VICTORIA NATURAL HISTORY SOCIETY

The VICTORIA NATURALIST

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46

THREE RACCOONS

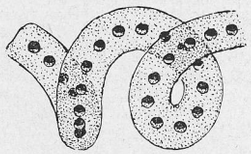
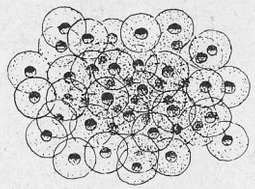


Fig. 1



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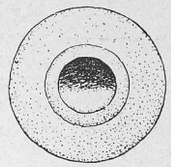

Fig. 3

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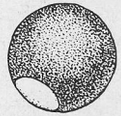

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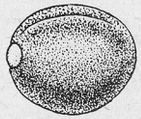

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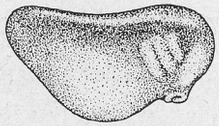

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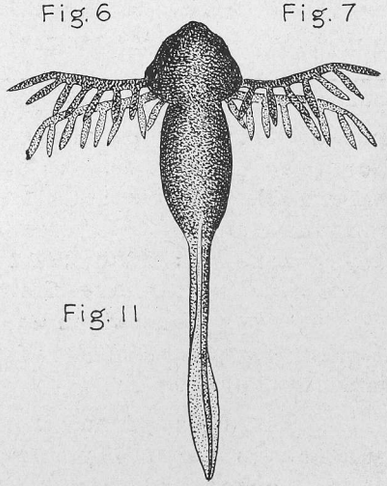

Fig. 11

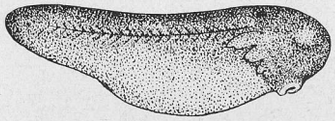

Fig. 10

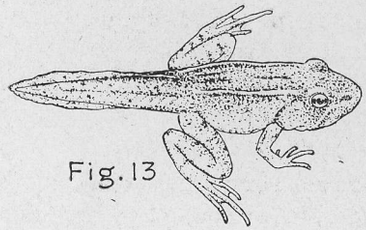

Fig. 13

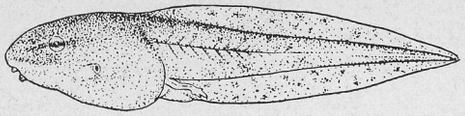

Fig. 12

DEVELOPMENT OF FROG

THE VICTORIA NATURALIST

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The Victoria Natural History Society

The regular monthly meeting of the Society was held in the Victoria College laboratory on April 9th, with Dr. Carl taking the chair. The speaker was Dr. J.S. Stevenson who spoke on "Volcanoes and Volcanism." A brief summary of his talk follows:

"An understanding of volcanism depends upon knowledge of the basic facts of the form of the earth. The continental masses consist of rocks of moderate density, resting upon the denser fundamental rock known as magma. All volcanic material originates in this magma, which is in a liquid or semi-liquid state beneath the earth's crust, as a result of heat and pressure. In the deeper solid rocks of the crust there are so-called magma chambers, at depths in the order of ten miles. The hard rocks of the crust are constantly undergoing readjustment of position due to shifting pressures, and cracks and fissures result. In most cases, the development of these fissures are manifested as earthquakes, but when one of them penetrates to a magma chamber, a flow of the molten contents of the chamber results.

The flow of magma, which on reaching the surface is generally known as lava, may be relatively quiet and unspectacular, and spread over a long period of time, resulting in the formation of extensive lava sheets or fields, such as those of India and Idaho. As a result of successive flows such fields reach depths as great as 9000 feet.

Central eruptions of explosive force are more spectacular. They start with the emission of a variety of gases, followed by small particles of rock and ash which form cinder cones. Successive flows of ash and lava result in the formation of

composite cones, in which the two materials are found in alternate layers.

Volcanic "Spines" are formed when plugs of cooled lava in the shafts of volcanoes are pushed upwards by the explosive forces of later eruptions, and rise to considerable heights above the normal cone summits. Such spires are not very durable and are soon eroded.

Parasitic cones are sometimes built up by the eruption of offshoots from the main shaft of a volcano. Such a cone developed quite early in the history of the new Mexican volcano, Paracutin. "Shield" and "dome" cones are forms which result from variations in the viscosity of the lava flow. The elevation which forms the Hawaiian Islands is actually a broad shield cone formed by three volcanoes.

The apical cavities of volcanoes are of two types. Craters have the form of inverted cones and are never wider than half a mile. Their slope is the natural slope of the loose cinder material. The much wider cavities called calderas are of debatable origin. The most widely accepted theory is that they result from the subsidence of the entire mountain, due to the collapse of the magma chamber underneath.

Volcanoes are found along well defined belts of crustal weakness.

Among the great eruptions of modern times are those of Krakatoa, in 1883, in which 18 cubic miles of material were dislodged, and a 100 foot tidal wave was generated, and Katmai, in 1905, which displaced 5 cubic miles and formed a caldera $2\frac{1}{2}$ miles in diameter and 3000 feet deep.

Paracutin (Mexico, 1943) has afforded scientists a unique opportunity of witnessing the very birth of a volcano.

RACCOONS: Frontispiece.

The raccoon is an attractive rascal with which few people have become familiar because of its nocturnal habits. The robust form, black mask across the face and banded tail, readily distinguish this animal from all others. The coon is noted also for its habit of washing its food before eating, even in the case of a frog which has just been captured in the water. Around settlements coons may become pests, robbing the hen house and the orchard under cover of darkness.

FROM FISH TO FROG:

About this time of year there occurs a process of development which never ceases to cause wonder in the minds of those who observe it. An animal is hatched in water, lives as a fish during a rapid period of growth, undergoes a major reorganization and emerges as a creature able to live on land, all within a period of a few short weeks.

The animal concerned, of course, is the frog, subject of many a myth, legend, and study in biology.

We are reminded each spring of the beginning of this phenomenon by the chorus of tree frogs which comes from every swamp and suitable pond on the outskirts of the city. Here the males gather as soon as cold weather is passed, the first singers appearing about the middle of February. The females, heavy with eggs, are drawn from the surrounding country to the pools occupied by the males, apparently being attracted by the nocturnal serenade. The frogs pair off and the eggs are soon laid in their characteristic blob of jelly-like material. Those of our common tree frog, Hyla regilla, number 40 to 60 and are enclosed in an elongated jelly mass about the size of a small

nut attached to twigs or stems of grass. Those of the Red-legged frog and the imported Green and Bullfrog are more numerous and in loose masses floating at the surface (Fig.2). Eggs of our common toad are laid in elongated strings (Fig.1) usually in the shallow edges of lakes or swamps.

Each egg, no matter what species, is round, black on top, white below, and encased in an individual coat of jelly in which it freely rotates so that the dark surface is always uppermost where it can receive warmth from the sun's rays (Fig.3). Shortly after the egg is laid, a vertical groove appears which soon divides it into two cells which adhere together (Fig.4). This is quickly followed by a second vertical groove at right angles to the first, dividing the egg to form four cells (Fig.5). The third division takes place horizontally slightly above the middle forming eight cells (Fig.6). Further divisions rapidly follow, the cells of the dark upper portion multiplying more quickly than those of the lower portion so that they soon grow down over the yolk except for a white spot, the yolk plug (Fig.7).

The egg now begins to lengthen and a groove appears marking the start of the spinal cord (Fig.8). Soon the yolk plug becomes covered over and the tail and head regions become discernible. On either side of the neck external gills develop; between them are the gill clefts which open from the mouth cavity. Eyes, suckers under the head for clinging to plants, and a tail fin develop by the time the tadpole hatches (Fig.11), which may be about the eighth day, the length of the incubation period depending upon the temperature. At this time the mouth has not yet broken through, the tadpole or "pollywog" living for the time being on the yolk material stored within. Soon, however, the mouth and jaws are completed and a flap of skin grows back on each side of the head

to cover the gills which are replaced by internal gills as in fishes. Water for breathing now enters the mouth, flows passed the gills and leaves by a tube, the "spiracle" on the left side of the neck (Fig.12). At this stage the tadpole closely resembles a fish, lacking only the paired fins of the latter.

Rasping teeth on the horny jaws enable the tadpole to feed on a variety of substances mainly vegetation but also dead animal matter when it is available. Growth is rapid if plenty of food is present and soon hind limb buds appear which develop rapidly into strong limbs which sometimes help in swimming. At this stage the gills begin to shrink in size while lungs commence to develop and the tadpole is forced more often to the surface to gulp air. Finally the fore legs appear, the left limb appearing first by being thrust through the spiracle, the mouth widens, the tail is absorbed and the froglet leaves the water to take up life on land. In a matter of weeks an animal has gone through a process of development which must have taken eons of time in the evolution of terrestrial animals.

The development of the frog can readily be observed. Collect one or two bunches of eggs from the nearest pond and place them in pond water in a fruit jar or other glass container. Include a few bits of water plant or twigs for the tadpoles to cling to and place in a window taking care that the container does not receive too much sunlight. When the tadpoles become active feed them small bits of lettuce or other greens and an occasional scrap of meat. Some types of pea-flour sprinkled on the surface of the water make an excellent food. As the legs become developed means should be provided so that the transforming froglets can easily climb out of the water, otherwise they will drown.

When metamorphosis is completed the young frogs should be transferred to a vivarium or released in the garden, providing pools of water are there available.

G. C. Carl,
Provincial Museum.

STARFISH NOTES

Pisaster ochraceus (Brandt), the ochre or common starfish.

(Fig.18). Our most abundant species. The colour varies from yellow through orange and brown to purple. In size it may attain 15 inches or more.

Ceremaster japonicus (Sladen), the pentagonal starfish (Fig.16).

A deep water species. The colour in life is vermilion above and yellowish below. A diameter of about five inches is attained.

Mediaster aequalis (Stimpson) (Fig.17).

A close relative of Ceremaster but more star shaped. In life the colour is deep red above, scarlet, or orange or salmon below. Common in fairly deep water. Size up to six inches.

Dermasterias imbricata (Grube), the leather star (Fig.15).

So named because of the thick, soft membrane covering the spines. The colour is red orange or lead blue mottled with dull red. Found at low tide along rocky shores.

Hippasteria spinosa (Verrill), the spiny starfish (Fig.13).

Colour (when dried) orange above, yellow below. Originally discovered at Departure Bay near Nanaimo, Range Alaska to Southern California.

Pteraster tesselatus (Ives) (Fig.14)

Usually found in deep water.
Range Alaska to Puget Sound.

The accompanying plate has been lent by "Museum and Art notes," Vancouver city Museum.

See the January 1946 number of the "Victoria Naturalist" for an article on Starfish.

The raccoon of Vancouver Island has been described as a separate subspecies under the name Procyon lotor vancouverensis to distinguish it from pacifica found on the adjacent mainland.
The illustration appearing on the front cover is used by kind permission of Canadian Nature.

Bird note:

On Sunday April 14th five members of the "bird group" left Victoria at 10 a.m. and went to John Dean Park and to the neighbourhood of Sidney.

In all 39 species of birds were seen. All but a large hawk were definitely indentified. Worth special mention are Savannah sparrows; a crossbill; three green winged teal (1 male and 2 females); a ruddy duck and at least four Wilson's snipe.

Two song sparrows were singing simultaneously close to each other but the songs were different.

FIELD WORK FOR BEGINNERS:

The observations of a field naturalist may be of considerable value if records are kept. These should not be confined to rarities, but should deal with Nature as we see her every day. Some suggestions on recording observations out of doors may perhaps be helpful to our junior members and to other beginners.

The field naturalist is mainly concerned with what he sees. His observations should be accurately, briefly and immediately put on record. The purposes of such a record are: 1. For future identification; 2. For future reference; 3. To serve as a contribution to your Society's work.

The beginner's first outing is usually disappointing, because he does not know how to set about it. It is best to go alone or with a congenial friend. A larger party should separate into ones or twos.

The field Naturalist must above all things, cultivate quietness: quietness of mind that makes him alert and receptive; quietness of movement that gives time to notice details and does not disturb wild life. Bright colours in clothing should be avoided, and glittering objects such as a camera lens, should be covered.

The most satisfactory way of keeping records is by means of notebook and pencil. The book should be pocket size and small enough to lie flat on the palm of the hand when in use. A large expanse of white paper is liable to scare wild creatures. A pencil with a rubber on one end and a knife to sharpen it, complete the outfit.

Diagrams with explanatory notes make the quickest, clearest and fullest records. Those of stationary plant life can be done at leisure, but when the object is a bird or animal the diagram and notes are more difficult.

Let us imagine that you have just seen in the distance a bird which you cannot identify

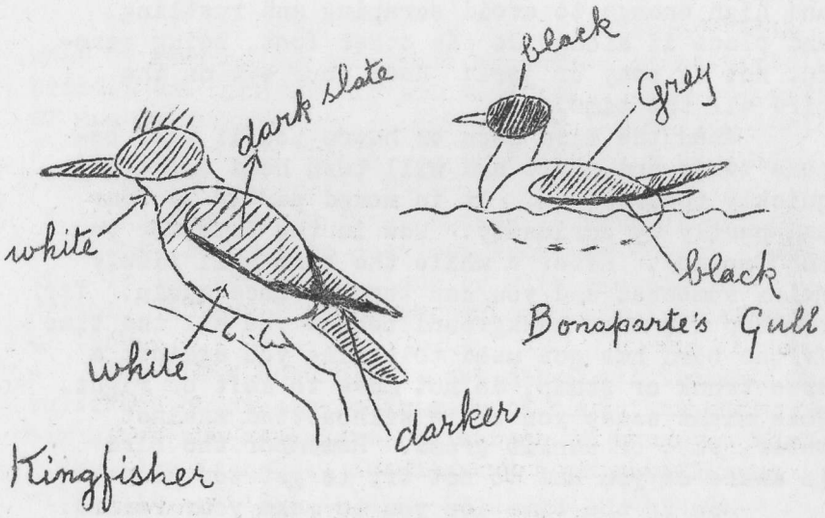
at sight. It is useless to trust to memory unless the bird has very marked characteristics. Until the bird is aware of your presence you can walk quietly towards it. Move by placing your advancing foot down gently, feeling for a sound footing without stones to roll or twigs to snap. Do not throw your weight on this foot until you are sure of doing this noiselessly. Then lift the rear foot slowly and high enough to avoid scraping and rustling and place it alongside the other foot, being careful not to sway or jerk. Keep your eye on the bird all the time.

When the bird sees or hears you it will become tense and alert and will turn head and eyes quickly towards you. It is moved partly by fear and partly by curiosity. Now is the time for you to "freeze". After a while the bird will likely relax somewhat and you can then advance again. Try to keep the same background behind you all the time. If the bird has got used to seeing you against a tree trunk or stump, do not move to left or right. This might cause you to be silhouetted against water, sky, or sunlit grass. Remember the bird is aware of you and do not try to get too close.

Now is the time for you to make your record. Standing perfectly still, slip your notebook out of your left pocket and hold it flat in your hand, at the same time taking your pencil out of your other pocket with your right hand. Your pockets should contain nothing else to entangle with these things. Avoiding jerky movements make a small simple diagram of the bird. Do not try to draw a fancy picture. First draw an eggshape for the body and a smaller egg shape for the head, then join head to body by two lines for the neck. The egg shapes may be long and narrow, short and stumpy, upright, horizontal or at an angle; and near or far apart according to the length of neck. Draw one firm line along the body for the shoulder and edge or wing; then add anything that projects

beyond the egg outlines, viz: wing-tips, tail, legs, beak, crest. Now add dark shading to suggest darkest colours, light shading for medium colours and leave white paper for pale colours. Make brief written notes on the colours e.g. black, sooty, reddish, buff, etc.

You will now have something like this:



Extra notes can be added on the locality, date, time of day, type of surrounding vegetation, weather, feeding or other activities, song etc.

Identification from such notes should not be difficult.

B. Woodward.

JUNIOR MEMBERS' DISPLAY CASE AND AQUARIUM

At our meeting on April 6th we found it necessary to have two chairmen to handle the duties of looking after the display case and the aquarium in the museum entrance.

Ronald Forbes was elected chairman of the display case and Elaine Galliford chairman of the aquarium.

Ronald has arranged a display of mammals which is very neatly arranged. He has, in the case; marten, mink, muskrat, whitefooted mouse, meadow mouse, bat, weasel and red squirrel.

Appearing shortly on display will be several articles and diagrams on the subject, "What is an insect?"

Elaine Galliford has secured a tank which has at present frog eggs and water plants, as this line is limited to only water creatures it is difficult to secure specimens. Any contributions on this subject that any members have would be greatly appreciated.

We greatly appreciated having Mrs. Woodward come down to our meeting to give us a very interesting talk on field work. She explained some of the best ways of approaching birds and animals surprisingly close without frightening them, in order to make notes.

Alan Beach,
Junior Editor.

MONTHLY MEETING

Tuesday 14th May — Reading Room, Provincial Library
Speaker: Rev. Archdeacon Connell
Subject: Seaweeds.

GROUP MEETINGS (Outdoors)

Saturday 11th May — Ornithology — Mr.J.O.Clay
at Mr. Hardy's, Braefoot.
Take V.I.C.L. bus at 1:45 to Blenkinsop Rd.

Saturday 18th May — Botany — Mr.J.F.Palmer
at Mt.Douglas, take V.I.C.L. Cordova Bay bus at 1:30 Return 4:30

Saturday 1st June — Botany — Mr.W.H.Warren
at Beacon Hill Park Bridge, 2:30 p.m.

Saturday 8th June — Ornithology — Mr. J.O. Clay
at home of Mr.& Mrs.K.E.Christianson, 3945 Saanich Rd. Take Lake Hill bus to Lodge Ave. Turn right at bottom of Lodge Ave. on Saanich Rd.

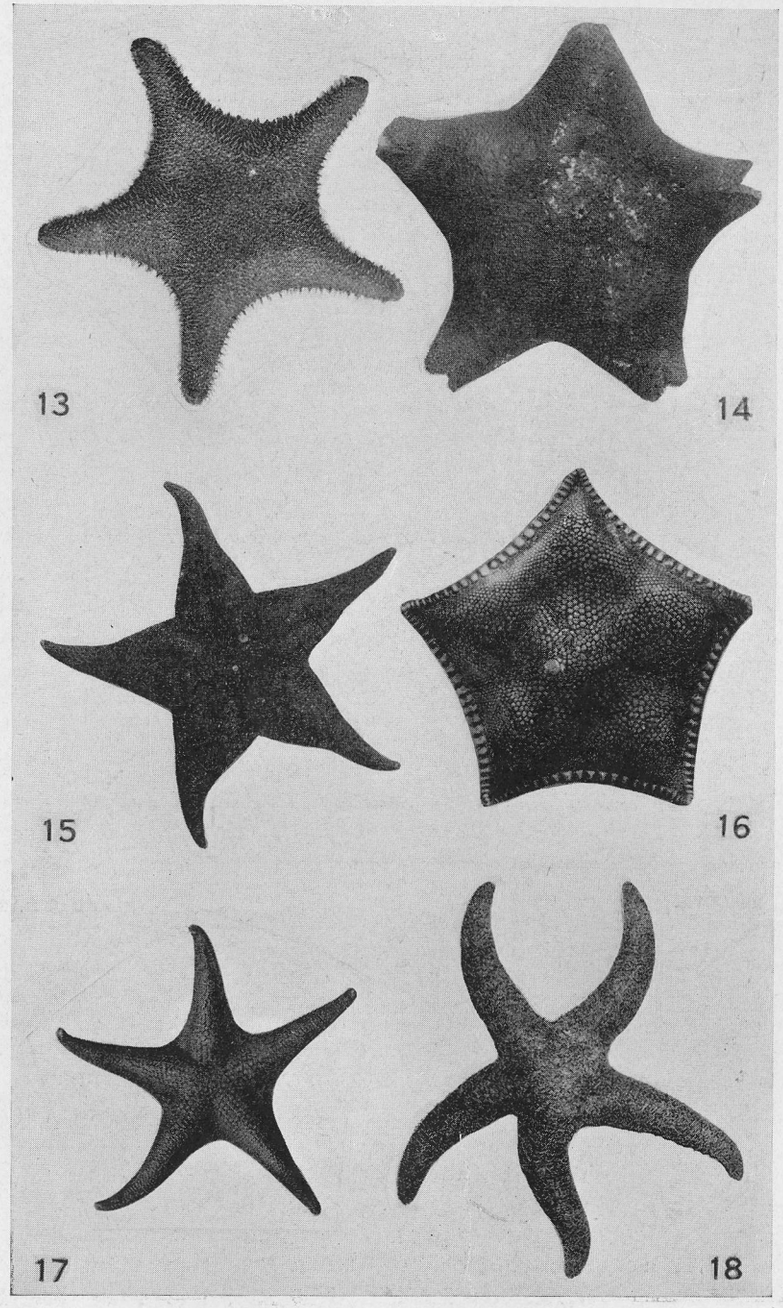
Saturday 15th June — Marine Biology - Zoology — Dr. G.C. Carl
at foot of Penzance Rd. (Chinese cem.)
Meet at Crescent Rd. terminus of Gonzales bus at 1:30.

Saturday 22nd June — Botany — Mr. J.F. Palmer
at Florence Lake. Take Veteran's Stage from Yates St.at 1:00 p.m.
Return 5 p.m.

Saturday 29th June — Entomology — Mr. Wm. Downes
at Goldstream. Meet at Old Goldstream Hotel, at 2 p.m. Members planning to take part are asked to communicate with Mr. Downes during the preceding week.

Special Note: The May 4th field meeting of the geology group will be taken by Mr. A.H. Marrion and members are to assemble at the Beacon Hill car terminus at 2 p.m. The objective is fossils in glacial wash.

MIMEOGRAPHED BY MONKS' MULTIGRAPH LETTER SERVICE



STARFISH

To Mr. J. O. Clay
169 Beach Drive
Victoria

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NOTICE OF NEXT MEETING

The next meeting of the Society will be held in
PROVINCIAL LIBRARY, PARLIAMENT BUILDINGS
at 8 p.m. on Tuesday, the 14th May, 1946.

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