the year and are asked if they can interest any friend, or friends, in becoming members for the coming Season.

FROM THE EDITORS: The Society's year ends with the Annual Meeting on the 2nd Tuesday in March so may we remind our members that the dues for the ensuing year are now payable. Please pay same to the Treasurer, Mrs. Gladys E. Soulsby. These dues including subscription to the Magazine are \$3.00 for Family Membership and \$2.00 for individuals. The Junior's Annual Fee is \$1.00.

PERSONAL: Members and friends will be interested to know that Mr. John Nutt who is recovering from a recent illness is now in Victoria and able to receive visitors. His address is c/o Mrs. A.L. Spiers, 135 Bushby Street, just a block off Dallas Road near Clover Point.

Victoria Natural History Society

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Annual dues, including subscription: Single, \$2; Family, \$3; Junior, \$1.

To