

# BLOMIDON NATURALISTS SOCIETY NEWSLETTER

Volume 4 No. 1

March, 1977

## ADDITIONAL OUTING

April 30 (Saturday) 9:30 am COLDBROOK FISH HATCHERY  
(In case of wet weather, the outing will take place the next Saturday, May 7) This outing will be a guide tour of the hatchery facilities and there will be many different sizes and types of fish to see. A good family outing. Meet at the Acadia University gym parking lot at 9:30 to pool transportation. Or meet at the hatchery at about 10:00 am.

## A Special Invitation to BNS Members!

Peter R. Hope  
Naturalist  
Kejimkujik Nat'l Park

Please consider this an invitation for any members of the Blomidon Field Naturalists to join in this outing. If you wish to promote this as an official outing for your group you may do so, otherwise just inform your members and let them decide.

When and Where: May 28 and 29, 1977 KEJIMKUJIK NATIONAL PARK  
A combined weekend long field trip of the Nova Scotia Bird Society and the Halifax Field Naturalists.

May 28, 1977

Meet at Park Information Centre at 9:00 a.m.

The day will be spent looking in depth at two important land communities; one a mature hemlock stand, the other an old growth hardwood area. In addition to looking for Great Crested Flycatchers and Scarlet Tanagers we will search out some of the more common birds which prefer either of these two distinct habitats. The major tree species, and understory vegetation will be discussed along with some of the typical mammals in an effort to fully portray the characteristic life forms of each habitat.

Evening, from 8:30 to 11:00 pm. (approximately)

Using tape recorders and sharp ears we will search out some of the night creatures--specifically the four species of owls and 6 species of frogs which should be calling.

May 29, 1977

Meet at Park Information Centre at 9:00 a.m.

This day will be spent on or near the water looking at some of

our wildlife which prefers these areas. (The length and difficulty of these outings can be arranged to fit several experience levels from raw beginners on up. Canoes can be rented in the park for \$1.75 per hour or \$ 8.75 per day.)

One habitat, Red Maple floodplain, will definitely be looked at. At this time there should be lots of birds around plus the new ferns will just be unfolding.

Outing could end with a picnic lunch about 3:00 or 4:00 p.m. Sunday allowing people to get home early.

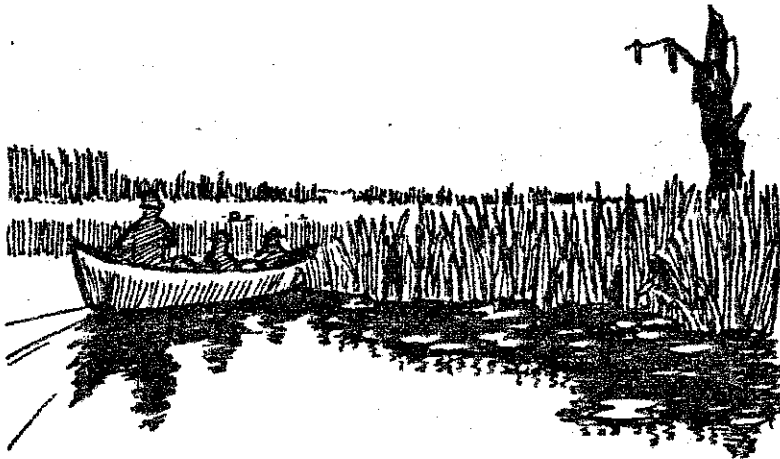
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This is a wonderful chance, BNS members, for a very professionally conducted series of field trips in one of Nova Scotia's most interesting ecological areas; also a great chance to meet members of our other two naturalists societies. Please give it THOT!

### SCHOOL BY THE LAKE

BY Larry Bogan

Some Naturalists may be interested in wilderness canoe tripping, back packing, food foraging, and/or survival. Instruction in these areas are provided by a new neighbor. School-by-the-Lake has been operating in Nova Scotia for many years now but this year will be located on islands in Black River Lake (or more precisely, Mantletree Lake). Weekend and full week adventures are provided by John McClelland and his staff starting in early May. (B.N.S. member and outing leader, Sherman Williams, will be the first weekend instructor during May 6-8 )

Anyone interested in School-by-the-Lake can obtain information by request from P.O. Box 59, Newport, Hants Co. Nova Scotia, B0N 2A0 or by calling 542-2032.



### Acknowledgements

For leading programmes this past quarter we should like to extend thanks to Dr. Daniel Toews, Dept. of Biology, Acadia University, for presenting the February evening meeting on his trip to the Amazon and tributaries and in March to Larry Bogan and John Timpa for their presentation on wood as an alternative energy source. Special thanks to all those who have made this particular Newsletter possible, whether it was articles or assistance in the production.

#### THE BLOMIDON NATURALISTS SOCIETY NEWSLETTER

is published quarterly by the Newsletter Committee of the Society

Co-editors: Jean timpa and Roy Bishop

Art and Production: Larry Bogan

"...the primary object of the Society shall be to encourage and develop in its members an understanding and appreciation of nature. For the purposes of the Society, the word 'nature' will be interpreted broadly and shall include the rocks, plants, animals, waters, air and stars."... from the BNS constitution.

BNS Newsletter Deadline - June 21, 1977

Please send contributions as soon as possible to: Dr. Roy Bishop, Avonport, N.S. or to Mrs. John W. Timpa, Box 1382, Wolfville, N.S. Before beginning field trips, will someone please take the responsibility of taking notes and writing them up so everyone who was not able to participate bodily will have some idea of what did happen? Please don't be afraid to be the trip historian; we'll all appreciate your efforts! Keep the other articles coming, too. Our "little" Newsletter is expanding rapidly and has quite a circulation. As of April 9th we have 96 members, 83 mailings and a distribution covering the United States, Quebec and most important parts of Nova Scotia except Cape Breton.

Letters to the Editors

This is the first issue we have had a column for 'Letters to the Editors,' and we certainly hope that it will continue from now on and not be our last attempt. We particularly welcome comments on the BNS Newsletter and programmes and field trips of the Society; we feel this column is particularly well-suited for short observations such as our first two participants have volunteered. We hope more shy violets will soon bloom! Send your contributions to Mrs. John W. Timpa, Box 1382, Wolfville, N.S., or to Roy Bishop, Avonport, N.S.

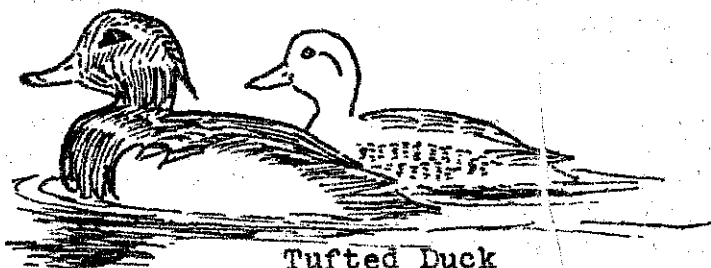
Wolfville, N.S.  
April 9th, 1977

To the Editors:

May I draw your attention to a small error in the Newsletter, Vol. 3, No. 2 in which it was mentioned that the property on Main Street now owned by Dr. Stuart had formerly been the home of the Rev. Dickenson, Minister of the Anglican Church. The name should read Dixon. His daughter was living in the house when we came to Wolfville in 1936, and she continued to live in the community till her death last year.

I should also like to cite a rather comic episode which suggests erratic bird behaviour, somewhat parallel to the one reported by Dr. Tufts in the most recent Newsletter.

In 1927 my husband and I used frequently to walk in Kensington Gardens (which lie next to Hyde Park), where there is a sizeable sheet of water known as the Round Pond. Here both children and adults sail model boats, but in spite of such interruptions, there were always a motley group of ducks waiting to be fed by passers-by. The three species that I remember were Mallard, Pochard (Red-head), and Tufted Duck, a very small duck of close relationship to the American Ring-necked Duck. The drake of this species is a handsome bird, with gay black and white plumage. One of these had settled his affections on a plump Mallard duck, very much larger than himself. He was usually in close attendance on her whenever we happened to pass by, but, if he were at the other side of the pond and any other drake of any species approached her, he came scuttering across the pond in most beligerent fashion. There was no doubt that he considered her his chosen mate. Tufted Duck



Tufted Duck

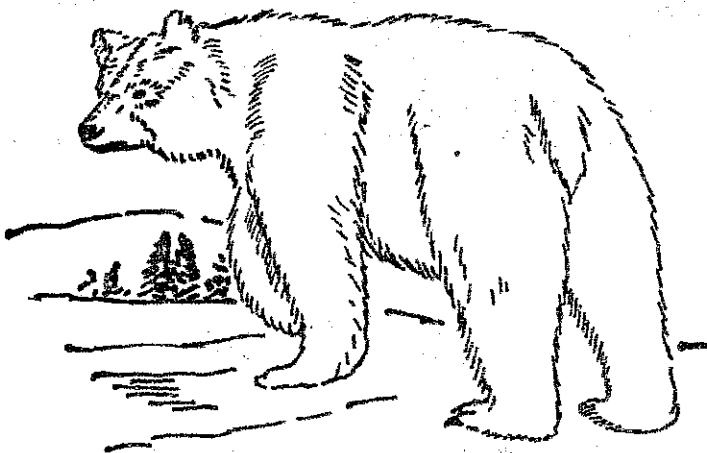
belong to the diving ducks, whereas Mallard are in the Anas genus, puddle-ducks. In this case we have no record of any actual interbreeding, but we derived much fun from watching this ill-assorted pair.

Sincerely,  
Rachel Erskine

To the Editors:-

Just as a matter of interest on February 22 I had an Evening Grosbeak (Male) at my feeder with a silver band on its right leg. I don't really know where I should report this. I have also had many female Red-winged Blackbirds, 1 male and a couple of juveniles. They come in with a flock of Cowbirds and 10-12 Grackles.

Mrs. W. A. Trueman  
formerly of Wolfville,  
now of Parrsboro.  
Feb. 24, 1977



Wildlife Park New Home for Bear Cubs

Halifax Chronicle  
Herald, March 8, 1977

SHUBENACADIE-The provincial wildlife park here took in two new residents Monday-twin six-week old bear cubs.

Weighing two and three pounds each, the cubs will have to be kept warm and fed a special diet until they are old enough to feed themselves.

Wildlife park superintendent Eldon Pace said last night a litter of cubs was also born at the park during the winter, but the number of cubs is not known. "The mother hasn't brought them out of the den yet."

The two wild cubs were captured by three Armadale men who first spotted the den six months ago while hunting rabbits.

Bruce Marriott, Fred Marriott, and Arthur Sullivan used a chain-saw to frighten the mother away. "When the mother heard the noise, she took off, we grabbed the cubs, then we took off," said Bruce Marriott.

Three lands and forests officials accompanied the men.

Mr. Pace said the men used a noisemaker "or the mother would likely have attacked them."

He said it is unlikely the mother will go looking for the cubs.

The cubs are "cute little fellows" and will likely attract quite a few visitors to the park this year.

The park opens May 15.

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After this news item appeared a number of us were upset over the precedents the incident could well create, and our president, Larry Bogan, wrote the following letter asking for clarification of the matter. We will publish any replies we may receive from the Honourable Minister as soon as possible.

March 23, 1977  
P.O. Box 753  
Wolfville, N.S.

The Honorable Vincent J. MacLean  
Minister of Lands and Forests  
Province House  
Halifax, N.S.

Dear Mr. MacLean,

On March 8, the Chronicle Herald reported a story concerning two new bear cubs added to the wildlife park in Shubenacadie.

The method by which the Park obtained these two very young residents is disturbing. From the story, the cubs, while still needing their mother, were kidnaped by scaring the mother away from the den. There appears to be no real need for the cubs since a litter of cubs had just been delivered by an already present mother bear at the Park.

The action taken by the persons involved, including Lands and Forests personnel, is not very admirable. Capturing of wildlife for containment is cruel enough but to take a dependent young animal from its mother is inhumane. This action is even more questionable when cubs and bears already exist in the Wildlife Park. I would hope that part of the role of Lands and Forests would be to protect wildlife in its own environment. The kidnapping incident also appears to condone the harassing of wildlife. I hope that it does not set a precedent; I feel that Lands and Forests should set a good example for maintaining our wildlife.

Many members of the Blomidon Naturalists Society share my concern over this incident. Recent letters to the editor of the Chronicle Herald show that other residents of Nova Scotia feel the same way ( e.g., see March 12 and 22 issues).

There is a possibility that my information is wrong or distorted; if it is I hope that you will correct me. As a naturalist, I enjoy seeing and respect all wildlife, and only wish the best for them as one should for all forms of life.

Respectfully yours,

*Larry Bogan*

Larry Bogan, President  
Blomidon Naturalists Society

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We also urge concerned individual BNS members to write the Honourable Vincent J. MacLean expressing your own views on this matter. Do you want to spend an increasing amount of time observing 'nature' in zoos, wildlife parks, and preserves, or do you still prefer the natural ecological settings? We're sure this isn't difficult to answer!!

Another Varied Thrush

Jean M. Timpa  
Wolfville, N.S.

Do you remember from our last BNS Newsletter the report of a Varied Thrush in Hants Co.? It usually winters in southern British Columbia to northern Baja, California, but it seems that the Hants Co. bird was not alone.

From "Notes from a Bird Haven" by Louise Daley of Digby, N.S., (Feb. 24, 1977 Digby Courier) we read:

"Talk about thrills a couple of weeks ago! A lady at North Range called telling me she had a strange bird feeding with three Robins and blue jays.

From her perfect description of the bird I thought it could be nothing else but a Varied Thrush, and sure enough that was what it was. A friend drove me out and we sat in a window within six feet of it and watched it feeding."

We understand since this column was written that Louise has been able to live-trap this unusual bird, and it now resides in her large cage in her kitchen which also has 3 or 4 Baltimore Orioles and other birds waiting for more temperate weather before they are returned to Mother Nature.

## On the History of Nova Scotia Plants

### Part III: Modern Times



DAPHNIE  
(ALIEN)

John S. Erskine  
Wolfville, N.S.

### The French Contribution

Fishermen and explorers of four European nations had been visiting the coasts for a century before the first French attempt at settlement, but as yet no plants suggest any introductions, intentional or accidental. The Portuguese established cattle on Sable Island and these must have brought some weeds with them, but these are now lost among the many introductions of settlers and innumerable wrecks.

The term 'French' needs to be divided into three overlapping groups, each of which seems to be responsible for different introductions, though these also filtered into those of the other groups. These groups were the seigneurs whose reports make up most of conventional history, and the peasants and fishermen who were brought to serve the seigneurs. They were all French and to all three groups food was of first importance, drink a close second, then medicinal plants, and then ornamental plants and trees. They must have brought with them unintentionally a great number of weeds, among careless seeds, in the forage for their livestock, and in the soil about the orchard introductions, but this process has been continued for centuries since, and today the French weeds are only guessed at then they are typical of Acadian areas.

Shade trees were Pedunculate Oak, Scotch Elm and Lombardy Poplar.

Basket Willows: French Willow, Osier and Purple Willow.

Hedge trees: Black and Common Buckthorn and European Hawthorn, though native hawthorn was used more than all these others.

Fruits were: Pear, Apple, Bullace Plum, Sour Cherry and perhaps Sweet Cherry and European White Strawberry.

Vegetables surviving: several Cresses, Sorrel, Horse-radish, Caraway, Chicory, Cat's ear and French Weed (Portulaca).

Drinkflavouring: Hops, Angelica, Marjoram, Wormwood.

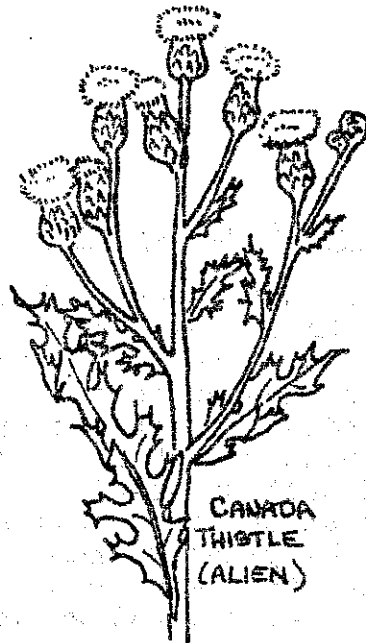
Medicinal Plants were almost any pungent plant: Celandine, Motherwort, Hyssop, Thyme, Woody Nightshade, Black Nightshade, Elecampane, Feverfew, Yarrow, Tansy, Mugwort and Tormentil.

Flowers: Yellow Flag, Bouncing Bet, Monkshood, Common Barberry, Daphne, Purple Loosestrife, Moneywort, Bird's-eye, Woodbine, Eglantine Rose, Queen of the Meadow, and perhaps Lady's Mantle.

Weeds: Two Nettles in fishing areas; Bulbous Buttercup, Field Bindweed, Slender Vetch, Bull Thistle and Canada Thistle and many grasses and clovers in the farms.

## The British Contribution (1710-1846)

This period has many overlapping phases. Until the expulsion of 1755 and 1758, the vast majority of the inhabitants were Acadians, chiefly farmers, fishermen and traders with New England and the West Indies. In the western part of the South Shore, New Englanders were establishing themselves among the Acadians, chiefly interested in fishing but also beginning small farms. In the description of Acadian farming, Diereville lamented the lack of artichokes and asparagus. In the same year (1700) Villebon gave a list of the vegetables cultivated by the Acadians, and asparagus and potatoes were absent. But asparagus is found about many cellars of Minas Acadians, and potato-forks have been dug up in Grand Pré and Clifton from Acadian fields, and in the 1758 expulsion on the South Shore, potatoes were the most important crop gathered by the soldiers. It seems probable that these two vegetables came either from Old or New England. The distribution of Sweet Cherry suggests the same source though with less assurance. The New England Planters who replaced the Acadians in the Annapolis Valley must have introduced many weeds, American and European, but it is impossible to distinguish them. They brought Butternut trees to provide the dye for homespun clothing, and a few Basswood trees. Abandoned cellars, probably of much later times, retain a number of ornamentals not found among the Acadians, two Campanulas, Veronica, Phlox and Yellow Loosestrifes, several roses, Cinnamon, and small whites among them. Many of the Acadian flowers continued to be delights of the farmhouses, and as both peoples had the same enthusiasm for herbal remedies, some may have been brought in by both.



The English colonists brought to the area now Halifax may have brought in occasional seeds, (sic) but these cannot be recognized in the abundance of European weeds that have been found on this harbour as on most harbours but may have been of any later period.

The German settlers arrived in two periods, the Lunenburg section being part of the Halifax beginning; the Digby section were disbanded Hessians of the American Revolutionary War. No plants are recognizable as belonging to either group.

The Scottish Highlanders also arrived in two periods but in reverse. The first settlement in Queen's County was of soldiers from the American War. The second was that of the unfortunate families which had been driven away by landowners who wished to make room for sheep, and these unhappy settlers were distributed along the Northumberland Strait, Prince Edward Island and Cape Breton. They had pathetically little to bring, but they brought at least Ragwort, (*Senecio Jacobaea*), a brilliant golden weed along roadsides. It still goes by its Highland name of 'Stinking Willie' in remembrance of William Duke of Cumberland whose army had broken the revolution of Prince Charlie and then had ravaged the highlands, leaving this weed behind where his horses had fed. (This duke had another flower named for him by the English, 'Sweet William'.) A



tall small-headed thistle, Carduus crispus, is abundant in Pugwash and occasional in Pictou, but these are ports receiving many weeds.

Heather, Calluna vulgaris, is often attributed to the shaking-out of Scotch blankets, but only two places seem to have suited the plant. Early in this century a multitude of young trees were brought from France with the intention of preventing erosion on the sandhills of Sable Island. The roots of some of the trees were wrapped in bundles of heather. Within a year, almost all the trees had been killed by sand-blast, but I found there a purple acre of healthy heather rejoicing in the sand of its choice. On Seal Island was a more scattered pattern of heather on a path, and no one knew how it had come, although its arrival had not been many years before my visit.

During and after the American Revolution, the Loyalists flowed over much of the province, and impractically in Shelburne. Two plants may have come as reminders of home. Scotch Broom, which is by no means peculiar to Scotland, has established itself along the roads, and its golden brilliance in early June has not yet disappeared in spite of the efforts of road-sprayers. The appearance of this on the southerly part of the Cabot Trail is recent and has survived two villainous winters. The other plant which might have been brought by some Loyalist, is May-apple. It is obviously cultivated, but the original gardener is not known.



PURSLANE  
(ALIEN)

#### North American Weeds

Weeds are innumerable, and because they are not often loved, therefore there are few records of their arrival, and in my experience most farmers do not know names even of the common pests. However, a small study may awaken some interest. It happened that a botanist in the University of Michigan wrote to my son, David, formerly a classmate of his, to ask if he could suggest a botanist in Nova Scotia who might collect seedlings of Ambrosia artemisiaefolia while not larger than one-inch tall and send them to the university greenhouse to be planted there. He had exhausted his grant in his recent flight to New Orleans for this plan. David passed the job to me, and for several weeks, my wife and I explored the neighbourhood after supper, and more than one hundred seedlings reached the greenhouse in good state. The collectors and the receiver noticed that we had two distinct varieties. Those with rather broad lobes came from the dykes and the old farms, whereas those from the railway and roadsides had narrow lobes, the character of the western variety elatior. This did not tell whether the true artemisiaefolia had always been in Nova Scotia, but it was certain that the elatior had not come before the railway. As a reward for our work, I received an identification of a number of bones and teeth which I had collected from an Indian campsite, an assistance which I could not find in Canada.

For a few weeds, history may help or confuse us. For one example, there is Portulaca oleracea (Purslane or French Weed) a common weed in gardens. It used to be cultivated as a pot-herb in France and came with them to Nova Scotia. This seems clear enough, but Champlain and Sagard recognized this plant in the Indian gardens by the St. Lawrence, and it seems to have followed agriculture from Mexico, while the Encyclopedia Britannica says that the plant reached Europe from India.

The weeds of grain-fields have changed frequently. Old botanical lists include Cornflower and Corn-cockle which probably came from European seed. In abandoned fields once sown to grain, Ball Mustard still lingers, but half a century ago it was replaced by Cadlock, the wild radish, which probably moved up from New England. Recently grain from the west has begun to replace it with wild mustards.



At the beginning of this century, Maccun found many new species by examining harbours. Twenty years later Fernald gave much attention to the railways which were bringing in new weeds from the west. In 1920 he collected a new arrival from the Pacific coast. Pine-apple-weed, (*Matricaria matricariodes*) a small daisy without petals and with leaves fragrant of pineapple. Today there is hardly a gravel walk throughout the province without it. Twenty-five years ago the railways were still introducing new weeds, but then pesticides replaced steam, and the Carpetweed and many others disappeared, and today only the stations and sidings are worth the botanist's examination. Cars have replaced trains, and in their wake the seeds of tiresome weeds, such as Stinking Willie, two groundsels, and Ragweed are spreading rapidly through the country. In the fields pesticides are now sweeping away many weeds, and we may look forward to a day when only pesticide-resistant weeds will take their place.

(This article is the last in a three part series which we have had in our BNS Newsletter On the History of Nova Scotia Plants by John S. Erskine. However, his wife, Rachel, has kindly given us permission and access to a number of other short articles which John wrote in the past. Rachel has also promised to put together a biographical sketch of John which we hope to publish in our June Newsletter.



### True Story

Woody P. Davis  
Bear River, N.S.

March 15 was a fine day. Sunny. Warm. I make hot fire in 1913 Elmer Morgan stove. Make a stew. It warm in shack. Open wooden door, brace back screen door. Spring! Relax a la E. B. Parker. Watch the birds and squirrels thru dirty west window. In come squirrel. It see me. Up the window. In to fry pan - cold - in to half pot of steaming hot water. Out faster n' in. Up the wall to ridge board in peak of shack. Back and forth it crawled. Looking for way out. A sad looking sight! Tail like a string, wet fur to middle. I let dry out. It seem to drag feet. I bet it had scalded hind tootsies. Not a cry or shriek did it make at any time. At last I get long fir pole and nudge to floor. A la cat land on all four. Like a streak out the door. So endeth story.

## What is It?

Mrs. Albert E. (Ella) Roland  
Truro, Nova Scotia

This is the question we asked ourselves many times when we visited Nassau early in March of this year. On our first walk, we found it most disconcerting to miss all of our familiar birds and then not even to know the name of the first black bird that we saw. We went looking in the shops for a bird book and bought James Paterson's Birds of the Bahamas containing descriptions and illustrations of the 100 most common birds. Just the book for amateurs like us! According to the inner cover flap, it would keep the most enthusiastic birdwatcher on the alert for quite some time. It did.

First of all, we missed so many of our birds from home. Imagine not seeing Robins, Juncos, Song Sparrows, Chickadees, Bluejays, Starlings, Crows, Grackles, English Sparrows and a host of others. There were not even described in our book but were mentioned as having been reported from the Bahamas.

To comment on each one of our new birds would be monotonous, and it is hard to decide which ones we enjoyed most. Here are just a few of our many memories:

Those black birds were Smooth-billed Anis and after our first encounter we saw them many times. They are comical in both appearance and behavior.

We were lucky in finding a mangrove Cuckoo that didn't mind being observed through glasses for some time, thus allowing us to be absolutely certain of its identification.

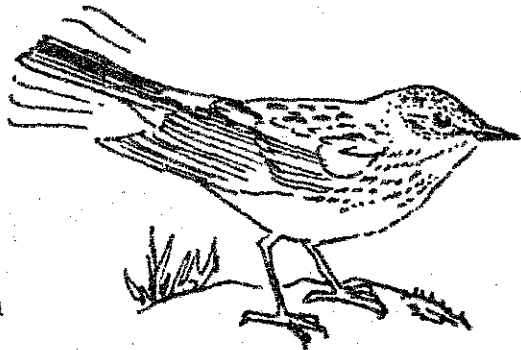
Mockingbirds were common but all were our own northern species. We looked carefully at each one for the distinguishing field marks of a Bahama mockingbird but all in vain.

We enjoyed the Bananaquits; they were active and interesting. A pair were busily flitting about in the sunshine gathering nesting material on our hotel grounds. The Black-faced Grassquits were common but less conspicuous.

We had expected to find many of our warbler friends wintering there and, of the 100 birds in our book, no less than 17 were warblers. Unfortunately, there were many habitats which we could not conveniently explore during our short stay, so we really missed out on the warblers. We were surprised at the many Palm Warblers; this species is the most common wintering warbler, followed closely by the Cape May Warbler. According to the book, our Yellow Warbler is found almost exclusively in mangrove swamps. We weren't even close to one.

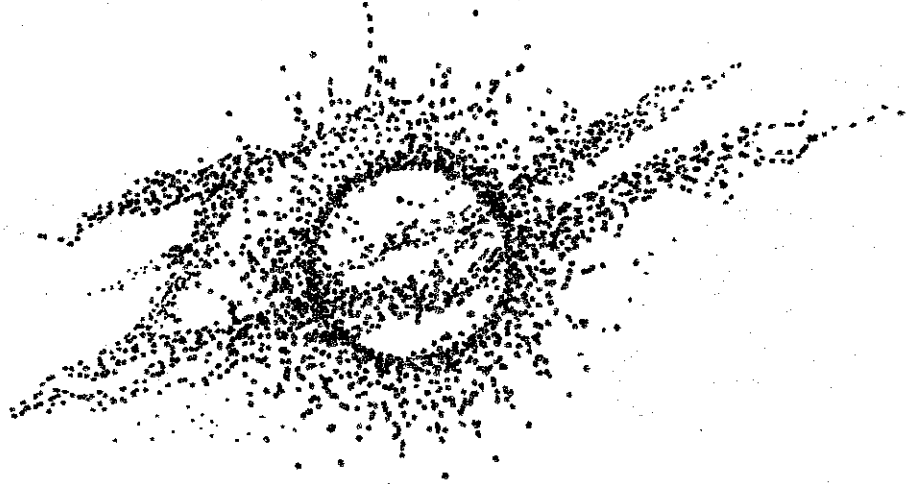
The birds of the more or less open seas between the islands and cays we had to forget. We weren't out sailing.

It might be of interest to some to read our list. With a very few exceptions, all were within easy walking distance of our hotel.



Little Blue Heron  
Common Gallinule  
Ruddy Turnstone  
Herring Gull - 2 immatures, only  
Ring-billed Gull  
Laughing Gull - by dozens  
Mourning Dove  
Rock Doves - as at home  
Common Ground Dove - so common that we learned to pass them by  
with scarcely a glance.  
Mangrove Cuckoo - in a shrubby overgrown place with trees  
Smooth-billed Ani  
Bahama Woodstar - the only species of hummingbird we saw  
Hairy Woodpecker  
Bahama Swallow

As darkness deepens over the forests of Nova Scotia many other stars come into view. Although the Sun is nearly one hundred million miles from Earth, the other stars are far more distant. Sunlight requires about eight minutes to reach us; however, the light of the other naked eye stars requires from ten to ten thousand years to traverse the distances to Earth. Thus most of the starlight which tumbles into our eyes began its journey long before we were born.



On a clear, moonless, summer night away from the light pollution of towns and cities, a hazy band of light can be seen stretching across the heavens. This is the Milky Way. The irregular glow is from the billions of stars which are too distant and hence too faint to be seen individually. Our Sun is one of the stars of this Milky Way Galaxy, a vast disc-shaped array of stars across which a beam of light would travel for a thousand centuries. As you gaze at that hazy band in the summer sky, you are looking through our Galaxy edge-on. The stars in other portions of our sky are relatively nearby the Sun, in our own corner of the Galaxy.

If you could take a journey in a fast space ship out of the Solar System, past the nearest stars, through other star clouds of the Milky Way, and then outward, beyond our Galaxy, you would enter a vast region virtually empty of stars. As the Milky Way system faded to a small, dim glow in the darkness behind, you would notice other similar, hazy patches of light, like snowflakes frozen in an eternal night. This is the realm of the galaxies. Individually separated by millions of light-years, countless billions of galaxies extend to the observable limits of the Universe.

#### Air Pollution Effects on Vegetation

Bill McRoberts  
11 Villa Avenue  
Charlottetown, PEI

from the PEI Natural  
History Society Newsletter,  
# 21, February 1977

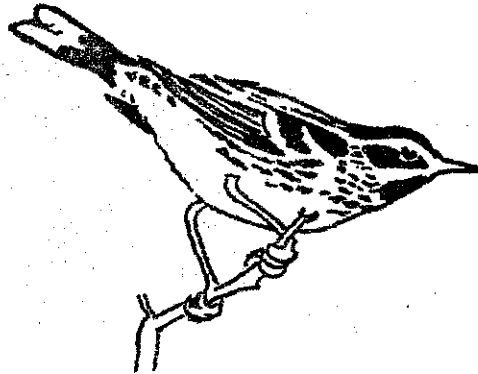
Within a living cell, many chemical and physical reactions occur. Air pollution can stress cells leading to various stages of impairment. Vegetation "breathes in" air to be used in photosynthesis. Gases, vapours, and particulate matter (dusts) enter the cell through stomata, which regulate breathing in plants. Generally, vegetation growing under optimum conditions is most susceptible to air pollution since under active growing conditions, the stomata are open more frequently, allowing air pollutants to enter the leaf.

As the air pollutant concentration builds up in the leaf, stomata will close, greatly slowing the growth process, and also trapping pollutants in the leaf. Studies have proven that a correlation exists between the degree of air pollution effects and the degree of stomatal openings.

Plant leaves react to concentrations of air pollutants in four basic ways:

- (1) Necrosis and Bleaching of leaf margins: This is caused by sulphur dioxide and sulphuric acid mists which arise primarily from the combustion of sulphur containing fuels (oil or coal).

Northern Mockingbird  
 Black and White Warbler  
 Magnolia Warbler  
 Palm Warbler  
 Ovenbird  
 Bananaquit  
 Black-faced Grassquit  
 Grassquit sp., either Cuban or Yellow faced - we needed Birds of the West Indies to identify it.  
 Indigo Bunting - already in good blue breeding plumage



Eagle Count

Cyril Coldwell  
 Gaspereau

Eagles made their first appearance at the feeding station on December 5, 1976. From then on they kept up regular daily visitations until March 12 when they disappeared. After four days three returned and at present (March 21) are still in the area.

During the winter three counts were taken in the Wolfville area and the numbers are shown below.

January 30:	22 birds	8 adults	14 immature
February 13:	18 birds	9 adults	9 immatures
February 27	12 birds	7 adults	5 immature

A Look at the Universe

Roy L. Bishop  
 Avonport, N.S.

The stars have been referred to as the holes in the blanket of night. However, during the present century research in astronomy and physics has revealed a Universe far more beautiful and profound than that pictured by poets or surmised by science fiction writers.

The central actors on the stage of the Universe are the stars. A star forms somewhere in space when a large, diffuse, dark cloud of hydrogen gas and dust collapses under its own gravity. As the material falls in, it warms. When the temperature is high enough hydrogen nuclei begin to fuse to form helium and in so doing release an immense amount of heat and light. Thus a star is born. Occasionally some nearby parts of the collapsing material are too small to become hot enough to form stars themselves. These small, cool lumps which drift in orbits about the central star are the planets.

It is the stars which fill the Universe with light. Our existence is due to and is sustained by the light of the nearest star, the Sun. Although it is an average star and does not look very large in the sky, we now know that the Sun is large enough to hold a million earths. We usually speak of sunrises and sunsets, but as Copernicus emphasized long ago, it is Earth which moves about the Sun. When you next see a "sunset", remember that it is the rolling of the little Earth on its axis which is carrying you with it, back away from that immense, blazing star.

- (2) Glazing of leaf surface: This is mainly caused by oxidants like nitrogen dioxide and compounds formed from Photochemical Smog. This is the smog which develops over cities where automobile use is high, such as Los Angeles, California.
- (3) Chlorosis: A loss of chlorophyll will show up as white or bleached areas on the leaf. This is caused by mercury, and sulphur dioxide (mainly). Once the chlorophyll is lost, photosynthesis is retarded, slow growth and possibly death follow.
- (4) Flecking or stippling: This usually occurs on the upper surface of the leaf and is caused by strong oxidants such as ozone. Ozone is a irritating gas caused by photochemical smog and high electric currents in electrical systems.

Air pollutants have been traced from sources by observing the effects on surrounding vegetation. The main pollutant in the nickel smelters of Sudbury, Ontario is sulphur dioxide which causes Necrosis and Chlorosis to some the of the nearby vegetation.

Some plants are more susceptible to air pollution than others. (e.g., rose, tobacco, alfalfa, tomato and various fruits are very susceptible. Extent of damage to individual plants depends on: humidity, stage of growth and especially concentrations of the pollutant and the time of exposure. A short term "very high dose" may cause as much or greater harm as a "low dose" over a long period of time. High concentration short term doses usually cause more harm than low concentration long term doses, since the plant will attempt to adapt to the pollutant over a long time period.

It is difficult to assess the cost of air pollution effects on vegetation, but a recent estimate of losses in citrus crops of California was 132 million dollars (Brandt and Heck "Effects of air pollution on vegetation", Chapter 12, Volume 1 of Air Pollution).

Over the past 10 years the public has become much more aware of air pollution. This has resulted in an effort to control and reduce pollution so that our environment will remain healthy.

#### Poem

anonymous English poet  
from Heating with Wood  
by Larry Gay, p. 42.

Beechwood fires are bright and clear  
If the logs are kept a year.  
Chestnut only good, they say,  
If for long 'tis laid away.  
But ash new or ash old  
Is fit for queen with crown of gold.

Birch and fir logs burn too fast,  
Blaze up bright and do not last.  
It is by the Irish said  
Hawthorn bakes the sweetest bread.  
Elm wood burns like churchyard mold,  
E'en the very flames are cold.  
But ash green or ash brown  
Is fit for queen with golden crown.

Poplar gives a bitter smoke,  
Fills your eyes and makes you choke.  
Apple wood will scent your room  
With an incense like perfume.  
Oaken logs, if dry and old,  
Keep away the winter's cold.  
But ash wet or ash dry  
A king shall wear his slippers by.



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