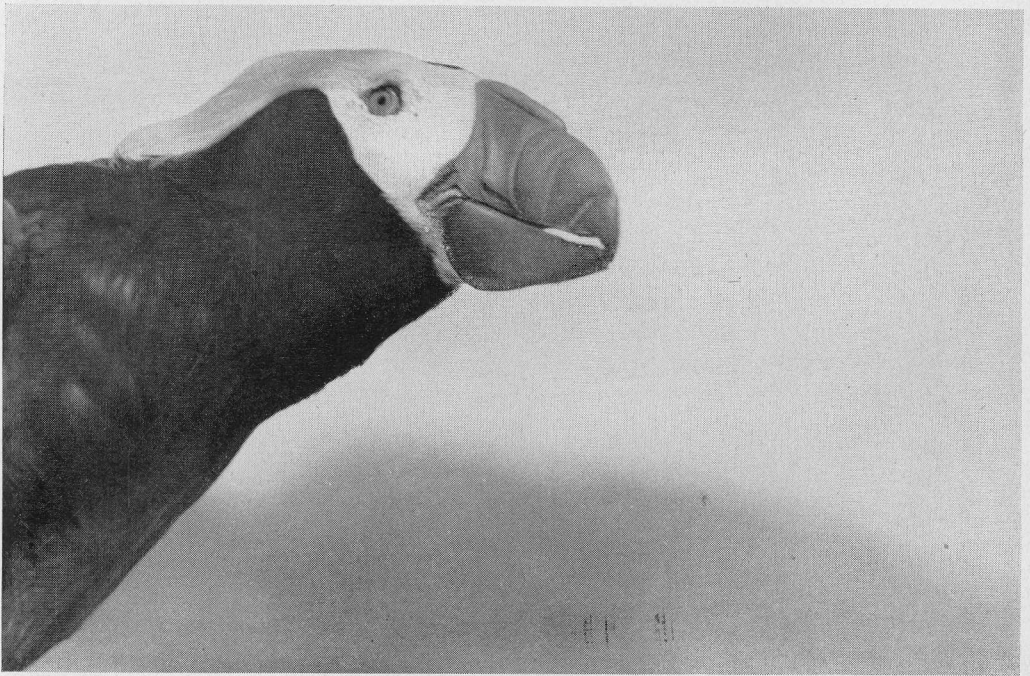


The
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Tufted puffin.

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HISTORY AND DEVELOPMENT OF THE PROBOSCIDEA

The finding from time to time in gravel pits or on beaches around Victoria of pieces of tusks or large molar teeth always arouses interest as to their origin. For this reason a talk was given by Mr. A. H. Marrion to the Geological group on October 6th.

It was shown that beginning with an African mammal of Upper Eocene Age, some thirty million years ago, the proboscidea developed along several lines, typical examples of which were illustrated by numerous sketches.

1. The ancestral form, Moeritherium, from North Africa had a short chin, an enlargement of the same pair of front teeth as those forming tusks of elephants, and a grinding tooth structure similar to those of animals described later. The Denotherium of Lower Miocene had no upper tusks, but developed a pair of lower tusks which projected downwardwards. Three types of the animal existed, remains being found in Africa, India and Asia. Higher forms are found in south Asia,

2. The next distinct development is seen in the Paleo or Ancient Mastodon which may have been ancestral to the European animals of the Lower Miocene. Its chin was longer than found in earlier forms and it probably had a long seizing upper lip with well-developed spoon-shaped short tusks and more complex grinders.

3: The third noticeable advancement appeared at the time of Mastodon augustidens, which had a long chin, armed with four straight forward projecting tusks from seven to ten feet in length. This was combined with a low forehead, short massive limbs, enormous broad pelvis and a height of nine to ten feet. This animal migrated to India and later to Asia, where three varieties developed. These Augustiden animals are called "Trilophodont" because on the fourth premolar there were three transverse rows of cups. During the Miocene, America, Europe and Asia became united by

land, so that various animals were able to migrate north east or west. The earliest trilophodont from either Europe or Africa was found in a river flood plain of mid-miocene age.

4. The fourth type is found in Tetra longirostris. During the Upper Miocene animals developed which had shorter chins and molars with four transverse crests composed of conic nipples with some accessory cones, and at first with no enamel. The Tetra type roamed India, east Asia, America and Europe; some types were apparently contemporary with trilophodont mastodons. Two types of Tetralophodont appear in the mountain area of the north-west United States, with skulls broad and flat, and with shorter grinders than Augustidens of Europe, while a third type roamed through Texas. Change of climate caused certain browsing types to disappear, whilst other grazing kinds increased. In the Pliocene the plains show an increasing dryness, whilst the coast was getting colder, shown by the appearance of more frigid type of shells. The Lower Pliocene produced two new types of mastodons on the great plains with somewhat shortened jaws and quite a large size of lower tusks.

5. The fifth development was the Stegodon type of mastodon with short jaws, and six to twelve crested molars, the third molars with five or six low crests. Upper tusks were round, without enamel and upturned. They had no lower tusks. The first short-jawed animal found in America was Stegodon mirificus of the Middle Miocene of Texas, where four other types were also found. Six kinds of Stegodons appeared in India, China, Japan and Asia, which brings us to stage six.

6. The sixth stage is the beginning of the true elephants, which are represented by two types, Indian and African. The African, Elephas planiformis, had narrow grinders, short crowns, thin transverse crests with valleys completely filled with cement, a change from the mastodon crested-nipple type of browsers to the more advanced plated type of grazers, as developed in Europe, India and China.

The Indian type, E. hysudricus from south Asia, is closely related to the Upper Pliocene elephant, E. meridonis which herded with the last of the mastodons. It originated either in Asia or Africa. Its molars are broad, with thick enamel, and its tusks were of gigantic proportions. It would appear that the Upper Pliocene produced both the modern Indian and the African elephant, as

some fossil remains of both have been found at Crete and Malta. Several species of elephant were produced in America, some of which by migrating south escaped the ice sheets, then later came north again during interglacial periods.

Elephas columbi, E. imperator and M. americanus, whose molars and broken tusks are found in gravels deposited by the great glacial streams, were the last American elephants. E. columbi fossils have been found with arrow heads, pottery and charcoal. This animal ranged from British Columbia to Mexico. E. imperator was by far the largest animal, with huge molars having few (17) widely separated plates, heavily surrounded with cement. It stood about 14 feet high, and roamed from British Columbia to Mexico.

E. primigenius, or woolly elephant, with molars having 13 to 15 folds in a space of ten inches, is distinguished by its smaller size (nine feet in height) and 18 to 27 thin plates in the grinders, and its very thick covering of hair and wool. This is the animal that has created so much interest since it was found in Siberia, where carcasses have washed out from the tundra, and tons of ivory have been recovered and sold.

Nearly sixty different Proboscidea types have existed since Moeritherium. Reported finds on Vancouver Island are:-

1. Broken tooth from James Island.
2. Piece of tusk from Island View Beach.
3. Piece of tooth from Cadboro Bay (?)
4. Piece of tooth from Mount Tolmie gravel pit.
5. Molar from James Island.
6. Molar of mastodon from Cobble Hill gravel pit.
7. Molar from Cordova Bay gravel pit (McIntyre & Hardie)

As the specimens appear mostly from outward gravels rather than from superimposed till, it would appear that the ice plowed the fossils from the interglacial river gravels and deltas, Fraser, Cowichan, etc. where they were deposited after being separated from other remains of the carcass by river floods, etc. It is interesting to note that these fossils consist of real cement, enamel and ivory and are not silicified replacements.

J. H. Whitehouse.

THE ANCIENT MURRELET

by C.J.Guiguet, Provincial Museum

From all accounts most members of the bird group have yet to observe the ancient murrelet, one of the most interesting birds to visit local waters. This beautiful little alcid with its smokey blue back, black head and throat and white underparts is to be confused only with the winter plumaged marbled murrelet which is so common here. The black throat is the "give away" at a distance; bird watchers should be able to add this bird to their lists with little difficulty.

One of the most interesting features of the ancient murrelet is the fact that the young are precocial, leaving the burrow in which they are born shortly after hatching. The young of our other alcids are altricial, that is, practically helpless at hatching, and undergoing a period of parental care, growth, and development in the nest, until the full juvenile plumage is acquired. Our other alcids normally lay but one egg, the ancient murrelet lays two.

On the Queen Charlotte Islands there are large nesting colonies of ancient murrelets. Their burrows are located on timbered hillsides facing the sea where literally thousands of excavations perforate the soft soil. Many are situated under the roots of giant Sitka spruce, others along the margins of rocky cliffs, and still others in the dense underbrush of salal. It is amazing that a great deal of confusion and mixing does not occur, for the adult birds relieve their mates on the nest only at night.

One of the rare treats of studying these birds is to spend a night on a colony when the "swing shift" comes on. The birds don't move until night has completely fallen - about midnight at those latitudes in June. They gather in large numbers in the littoral waters off the colony, and, as each bird calls incessantly, the thousands gathered set up a din that is difficult to describe. Suddenly, hurtling bodies crash into the undergrowth and into the lower branches of the tall spruce, and on a "good night" the air is full of murrelets, each seeking out the burrow containing its mate and eggs.

One of the mysteries of nature is how they know which burrow is their own, but they do, for the birds we marked were almost invariably found in their own nest. On one occasion we did find a stranger, an unmarked bird, in a

burrow where the original pair had been marked, and we found other contradictions in the small number of nests studied. In one nest the birds alternated nightly, in another the same bird was on the nest for three consecutive days. Nevertheless, most of the birds apparently spent two nights on the eggs before being relieved by their mate. The experiment ended before any definite conclusions could be drawn, for most of the birds deserted their eggs - undoubtedly because we had disturbed them.

During the first week in June, the big hatch of young is coming off the hills, and hundreds of pairs of young, peeping lustily, are rushing nightly to the sea, where adult pairs are calling vociferously. Apparently these newly hatched young are recognized by their parents, for calling birds pass up many young before selecting a pair and heading out to sea. The chicks are able to dive and swim below the surface when they first strike the water, an ability which extreme exponents of learned behaviour find difficult to explain.

By dawn the adults and their two tiny young are well beyond the littoral waters, out to sea where rapacious gulls and crows are less likely to prey upon them. As the young birds grow, the family group gradually moves in from pelagic waters until finally, when the young are capable of flight, they are once again in the coast littoral.

Ancient murrelets do not frequent the waters around the southern end of Vancouver Island except during the winter months. Usually they arrive in the Oak Bay area in December with a few early showings in November; normally they remain well out in the bay and outside channels until mid-February when they disappear, - heading north no doubt, to raise another family.

This year the ancient murrelets have arrived early. We recorded the first ones on November 1 and on November 17 they were numerous off the Fiddle Reef light in Oak Bay. I'm certain that they will appear close in on Cattle Point where much "feed" has been showing recently. Look for a string of murrelets swimming along together (the ancients tend to "string" more than do the marbled), get the black throat in your glasses (the winter marbled murrelet has a white throat) and you have the bird. Better still, take a run off shore in a small boat on a good day and you will almost surely see ancient murrelets in Oak Bay.

With a little luck you should also see Cassin's auklet,

rhinoceros auklet and tufted puffin, all in winter plumage and if you get out right away you may see red phalarope - they were still present in small numbers on November 22nd.

THE BLACK-NECKED GREBE IN THE CARIBOO PARKLANDS

by J. A. Munro,
Okanagan Landing, B. C.

The black-necked (or eared) grebe is a regular summer visitant to numerous lakes in the Cariboo Parklands and some of the larger colonies, for example those at Westwick Lake and Sorenson Lake in the Springhouse region south of Williams Lake village, maintain approximately the same numbers from year to year.

On July 12, 1949, when these lakes were last visited, the population of Westwick Lake, made up of several nesting colonies, totalled approximately 130 pairs. On this date, when two of us in a canoe were making a census of the waterfowl population, a flock of 88 adult black-necked grebe was counted on open water 76 yards or so from one of the larger round-stem bulrush marshes - all vanished as we paddled towards them. Soon afterwards was heard, coming from what seemed to be the centre of the marsh, a chorus of thin, plaintive voices that rose and fell, then died away. Toward these sounds we paddled quietly along a yard-wide channel leading to a pond in the marsh which we came upon suddenly. Then, for a moment, there were glimpses of 50 or so adult grebe, the singers of the chorus, gliding over the water or disappearing below its surface. Around the edge of the marsh enclosing the pond, at bases of rush clumps and on floating debris between the clumps, we counted 40 nests in an area roughly 30 x 40 feet. In some places a distance of only two feet or less separated one nest from another. All were in plain view and conspicuous; probably all contained eggs but none was visible beneath the covering of nest material. Each of the few nests we uncovered held three or four eggs, stained olive-drab from incubation.

Most of the other marsh areas on Westwick Lake also were occupied by smaller numbers of nesting grebe but none had young so far as could be determined.

Now on the adjoining Sorenson Lake, as we discovered later in the day, all of the several populations, totaling perhaps 50 pairs, frequented open water and were accompanied by young of different ages. Some were recently hatched chicks riding on their parents' backs; the remainder were of various ages including a few families about three-quarters grown. The brood-size averaged three which indicates a high survival rate.

POLLINATION

On Tuesday evening, April 21st, 1953, Miss Winona Bethune of the Victoria College Staff gave a fascinating lecture on pollination. Making use of the College Biological Laboratory, with its specimen jars, microscopes and large blackboard space, Miss Bethune lectured on, and illustrated, with great deftness and lucidity, methods of pollination in use by some of the more familiar plants on land and in the waters around us.

Man is certainly not alone in engaging other agencies for his own uses. As Miss Bethune pointed out, members of the plant world, in the desire to perpetuate their species, have entered into arrangements with water, wind, birds, insects, bats and even slugs.

An example of water agency is the eelgrass, whose flower-buds, breaking off from their short pedicels right at the base of the long leaves, float up to the surface and gather around fertile flowers. Later, spiral scapes rise up and draw the fruit under water to ripen.

Wind is responsible for the pollination of most grasses and sedges, trees such as alder, hazel and elm, and all the conifers. As the flowers of these are inconspicuous, odorless and nectarless, so that no birds are likely to be interested in them, they produce an abundance of pollen, easily carried by the wind. Their anthers, in the shape of limp filaments, wave about in the breeze which picks up the pollen and deposits it on the feathery stigmas, especially developed to present as large a catching surface as possible.

By transferring pollen from blossom to blossom as they slime their way over the plants, slugs contribute to the perpetuation of species which have an unpleasant smell and a large spadix such as the Yellow Arum. Certain bats

simply chew their way from flower to flower unconsciously pollinating as they go.

Miss Bethune, who in addition to her botanical qualifications has taken honours in Zoology, gave some interesting information on the relationships between various members of the plant and animal kingdoms. The three main attractions to the insects etc. are the size of flowers, their colour, and most of all, their smell. A pansy for example is much larger in size and may be more brilliant in colour than a violet, but because of its perfume the violet will receive much more attention than the pansy. Then again, different colours attract different creatures, beetles and moths preferring white flowers, butterflies - reddish, birds - blueish, and flies - yellow.

From the astonishing and inexhaustible variety of ingenious and complicated methods used to effect pollination, Miss Bethune chose to describe that of a moth (which carries a ball of pollen under its chin until it has entered the flower of a Yucca, and after laying its eggs, plugs up the entrance hole with the ball of pollen) and those of the Kinnikinick, the Primula, the Lilac, the Iris, Salvia and the Twayblade. The methods differ in details, yet all have the same purpose - the perpetuation of their particular species.

Professor Lowe expressed the delight and gratitude of all present to Miss Bethune for preparing specimens and giving such a comprehensive and up-to-date talk on this most intriguing subject.

J.N.

THE BIRDS OF VICTORIA

It has been suggested that the approximate dates the birds on migration may be seen in Victoria might be of service. While the migration of birds in general has a fairly regular pattern, both as to the time of year that the different species may be expected, and their approximate numbers, there are always sufficient variations to this pattern to keep bird observers continually on the alert, and to provide a continuous interest to their outings.

These bird movements can be seen every month in the year. In January, for instance, we often have a very large

influx of robins into Victoria. Last January, on the 11th, about 5000 of these birds appeared in the Ten Mile Point area. In short order most of the arbutus berries vanished, and in a day or two the robins disappeared too. There are three species of birds whose movements cannot be predicted, the crossbill, evening grosbeak and the waxwings, most of the other birds are fairly regular, and the following dates of arrival are taken from this year's notes:-

- | | | |
|-------|-------|--------------------------------|
| March | 14th: | White crowned sparrows. |
| | 23rd: | Violet-green swallows |
| | 24th: | Audubon warblers |
| | 29th: | Yellow warblers. |
| | 31st: | Rufous hummingbirds, male. |
| April | 5th: | Lutescent warblers |
| | 6th: | Rufous hummingbirds, female. |
| | 13th: | Chipping sparrows |
| | 15th: | Savannah sparrows |
| | 18th: | Myrtle warblers |
| | 19th: | Townsend's warblers |
| | 20th: | Band-tailed pigeons |
| | 22nd: | Dowitchers |
| | 25th: | Western sandpipers |
| | | Barn swallows |
| | 29th: | Cassins (Solitary) vireos. |
| May | 2nd: | American pipits |
| | | Townsend's solitaire |
| | 3rd: | Goldfinches |
| | 4th: | Warbling vireos |
| | | Western flycatchers |
| | | Pileolated (Wilson) warblers |
| | | Russet-backed thrushes |
| | 11th: | Rough-winged swallows |
| | 13th: | House wrens |
| | 20th: | Macgillivray (Tolmie) warblers |
| | | Olive-sided flycatcher |
| June | 3rd: | Wood peewees |
| | 5th: | Night hawks |

For certain species of birds, the nesting season is over by the beginning of July and they are free to roam. From the south, on the 10th of July came the Heerman gulls, and on the 12th, from the east, the California and the Bonaparte gulls; the short-billed gulls from the north

appearing on the 26th. The regular south bound migration however commences about the middle of July with the arrival of dowitchers, greater yellowlegs, semi-palmated plovers, least and western sandpipers; the northern phalaropes showing up off the Oak Bay coast on the 19th, and the spotted sandpipers on the 27th.

The warblers, vireos and flycatchers can be seen going south throughout August and part of September, while the sparrows, which include the white-crowned, golden-crowned, fox, savannah and lincoln continue through September to October, many of the golden-crowned and fox sparrows remaining for the winter. One of the later migrants is the western bluebird, the last two weeks in October being the most favourable time to observe these beautiful birds. Sometimes with them will be seen Audubon warblers, pipits, and others whose regular migration has been delayed.

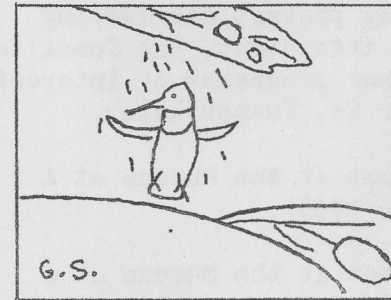
The turkey vultures were first seen this year on Sept. 14th, these birds often going through in large flocks, slowly spiraling their way south. The hawks in general are not at all numerous in this area, but from September to November, many species can be identified on migration. Among them this year were the sparrow hawk, the coopers and sharp-shinned hawks, marsh hawks, red-tailed hawks, black pigeon hawks, and occasionally the duck hawk or peregrin falcon, which latter was observed at Ten Mile Point on November 10th. By the middle of November practically all the Victoria wintering sea birds are here, the last to arrive being the American goldeneye. Victoria is fortunate in having a large number of birds as winter residents; the Christmas count last year comprising 68 species.

A. R. D.

Chairman: Bruce Colvin

Editor: Roger Porter

A GARDEN SHOWER



One morning I looked out of my window. The rain had fallen leaving pearly drops of water on the leaves and grass, and amongst the drops were robins, flickers and chickadees.

All of a sudden a big bee flew into the garden with a graceful speed. It was a Rufous hummingbird. The hummingbird sat down on a raspberry leaf, flipped its tail saucily and proceeded with its bath.

First it jumped into a pool of rain on the leaf ruffling its feathers and splashing merrily. When it had finished it scrambled onto the raspberry branch and started to jump up and down as hard as it could.

The leaf above the hummingbird spilled water on its glossy green head and its back. The hummingbird had invented Mother Nature's own bath and shower!

Gerry Skinner.

Excerpts from a letter to Mr. Guiguet written by Geo. Merrick (a former Junior Member) from 5314 N.E. Wygant St., Portland, Ore:

-- COMMON BIRDS THAT ARE AROUND HERE NOW --

American Robin: A few in trees and some flying over but there are hardly any around this year. Brewer's Blackbird: a few flying over. Oregon Junco: Are seen pretty well everywhere there is food for them. Bewick's Wren: are seen often in thickets and low trees. Bush Tit: They are seen in flocks every so often. They travel from place to place looking for small insects. I counted 132 in one flock. Black-capped Chickadee: They are seen often in fruit trees and sometimes fir trees. English Sparrow: As common as ever. Now traveling in large flocks.

NOTICE OF MEETINGS

1953

Tuesday
December 8:

GENERAL MEETING: at the Provincial Library at 8 p.m. Speaker: Dr. David B. Turner, Director of Conservation, British Columbia Department of Lands, will speak on some aspects of his work. Dr. Turner has warned us that his duties may prevent his keeping this engagement. In this event, the Committee will arrange some other programme of interest and we shall hope for Dr. Turner later.

Tuesday
December 15:

Junior Naturalists meet at the Museum at 4 p.m. (last meeting in 1953).

Tuesday
January 5:
1954

Junior Naturalists meet at the Museum at 4 p.m.

- - - - -

Obituary:

We regret to record here the passing of the Reverend T. Taylor on October 18, 1953.

Mr. Taylor was an active member of the Victoria Natural History Society, serving as convener of the Botany Group in 1950-51 and taking a keen interest in all other phases of natural history. We extend to Mrs. Taylor and her family our sincerest sympathy.

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