Toronto Field Naturalists' Club

DECEMBER MEETING

Monday, December 5, 1960, at 8.15 p.m.
at the
ROYAL ONTARIO MUSEUM

Speaker: DR. W. W. H. GUNN, Field Secretary, Federation of Ontario Naturalists

Subject: MANITOBA MEDLEY - a "tape tour" of Manitoba, illustrated by sound recordings from the prairies to the tundra.

Also - see and hear Dr. Gunn's superlative recordings of bird songs
- recommended books for you and for your gift list
- a display of winter bird feeders and other ornithological supplies

DECEMBER OUTING — Saturday, Dec. 10, at 9.30 a.m. - Highland Creek
Take Highway 401 to Lawson's Road, at eastern end of bridge over Highland Creek. Turn sharp right and go into the valley to the car park. Or catch 8.30 a.m. Gray Coach bus (local) for Oshawa. Get off at Lawson's Road. We will meet the bus and provide transportation to the Park. Rubber boots are a "must" on this trip. Leader - Miss Ruth Marshall.

FEES — A large number of members still have not paid their fees. Could you be one of them? If so, we are sorry to say that this is the last Newsletter you will receive. Fees are still only $2.00, payable to the secretary by mail, or at the December meeting.

IMPORTANT NOTICE — Please see page 10 of this Newsletter for an important notice regarding the proposed change in fees.

JUNIOR CLUB — The Junior Field Naturalists' Club will meet on Saturday, Dec. 3, at 10 a.m. in the Museum theatre - There are still a few openings for children 8-10 years - Twelve eager young entomologists are without a leader this year. If you know someone who might be able to lead the Insect Group, please contact the director, Mr. Bob MacLellan - HU 8-9346.

BOTANY GROUP — There will be no meeting of the Botany Group in December.
Secretary, Miss F. Preston - HU 3-9530

ROVING THREE CONTINENTS — We are proud to present Mr. Bristol Foster as our Audubon Screen Tours lecturer on Dec. 28-29. This brilliant young biologist was cradled in our own Junior Club and later became a member of the T.F.N. and of the Toronto Field Biologists' Club. His film was made on a 55,000-mile Land Rover trip through Africa, Asia and Australia. We suggest you make up a party and include this outstanding treat in your holiday plans. Good seats are available from Eaton Auditorium box office for only $1.25.

CHRISTMAS CARDS — Attractive "Red Fox" design Christmas cards will be on sale at the December meeting, at $1.50 per dozen. The supply of these is limited and the "Tree Sparrow" design is completely sold out.

REPTILE CONSERVATION GROUP — Plans are underway for the formation of a provincial group to sponsor understanding and protection of this exceedingly important but much-persecuted class of animal life. All who are interested are asked to call Mr. Alex Findlay - CH 1-4002.

President - Mr. Fred Bodsworth

Secretary - Mrs. H. Robson,
49 Craighurst Ave. HU 1-0260

Number 175 November 1960

Whether with favor or with dislike Jean-Jacques Rousseau is well-known as one of the most influential writers and thinkers of the eighteenth century. The Social Contract has been a focus of political and social argument for generations. Few students of the social sciences escape contact with it. His Emile and his Nouvelle Heloise have been equally fruitful in the field of education. Indeed, much of what is called "modern" or "progressive" education stems directly from these works. Literati and artists owe a vast amount to Rousseau's Confessions. How many are there, on the other hand, who know that this same thinker was an active and widely-known amateur botanist?

Nonetheless, Jean-Jacques won noteworthy distinction in this field, too, as his correspondence on the subject indicates. He was, in fact, one of the first to study flowers and plants for their own sake without any desire to swell the pages of medical botany or to build up a gardener's knowledge of herbs, the two usual reasons for plant study at the time. His attitude was related to the rising scientific curiosity of the age, perhaps, but essentially it had a tone all its own. For Rousseau what counted most was the beauty and charm of plants. To him, entry into this peaceful, ordered, lovely realm of nature was a solace and a recreation in a terribly troubled life, one which he clung to till the end, as his last and in many ways his most attractive book, Les Reveries d'un Promeneur Solitaire, reveals. Jean-Jacques was really a field-naturalist, one of the first to adopt an attitude to plants that that now we know so well, thereby becoming in this field, as in so many others, a real pioneer.

How much this is so is revealed in his letters on botany, written to his cousin, a Mme. Delessert, to help her in initiating her daughter into the study of plants and flowers. When one considers that these letters were written nearly two hundred years ago, at a time when botany was only just becoming organised as a science, in the generation of Linnaeus, who put botanical classification on a sound foundation for the first time, and when advising someone to teach their child to look at wild nature was regarded as quite abnormal, you will see that the contents of the letters are novel indeed. What seems commonplace now was revolutionary then.

I have chosen to translate the first of Rousseau's letters on botany in order to give the readers of the Newsletter some idea of what an amateur lesson in botany was like two centuries ago. How much better could we or do we do than Jean-Jacques in 1771, right at the beginning? Those of you who are especially interested in education will note that in this amateur lesson Rousseau's basic emphasis upon direct experience and learning by yourself through such experience as opposed to rote teaching comes out. In that sense as in the interest in plants the letter, though almost two hundred years old, is really very modern.

Here then is the letter.

August 22, 1771.

"Your idea of beguiling a little of your daughter's vivacity by drawing her attention to such agreeable and varied objects as plants seems to me an excellent one though I would not have dared suggest it to you myself for fear of playing the busybody. Since it comes from you I approve and concur in it wholeheartedly, persuaded as I am that at any age the study of nature takes the edge off any taste for frivolous amusement, stems the tumult of the passions, and provides the mind with profitable nourishment in filling it with the worthiest object for its meditations.

"You have commenced by teaching the little girl the names of as many plants as you had commonly under observation. This was precisely what ought to have been done. This small number of plants that she knows by sight will be the means of comparison to extend her knowledge, but they will not suffice. You ask me for a short list of the best known plants with their identifying marks. This causes me some embarrassment as it means describing these marks or characteristics to you in writing that is at once clear and yet not too wordy. This appears to me impossible without using the language of the subject, and the terms of that language form a vocabulary all their own that you will not understand unless some previous explanation is given.

"Moreover, only to know the plants by sight and to be able to give them names can only be a very insipid study for minds such as yours. It is to be presumed that your daughter would not long be amused by that. I suggest that you acquire some elementary notions of plant structure and organization so that, should you take but a few steps into the most beautiful and richest of the three kingdoms of nature, you will do so at least with some enlightenment. It is not then a question of nomenclature, which is only a herbalist's knowledge. I have always thought that one could be a very great botanist without knowing a single plant by name; and without desiring to make your daughter into a great botanist I believe nonetheless that it will be always useful to teach her to see what she looks at well. Don't be scared at the undertaking. You will see soon enough that it is not too great. There is nothing complicated nor difficult in carrying out what I am suggesting. It is only a matter of having the patience to begin at the beginning. After that you go only as far as you like.

"We are into the latter season now and the plants of simpler structure have already passed. Moreover, I would ask for a little time to put some order into your observations. But while waiting for spring to allow us to begin and to follow the course of nature I am going to give you a few words of the vocabulary to retain.

"A perfect plant is composed of root, stem, branches, leaves, flowers and fruits (for in botany the whole means of producing seed, whether in herbs or in trees, is called fruit). You know all that already, at least sufficiently to understand the word. But there is one principal part which requires closer examination, it is the fructification, i.e., the flower and the fruit. Let us start with the flower since it comes first. In this part it is that nature has enclosed the epitome of its work; by this the plant perpetuates itself, and of all the plant parts it is ordinarily the most striking and always the least subject to variation.

"Take a lily. I believe you will still easily find some in bloom. Before it opens you see an oblong, greenish bud at the top of the stem which whitens as it gets ready to open. When it is well open you see its white envelope take the form of a vase divided into several segments. This enveloping, colored part, which is white in the lily, is called the corolla, and not the flower as it is commonly known, because the flower is really composed of several parts of which the corolla is simply the principal.

"The corolla of the lily is not of one piece, as is easily seen. When it fades and falls it falls in six quite separate pieces which are called petals. Each flower corolla that is made thus of several pieces is known as a polypetalous corolla. If the corolla were only of one piece as, for example, in the bindweed, called field bellflower, it is described as monopetalous. Let us get back to our lily.

"In the corolla, precisely in the middle, you will find a sort of little column attached at the base and pointing straight upwards. This column, taken in its entirety, is called the pistil; taken in sections it may be divided into three: 1) the base swollen like a cylinder with three rounded angles, known as the ovary; 2) a filament posed on the ovary, called the style; 3) the style is crowned by a kind of capital with three indentations: this capital is the stigma. There then is what constitutes the pistil and its three sections.

"Between the pistil and the corolla you will find six other distinct bodies. These are the stamens. Each stamen is composed of two parts: i.e. a smaller one by which the stamen is attached to the base of the corolla, called the filament; a larger one at the upper end of the filament known as the anther. Each anther is a box that opens when it is ripe and lets out a strong-smelling yellow dust of which we will speak later on. This dust has no French name as yet but is called pollen by the botanists, a word signifying dust.

"This is a rough analysis of the parts of the flower. When the corolla fades and falls the ovary enlarges and becomes an elongated, triangular capsule, the interior of which contains flat seeds arranged in three compartments. This capsule, considered as the covering of the seeds, is named the pericarp. However, I will not attempt an analysis of the fruit here. This will be the subject of another letter.

"The parts that I have just named for you are to be found in the flowers of nearly all other plants but in varying degrees of size, situation and number. It is by analogy of these parts and by their combinations that the various families of the vegetable kingdom are distinguished; also, analogies of flower

parts are allied to other analogies of parts of the plants which seem to have no relation to these. For example, this number of six stamens, (sometimes only three), of six petals or corolla divisions, and the triangular, tri-compartmented ovary distinguishes the entire lily family. And in this whole family, which is very numerous, the roots are all "onions" or bulbs, more or less marked, and varying in figure and composition. The lily bulb is made up of overlapping scales; in the asphodel there is a bundle of elongated tubers, the crocus has two bulbs, one on top of the other, while the colchicum has one beside the other -- but always it is a matter of bulbs.

"The lily, which I have chosen because it is in season and also because the size of the flower and of its parts make them more evident, lacks one of the constituent parts of a perfect flower; namely the calyx. The calyx is that green part, commonly divided into five folioles, which supports and embraces the corolla from beneath, and which covers it entirely before blooming, as you will have remarked in the rose. The calyx, which accompanies nearly all other flowers, is lacking in the majority of the lilies such as the tulip, hyacinth, narcissus, tuberose, etc., and even in the onion, leek, and garlic which are also true lilies although appearing very different at first glance. You will see also that, in all this same family, the stems are simple and rarely branching, the leaves entire and never cut; analogies that confirm in this family the analogy of flower and fruit with that of other parts of the plant. If you follow these details with some attention and familiarize yourself with them by frequent observations you will already be able to determine by careful and consistent inspection of a plant whether or not it is a member of the lily family, and this, without knowing the name of the plant. You see that this is not simply a matter of memory but rather a study of observations and facts, one truly worthy of a naturalist. You will not begin by saying all this to your daughter, even less so when later you are initiated into the mysteries of vegetation; but you will develop by degrees what is suitable to her age and sex in directing her how to find out things for herself rather than teaching them to her. Good day, dear cousin; if all this rubbish suits you I am at your orders."

The "rubbish" did, in truth, prove so attractive to his cousin that Rousseau wrote a series of letters in which he outlined the main characteristics of the chief plant families, and gave many valuable and imaginative indications for their study.

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That botany retains its place as one of the most important sides of nature study is indicated by the amount of space devoted to it in current naturalist journals. From time to time we have seen fit to draw upon such resources when it appeared that our readers would find something of interest in these selections. We do so again in this number, presenting for your pleasure and information four of the botanical articles that have been published in the Nature Bulletin of the Forest Preserve District of Cook County, Illinois, during the past year (Nos. 586, 594, 599, 603). We are grateful to the officers of the Forest Preserve District for permission to reprint in the Newsletter, who is granting permission show the sort of friendly co-operation that we appreciate in the fraternity of field naturalists.

Teasel

One of the most remarkable and picturesque plants found in Cook County is the teasel. More prickly than a thistle and as completely armored as any cactus, it is far the most formidable. You cannot take hold of a teasel, anywhere, without being painfully stabbed. Even the leaves have fine hairs that penetrate your skin as deeply as slivers of glass.

Teasel is a biennial. Now, in winter, tall dead stalks of it stand erect and branched like a candelabra. They grew and bloomed last summer from plants that were in their second year. On the ground among them are green rosettes of large crinkled leaves. Those, and long taproots, were developed by teasel plants during their first year. Like similar rosettes of mullein and bull thistle, they stay green all winter and each will send up a flower stalk next spring.

An old stalk, from 3 to 6 feet tall, is tough, woody, and hollow, with several ridges along its entire length. Each ridge is armed with short spines that are wide at the base and very sharp. At intervals that increase to 10 inches or more near the top, are opposite pairs of branches -- each pair projecting upward in a plane at right angles to that of the next pairs above and below it. At the tip of the main stem and of each branch is a cylindrical cone bristling with brown spines densely packed in diagonal rows. Curving outward from its base are several needlepointed spiny prongs. Those cones were flower heads in summer.

Each pair of branches grew from the axils of a pair of leaves. The leaves are long and pointed, with jagged margins. The upper surface is dotted with prickles and on the underside, there are hooked spines along the midrib. Cattle learn to avoid them but, anyway, the juice is very bitter. The bases of each pair of leaves surround the stalk and form a cup. Country people used to believe that the rainfall collected in those cups was a sure cure for warts.

The teasel has its own peculiar way of blooming in midsummer. A goldenrod, for example, blooms first at the top of its flowering branches and then downward. On a mullein the clublike flower head begins blooming at the bottom and thence upward. But a teasel begins with a band of blue, lavender or purple flowers around the middle of each flower head and blooms both ways. The construction of the little flowers is as interesting as the rest of the plant. They are pollenized by bumblebees and honeybees. Honey made from their nectar has a very fine flavor.

The common teasel, native in Europe, was grown in Germany, France and England for use in carding wool, raising a nap on woolen cloth, and making blankets fluffy. The dry bristly flower heads are drawn across the material by hand; or the heads, split in half, are mounted on belts or rollers that move across the cloth. Metal wires might tear it.

Introduced into the U.S., teasel was an important crop in central New York for 100 years and, later, in Oregon. It escaped and has become established as a weed from Maine to North Carolina and westward to Missouri and a few far western states. Fuller's Teasel, another species, has been cultivated for 2000 years in southern Europe and is grown in a few of our eastern states. One difference is that the spines or bracts on its flower heads have tiny hooks at the ends.

Patches of the common teasel occur in several places in Cook and neighboring counties. Several of them resulted from refuse dumped there by greenhouses that had teasel stalks and flower heads for sale. They are used as bizarre ornaments in winter bouquets and flower arrangements. In New England they are used by rural housewives to sprinkle clothes for ironing.

A teasel teases wool but you'll regret it if you tease a teasel.

Bark

A tree has three main parts: the roots, the trunk with its branches, and the leaves. The trunk has a dense core of heartwood that gives it strength. Surrounding that is a layer of sapwood. On the outside is a layer of bark. The bark protects the wood against attack by fungi and, most important, it protects the cambium: a microscopically thin layer of wonder-working cells between the sapwood and the bark. If a tree if "girdled" -- its wood exposed by removing a band of bark around the trunk -- the cambium dries and the tree dies.

The cambium enables a tree to live and grow. Each year it builds another layer of sapwood and also a layer of bark. The sapwood conducts water and dissolved nutrients, taken from the soil by the roots, up thru the trunk and branches to the leaves. Food manufactured by the leaves is carried down to the trunk and roots thru the spongy sieve-like inner bark. As new layers of wood and bark are added, the older growths of bark are pushed outward. They become dry and hard. Eventually they become loose and drop off.

In each species the bark on the older trees has a distinctive appearance. Even during winter, many of our hardwoods can be identified by the color of the bark and whether it is smooth, ridged, deeply furrowed, scaly, or shaggy. The beech, the paper or canoe birch, both hornbeams, the sycamore, hackberry, white oak, bur oak, black cherry, and shagbark hickory are familiar examples. On some kinds the bark is rather thin; on others, such as a bur oak, it may be 2 inches thick; on a gigantic sequoia the deeply wrinkled bark, spongy and fire resistant, frequently has a total thickness of 2 feet.

Our American Indians had some use for one or more parts of almost every plant, including the bark of trees and shrubs. Sheets of bark peeled from the paper birch were used to cover Ojibwe wigwams and canoes. It was used to make all sorts of baskets, buckets, trays and vessels for gathering, cooking and storing foods. The Potawatomi commonly used elm bark to make utensils and cover their wigwams. Both tribes used fibers from the inner bark or bast of the linden (basswood) for cordage and weaving. For various medicines they used bark from hemlock, tamarack, pine, spruce, black and choke cherries, poplars, willows, slippery elm, speckled alder and buckthorn. They made dyes from the bark of sumac, speckled alder, birch, oaks, hemlock, willows, and wild plum.

Marco Polo told how, in the 13th century, the Mongols made paper money out of the inner bark of the paper mulberry, now used in Japan for making paper and in the South Sea islands for tapa cloth. Cinnamon, the aromatic inner bark of evergreen trees native in Ceylon and India, has been prized for centuries as a spice since colonial times, the astringent barks of chestnut, oaks and hemlock, now largely supplanted by quebracho bark from Argentine and Paraguay. The bark of cinchona trees, native in Peru, furnishes quinine.

Cork, an extremely light, buoyant substance which has many important uses, is obtained in Portugal from the outer bark of the Mediterranian cork oak. During World War II, the bark of Douglas fir was found to be valuable for many purposes and is no longer wasted. The thick shaggy bark of our California redwoods is now utilized as material for insulation, floor cleaners, and as a substitute for wool in fabrics.

The bark of a tree has been transposed into clinks of the almighty dollar.

Modern Uses of Drug Plants

Some of us older people who were children on farms or in small towns remember when, each spring, we had to drink gallons of fragrant sassafras tea. Made by simmering bark from roots of that tree, it was considered a tonic "to thin and purify the blood". There were other teas and tonics -- some pleasant, some bitter as gall -- brewed from parts of various plants.

Our grandmothers had a long list of home remedies obtained from plants and used as cough medicines, as laxatives, or for stomach aches, fevers, rheumatism, asthma, boils, and other ailments. In pioneer days, doctors and apothecaries were as scarce as money. The early settlers, learning by experiment or from the Indians, gathered and prepared their own medicines -- mostly from native plants. From each plant they used a certain part for a desired cure: the leaves or the leaves and stems, the flowers, the fruits or seeds, the roots or the bark from roots, and the inner bark from trees and shrubs.

Some of those old remedies were beneficial and a few are still used. Many were worthless and some were even harmful. Some of those plants contain chemicals with medicinal values but not for the purpose intended. Hundreds of them came to be classified as drug plants and were sold in drug stores.

A drug is any helpful substance used in medicines or in making medicines. During the 19th century and this one, the science of drugs and the science of chemistry developed together. Scientists separated vegetable, animal and mineral materials into their component parts and identified, in each, the part that acts on the human body -- the "active principle". Then they studied the chemical structure or "formula" of the active principle. As a result, in many cases, they became able to "synthesize" a drug: make an exact copy by putting together the chemical elements or compounds needed.

In general, synthetic drugs are cheaper to make. Manufactured on a mass production basis, with less labor, they do not require plants from foreign lands or rare minerals. Atabrine, derived from coal tar as a substitute for quinine -- obtained from the bark of the cinchona tree and used to cure malaria -- is an example.

The United States Pharmacopoeia, first published in 1820, was designated by the Pure Food and Drugs Act of 1906 as the official list of drugs legally recognized in this country. An early issue of the U.S.P. listed over 600

items of plant and animal origin. The most recent issue only lists about 69. Drug Plants of Illinois, published by the Illinois Natural History Survey, describes almost 300 plants, growing wild or cultivated in this state, that were listed as official drugs or sources of drugs in early editions of the U.S.P. Only 24 of them are listed in the 1936 edition.

Today, the sale of antibiotic drugs -- such as penicillin and streptomycin obtained from fungi -- tranquilizing drugs, and drugs for relieving high blood pressure, far exceeds in quantity and value the sale of strictly botanical drug items.

Nevertheless, certain plant drugs are still extremely important. Digitalis, from the foxglove, is best for controlling the muscle action of the heart. Curare, from certain tropical plants, is used by surgeons to relax muscle during operations. Strychnine, a nerve stimulant, is obtained from an Asiatic tree. Morphine, from the opium poppy, is used to relieve intense and prolonged pain. Rauwolfia, from the root of a plant in India, has been found recently to have great value as a tranquilizing drug and for treatment of high blood pressure.

But grandma's "roots and yarbs" are out of date.

Pollen and Pollination

Almost everybody loves a flower. Commonly the word "flower" suggests showy colors, symmetrical designs, fantastic shapes, fragrance and nectar. However, these pleasing features are mainly lures to attract insects upon which plants depend to carry their pollen from one flower to another. This is pollenation, a function essential to the life line of the plant and the production of seeds and fruit which we use as food. Many other plants, such as grasses and our common trees, have wind-borne pollen. Even though their flowers are inconspicuous, colorless and odorless, they have pollen -- and that makes them flowers.

Pollen is the yellow stain on a youngster's nose after he sniffs a dandelion. It is the shower of golden dust from blooming ragweeds in late summer which causes most of our hay fever cases. From midsummer through the first heavy frost, air samples are taken and daily pollen counts are published. Pollen can be blown by west winds from Illinois across Lake Michigan or carried hundreds of miles out to sea. In general, wind-borne pollen is abundant, light and dry; while insect-borne pollen is sticky, heavy, and produced in small quantities.

A pollen grain is the male sex cell of a flowering plant. On the mature stigma of a flower of the same species it germinates and a pollen tube grows down through the style to unite with an ovule, or egg cell, which then develops into a seed. For example, a single strand of the thread-like silk of an ear of corn, sometimes over a foot long, is a greatly elongated style. A pollen tube pushes its way down this entire length in a matter of a few days to fertilize one kernel of corn. In contrast, some oaks require almost a year for their pollen tubes to grown one-eighth of an inch.

The great majority of the world's flowers are cross-pollenated. They can be divided up according to the way pollen is carried from one plant to another. We have bee flowers, moth flowers, fly flowers, beetle flowers and hummingbird flowers. In some of our water plants, such as eel grass, pollen is floated from one flower to another. In the tropics there are even bat flowers.

Bee flowers are usually blue or yellow -- colors which are brightest to a bee's eye. Some of them provide a special lip or landing field with guide lines leading to the nectar stores deep inside. As the bee sips the nectar, the body hairs pick up pollen and transfer it to the next flower visited. Butterflies are often attracted by red or orange flowers -- colors which bees cannot see. Moths, unlike bees and butterflies, hover over flowers at dusk and night, preferring those that run to shades of white and very heavy fragrance. Some hawk moths have tongues several inches long. Fly flowers are mostly dull-colored and have rank odors. Some smell like spoiled meat, fish oil or stale tobacco.

The pollen grains from various plants differ greatly in size, shape and surface markings. Some, like those of the pines, have air bladders which make them unusually light and buoyant. Grass pollen is smooth with a single pore, sunflower pollen is spiny, and pigweed pollen, when magnified, looks like the markings on a golf ball.

Pollen grains are protected by thin, glassy, plastic covers which are highly resistant to decay. Actually, these tiny, fragile-looking granules are more durable than any other part of a tree, as the wind blows them about and they settle in peat bogs or the beds of ancient lakes, a record is preserved of the kinds of plants that grew here in the past. By identifying and counting these pollen grains, we can read the changes which have taken place over vast periods of time.

Which came first, the bee or the flower?

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BE ON THE WATCH FOR --

Snowy oils, black-backed three-toed woodpeckers, red crossbills. Several reports of all three have come in already. The owls prefer open country, especially areas where mice and rats abound. They usually perch on poles, hayricks, building roofs and other high places though they are sometimes on the ground. The three-toed woodpeckers in this region are feeding especially on diseased elm trees. They also favor evergreens, particularly hemlocks. The crossbills prefer evergreens too, since they eat the seeds. The cone crop is very heavy this season.

Other winter birds: white-winged crossbills, northern shrikes, snow buntings, Lapland longspurs, are also beginning to appear.

An immature male European widgeon has been at Grenadier Pond, in the company of baldpates (American widgeon) for some time.

Increase in fees

At the November meeting a motion relating to increase of fees was presented and discussed. It was clear from the questions and comments that the membership were not completely sympathetic to the proposal to increase annual dues to $5.00, and before the motion was passed it was modified by an amendment requiring the Executive to review the basis of membership and variations of fees for different classes of membership.

The Executive has given considerable study to this matter, attempting to find the least painful means of obtaining the money needed for healthy operation of the Club. The need to increase fees is inescapable to balance the continuous increase of operating costs.

The amendment to the motion which was passed at the November meeting, required the Executive to submit a revised motion at the next meeting. Accordingly, notice is hereby given that the following motion in the form of an amendment to the Constitution, will be presented at the December meeting of the T.F.N.C.:

PROPOSED THAT: The Constitution be amended in Articles III and V as follows:

Sections 2, 3 & 4 of Article III, Membership, be deleted and the following substituted:

Section 2: Classes of membership shall be as follows:

a) Honorary membership may be awarded to persons who have rendered distinguished service to the Club, to the advancement of natural history or to the cause of wild-life preservation. Their election shall be according to the procedure stated in Article VII, section 2.
b) Life membership.
c) Ordinary membership.
d) Family membership, applying to a member's immediate family.
e) Corresponding membership, available to persons residing more than twenty miles from the Royal Ontario Museum.

and that

Sections 2, 3 & 4 of Article V, Fee, be deleted and the following substituted:

Section 2. The fee for Life Membership shall be $100.00.
Section 3. The fee for Ordinary Membership shall be $4.00 per annum.
Section 4. The fee for Family Membership shall be $6.00 per annum.
Section 5. The fee for Corresponding Membership shall be $2.00 per annum.

ALSO THAT, with respect to the proposed amendments:

a) Article V, Section 2, be effective immediately.
b) Article V, Sections 3, 4 & 5 be effective May 1, 1961.

R. M. Saunders, Editor