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COVER PICTURE

By A. H. Marrion

Taken at the north end of Saanich Peninsula, the cover picture may remind readers of similar rock outcrops along the highway between Duncan and Nanaimo, or on the Gulf Islands.

These sedimentary rocks, called the Haslam Formation, belong to a very thick series of deposits consisting of shales, sandstones and conglomerates, with some included coal beds. Long, long ago, in Upper Cretaceous times -- 106 million years ago -- the formation accumulated to a thickness of 10,000 feet or more, under varying conditions -- in the sea, at river mouths and on land. They consist of material derived from earlier volcanics and their intrusive rocks, and rest upon a greatly worn and eroded surface.

The Haslam Formation, 500 feet thick in one area, consists of ancient sea bottom muds and fine sands, with beds of sand predominating near the bottom. The consolidated muds, called shales, are carboniferous, with the result that they are brown to black in colour; contain marine fossils and sometimes leaf imprints. The author collected some beautifully preserved fossils of Belemnites in concretions on North Pender Island.

The photo shows Haslam shales dipping northward into Satellite Channel. The deformation, which caused the uprising and downdipping of the rocks, occurred in early Eocene times, about 56 million years ago, and produced the type of scenery found along the south side of Lands End Road and projected the Gulf Islands above the sea.

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## AQUATIC ENTOMOLOGY

By M.D. Atkins

The dragonflies and more slender damselflies comprise the order Odonata which has been grouped by some workers with the Ephemeroptera (see Vol. 20, No. 9) under the name Paleoptera meaning "ancient wings". The Odonata are an old group that left a relatively good fossil record. Their ancestors, the Protodonata, were prevalent during the Carboniferous period when, in the absence of competition from other winged creatures, they achieved gigantic size. One species found in Belgium, *Meganeuron monyi*, had a wing-span of 29 inches.

To-day, some 250 million years after their first appearance on earth, dragonflies are a familiar sight along the shore of almost any permanent fresh water body. They are often called "mosquito hawks" because of the way they dart about catching mosquitoes, gnats and flies. Although mainly beneficial, a few dragonflies are pests in bee yards, where they prey upon the bees.

Less familiar to the casual observer are the immature forms or naiads which are strikingly different from the adults. They are robust, cryptically coloured, wingless, and respire by means of gills. The most interesting feature of the naiad, however, is the extensile lower lip, or labium. Hinged and well muscled, this structure can be thrust rapidly from its concealment beneath the head to capture passing prey on its fang-like spines. The naiads can be found amongst the vegetation bordering most permanent bodies of water. They are all predators, and some larger species are known to capture and devour trout fry.

The development of Odonata from egg to adult may take from one to five years, during which the naiads moult from ten to fifteen times. The fully developed naiads crawl from the water and attach themselves firmly to suitable objects in preparation for the emergence of the adults.

Adult dragonflies and damselflies can be caught in a standard insect net, although some of the large, high-flying species are sometimes collected by shooting them with fine dust shot. When properly pinned, they make a beautiful addition to insect collections. The naiads can be caught with a dip-net swept through the debris along the water's edge. The immatures should be preserved in 80% alcohol.

## DIVING RHYTHM OF THE HAIR SEAL

By G. Clifford Carl

While it is not uncommon to see a hair seal almost anywhere along our coast-line, one seldom has a chance to observe this animal for any length of time, at one spot. Such an opportunity arose last May when we saw a hair seal not far from shore at Jordan River, and we were able to watch it for several hours.

The seal was diving and surfacing in a small area 30 or 40 feet from shore, off a sandy beach, just south of the river mouth and about a hundred yards from our vantage point. Because it was low tide during the period of observation, (11 a.m. to 1 p.m. P.D.T.), we judged the water in which the seal was working to be about 6 to 8 feet deep. There was no wind, little surf and the weather was showery.

The regular pattern of diving and surfacing at one spot suggested that the seal was actively feeding, but from our distant view-point we could see no fish in the animal's jaws as it surfaced, and unfortunately we had no field glasses to permit closer observation. Because the most common fishes in this habitat are young flounders, it is possible these were the food items being used, in which case each fish would scarcely make a mouthful. This may explain why we did not see fish being eaten at the surface.

After watching the seal working for some time, we conceived the idea of timing its dives and subsequent breathing periods, using an ordinary pocket watch with a second hand.

The following is a record of observations:

Dive Number	Time Submerged		Time on Surface
	Minutes	Seconds	Seconds
1	3	30	25
2	2	30	20
3	3	00	25
4	3	35	20
5	3	25	32
6	3	15	20
7	3	25	32
8	3	15	20
9	2	30	20

<u>Dive Number</u>	<u>Time Submerged</u>		<u>Time on Surface</u>
	<u>Minutes</u>	<u>Seconds</u>	<u>Seconds</u>
10	2	40	17
11	2	55	19
12	2	53	21
13	3	57	30
14	4	10	20
15	3	17	25
16	2	50	28
17	3	34	29
18	4	10	29
19	4	15	35
20	4	15	31
21	4	10	34
22	3	50	32
23	2	45	14
24	1	00	14
25		55	20
26	1	45	28
27		15	10
28	2	05	21
29	2	45	25
30	3	07	--

A number of interesting sidelights appear when this record is examined. In the first place, the periods of submergence and the periods at the surface are remarkably uniform for several successive dives, suggesting that the rhythm of diving and surfacing was determined to a large extent by the physiological requirements of the animal. In other words, the seal held its breath as long as it was comfortably able to and then surfaced just long enough to air its lungs. The average time under water for 6 successive dives (Numbers 3 to 8 inclusive) was 3 minutes and 16 seconds, while the average time between dives was 24.8 seconds.

Another noticeable feature is that the breathing period is lengthened following prolonged submergence. After dives 18, 19, 20 and 21, which averaged 4 minutes and 12½ seconds each, the time spent on the surface increased to 32 seconds on the average. This is to be expected; it takes longer to aerate the lungs and blood after the breath has been held for a period longer than usual.

Of course it was impossible to see why the seal occasionally stayed under for lengthy periods, but one might

guess it was busy catching or pursuing a fish. This possibility is supported by the fact the animal remained at the surface presumably just long enough to aerate its blood, then dived again for a prolonged period. The strong attraction of food seems to be the logical explanation for this behaviour.

By the same reasoning, the short dives e.g. Nos. 24, 25 and 27) may be the result of quick success. In such shallow water, the seal probably rose to the surface each time it captured a fish.

When we left, the seal was still actively diving and surfacing in the same place; how long it continued was not determined.

#### COMOX BIRD COUNT

The annual Christmas bird count will be held at Comox on January 2nd. Competent birders wishing to participate should contact Betty Westberg at 477-4441. Billets can be arranged if desired, or the trip can be made in one day (3 hours driving each way). Help is needed if the count is to be more thorough than last year -- last year we found 89 species -- the goal is 100 species. Highlights of last year's count were snowy owls, trumpeter swans and a burrowing owl.

#### RECOMMENDED READING

Pesticides And The Living Landscape, by Robert L. Rudd, University of Wisconsin Press, is the latest book dealing with man's effect on his environment. Silent Spring, by Rachel Carson, has been criticized as being too emotional. The same cannot be said of Pesticides And The Living Landscape -- it is a book that is entirely factual, but easy to read. Whether emotional or factual, both books present a disturbing picture of growing environmental pollution.

D.S.

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MANNING PARK - A NATURALIST'S PARADISE

By R. Y. Edwards

There is more to find and study in Manning Park than a naturalist can do in a lifetime. Here, the Coast and Interior come together, and high above is Arctic life on miles of open alplands. Rare plants and rare annuals are everyday conversation in this large park.

You can drive to within a short walk of one of the biggest and best shows of wild flowers to be found anywhere. Here is the place to see ptarmigan, rosy finches, pikas, alpine larch, and a host of other species not easily found elsewhere. A good park road takes you most of the way to timberline. Miles of good trails lead through forested valleys, and every summer, Parks Branch hires a staff of Park Naturalists to help you. There is a Nature House in Manning Park, several well signed nature trails, guided walks in the flower meadows and evening slide shows in an outdoor amphitheatre to help you decide on where to go and what to do. These services are available during all of July and August, and part of June and September.

Why not visit Manning Park, only 140 miles from Vancouver, in the Cascade Mountains? Before you go, ask the Parks office in Victoria any questions that are bothering you. In that office, or at the Nature House, there are publications to help you on birds, flowers, trees, butterflies, and notes on where to go and what to do.

THANKS

Our plea for material for the magazine brought out a magnificent response. This issue is of normal thickness and we are assured interesting material for the next issue. However, there are many more issues yet to fill. Please keep the stories coming in. We will need them. Remember, the editor likes to be able to plan at least a month ahead -- preferably two. Ed.

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BIRDS FOR THE RECORD

- Ancient murrelets - - - - Clover Point -- November 3rd.  
D. Stirling and M. Matheson.
- Ring-billed gulls (4) - - Clover Point -- November 3rd.  
R. Fryer.  
One ring-billed gull was seen at Clover Point on October 21 by Mary Winstone.
- Bonaparte's gulls - - - - A spectacular concentration seen off Clover Point -- November 12 -- D. Stirling and R. Fryer.
- European widgeon - - - - - Esquimalt Lagoon -- November 15  
Gwen and Tom Briggs.

CHRISTMAS BIRD COUNT

All birders should note that December 27, 1964 will be Christmas Bird Count day. Areas and groups will be similar to last year. For detailed information, phone David Stirling, 385-4223, or Murray Matheson 383-7381.

WANDERING BIRDWATCHERS

By A. R. Davidson

There are few better places to live in than Victoria, and it is a good birding area, but it is interesting to go further afield now and then to see, in their native habitat, birds we seldom or never see here.

We have pleasant memories of mornings in early June on cattle ranges in Alberta and Saskatchewan. Prairie flowers were in full bloom and the air rang with songs of nesting birds. All nesting in the same area were chestnut-collared and McCowan's longspurs, (both of which rise in the air singing and flutter to earth like a skylark), lark buntings (all black with white wings) and prairie horned larks.

The Stormy day at Brooks, Alberta, when fifty-five white pelicans flew overhead, was thrilling. There were willets, marbled godwits and avocets in sloughs and

fields. At sloughs and shallow lakes, we saw these birds again in company with Wilson's phalarope, black terns, yellow-headed blackbirds, many species of ducks and grebes.

One episode was rather remarkable. On the edge of a lake, we saw in the distance what appeared to be a large bird. Wondering what it might be, we walked across the prairie and around a slough for a closer look. We were immediately "bombed" by all the nesting avocets in the neighbourhood -- about 50 of them. Their attack was reinforced by angry calls from godwits and willets. We felt guilty disturbing them and hurried on without looking for nests. As they whizzed close by our heads, they demonstrated how aggressive avocets can be. The hubbub disturbed the large bird which flew over and we were able to identify it as a black-crowned night heron.

Another time, we stayed at Drumheller in Alberta. This small coal-mining town is at the bottom of a coulee, through which runs the Red River, in what are termed the "bad-lands", and in the surrounding cliffs a variety of fossil dinosaur bones have been found. We saw our first grackles there and least flycatcher, rock wrens, Say's phoebe, etc. -- a place well worth a visit.

On cattle ranges in southern Saskatchewan, we saw many pronghorn antelope, some with young. Here, our most memorable sight was while travelling along the highway early in the morning. Close to the road was a group of animals, all looking interested at us, without moving. The group was two antelopes, two coyotes, a white-faced cow and her calf, all apparently in harmony. Most of the coyotes in the area have been poisoned off, with the result that ground squirrels are present in thousands, and many are killed by road traffic to the benefit of gulls, ravens and crows.

Most of the farms in the treeless sections of Saskatchewan are surrounded by windbreaks of planted poplar, willow, birch and spruce. In these windbreaks, we found black-billed cuckoos, brown thrashers, logger-head shrikes and other woodland birds.

The most difficult bird to find was Sprague's pipit, but we did eventually locate it. We were somewhere in Alberta, walking over a stretch of original prairie and woodland -- a place of real beauty, just as pioneers must have seen it. The whole area was composed of rounded hills, thickly carpeted with grass and flowers. As we approached, two white-tailed deer leaped away and

six sharp-tailed grouse flew in all directions. Climbing over a knoll, we found the dancing ground of the grouse and noted the grass trampled flat by their courtship dances. At the same time, we heard pipits, but our most careful scrutiny failed to reveal them. Then a gull flew high overhead and as we trained our binoculars on it we saw, away beyond, two small black specks -- these were the Sprague's pipits, singing in the sky. We watched them for a long time. Finally, they flew to earth, and by walking to where one had landed, we were able to positively identify it as a pipit.

Birdwatching takes one to many beautiful places, and certainly provides many interesting experiences.

#### REPORT OF B. C. NATURE COUNCIL MEETING

The British Columbia Nature Council met in St. John Ambulance Hall, 941 Pandora Avenue on Saturday morning, October 10th, 1964. Thetis Park Nature Sanctuary Association was co-host with Victoria Natural History Society. This Council is made up of one delegate from each of eight Natural History Societies in the Province. Dr. J. F. Bendell, of the Department of Zoology, U. B. C., elected president at the annual meeting in Penticton in May, was in the chair. The morning session was given over to work on constitution, finances, newsletter, etc., until 12:30, when we adjourned for lunch.

On reconvening at 2 p.m., we were addressed by Mr. J. M. McCloskey, a lawyer who is working with conservation societies in Washington and Oregon States. He has done research on the British Columbia park laws, and we were fortunate in having his comments and judgments. He emphasized the point that administration and setting up of parks, wilderness areas, etc., should be by statute and not by order-in-Council as is now the procedure in B. C. We naturalists want nature preserves, separate from parks; parks cannot provide what we want. Out of the discussion following Mr. McCloskey's talk, Mr. Dick Pullen, President of the Vancouver NHS, was appointed to confer with Mr. McCloskey, and prepare a resolution to go to the Government as soon as possible.

The committee on biological control of pests and the one on chemical control, each reported progress. Road-sides in this part of Vancouver Island were certainly freer of spraying this year, in which fact we hope we helped!

You will be asked to buy, and to sell too, hasty-notes which are being prepared by the Central Okanagan Naturalists' Club, under Mrs. Lamoureux, who incidentally is also the Council's secretary. This project is being undertaken to publicize the Council, and we trust our members to do their best to help.

We now have a committee on "evaluation of lands", following the introduction of requests that three separate areas be given consideration for conservation. These are:-

1. A portion of the Cathedral Lakes district, near Hedley, for a wilderness area,
2. Blue Heron Basin, near Sidney, Vancouver Island, to be kept as sanctuary.

The joint efforts of our societies and the Council will be exerted to save these areas.

At 5:30 we adjourned. At 6:30 we met for a "no-host" dinner at the Dominion Hotel. Besides the delegates, several members had come from the societies in the Interior, and 20 from Vancouver, so about 45 sat down for a very happy meal together. Dr. Bendell led us in a very informal meeting afterwards and got us thinking on the topic of how natural history societies could help their communities.

On Sunday morning, the meeting place was Clover Point at 9:00 a.m. After an hour's birding we went to the Undersea Gardens in Oak Bay. From there we went to Thetis Lake Park where Miss Melburn was ready to lead a trip for an hour and a half before we went to Thomas S. Francis Park where the Junior Group of the Victoria Natural History Society were ready for us. Lunch was served to out-of-town guests and some of the older Juniors led trips along the park trails.

Monday, Thanksgiving Day, the Vancouver people stayed over, and Freeman King, along with Dr. K. Beamish, a botanist, who came over from Vancouver that morning, took the party to Sooke for an all-day trip.

We had perfect weather for each day. Coffee was served on Saturday morning by Mrs. H.M.S. Bell and Mrs. J. Hobson of the Victoria Natural History Society. In the afternoon Miss Alyard, Miss Piggott and Mrs. Chambers, of

Thetis Park Nature Sanctuary Association, served tea. Mrs. Whitby convened the very excellent lunch provided by the Junior Group and their parents at Thomas S. Francis Park on Sunday.

G.S.

### JUNIOR JOTTINGS

By Nancy Chapman

For the Junior Group, last month was as usual, a busy one. The fine Indian Summer weather was ideal for their tasks and adventures. Among the tasks were - ushering at Audubon Wildlife films, trail work, nature house display work and general maintenance at Francis Park. Adventuring included trips to Blenkinsop Lake, Beaver Lake and Goldstream Park.

The younger section of the Group went to Blenkinsop or "Lost Lake" to explore the boggy area around the lake. This area was once similar to Rithet's Swamp, but is gradually being encroached on by cut-leaf blackberry and other weeds. Labrador tea and sphagnum moss have disappeared, but birch and lodgepole pine remain. It is an excellent example of plant succession.

On different occasions, both sections of the group went to Goldstream to see spawning salmon. Coho, returning from three years at sea, were most common. Once returning salmon enter fresh water their digestive system ceases to function, and even if they lived to return to salt water, they would starve to death.

Dippers, or water-ouzels, were also seen at Goldstream. These little dark grey birds are able to walk under water, even where the current is quite strong.

At Beaver Lake, the younger section of the Group investigated mushrooms and pond life.

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MEETINGS AND FIELD TRIPSEXECUTIVE MEETING:

December 1, 1964

Dr. Carl's Office,  
Provincial Museum - - - - 8:00 p.m.GENERAL MEETING:

December 9

Douglas Building Cafeteria  
Elliot Street - - - - - 8:00 p.m.

Speaker: C.P. Lyons.

Subject: "Nature's Plans and  
Puzzles"This is one of Mr. Lyons' Audubon  
films.(Note change to Wednesday from  
usual Tuesday Meeting.)ANNUAL BIRD COUNT:

December 27

Same places as last year. For  
further information contact:  
David Stirling 385-4223, or  
Murray Matheson 383-7381.JUNIORS:Meet each Saturday at the Monterey parking  
lot, Hillside & Douglas at 1:30 p.m. for  
field trips.

Leader: Mr. Freeman King.

Anyone who would like to join these trips  
is welcome. Mr. King may be contacted at  
479-2966.

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