

The

# Young Naturalist

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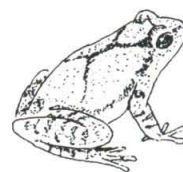
MARCH, 1969

## THE SPRING PEEPER: SIGNAL OF SPRING



Ontario Department of Lands and Forests

Shown is a swampy area in Rondeau Park, Ontario. Here, and in wet woods like it, is a good place to listen for the cries of the Spring Peeper.



You have probably never seen a Spring Peeper, but chances are that if you have been in the woods during March, April, or May, you will have heard many. These tiny tree frogs are common throughout Ontario and other parts of North America. They are considered by many to be the true messengers of spring, because their birdlike calls echo throughout the woods before most birds arrive from their southern wintering grounds.

### Where Does it Spend the Winter?

When the temperature becomes quite cold toward the end of October, the Spring Peeper starts to look for a place in which it can spend the winter. It burrows a hole in the soft ground of the woods and prepares itself for a four or five-month sleep. Towards the end of March, as the air becomes warmer, the ground above the Spring Peeper's burrow that has been frozen solid throughout the winter, starts to thaw. As the earth warms up the Spring Peeper wakes up and crawls out of its burrow ready to face a new season.

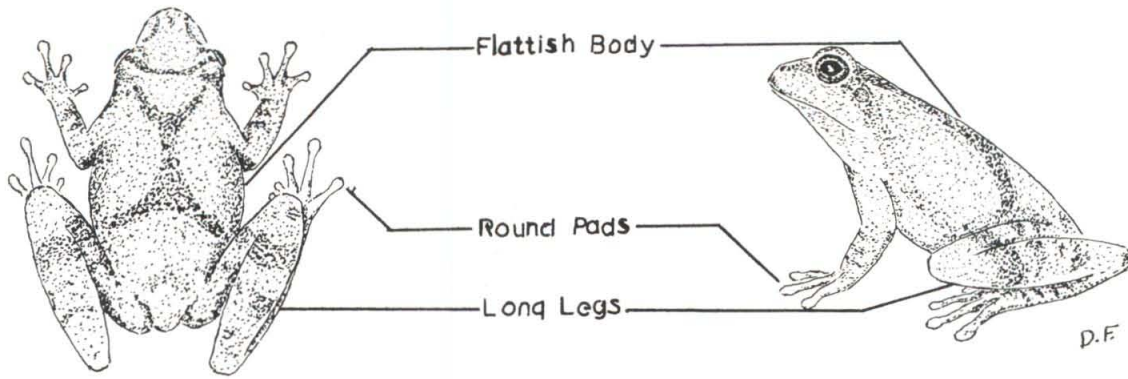
### A Curious Creature

This curious amphibian has some very special features to help it survive in the woods and swamps.

Perhaps the first thing you will notice about the Spring Peeper, apart from its

See PEEPER — Page 2





Sketches by Don Foxall

These sketches of the Spring Peeper are about twice life-size, but the one shown on page 1 is almost exactly life-size.

### PEEPER — from Page 1

size, are round pads on its feet that most people mistakenly call suction cups. These pads are rather sticky and enable the Spring Peeper to cling to smooth surfaces. It has been known to cling for days to the smooth surface of an aquarium.

The legs of the Spring Peeper are much longer than the legs of other frogs of its size. This special feature helps it to climb and push itself up the trunk of a tree if necessary.

If you look at the pictures carefully you will also see that the Spring Peeper's body is rather flat; this aids climbing by allowing it to flatten and press itself against the trunk of a tree or similar surface.

The brown or tan colour of the Spring Peeper, combined with its tiny size, helps to keep it hidden from many of its enemies.

### Remarkable Voice

The Spring Peeper is well-named, for as it comes out of its winter burrow, it adds its call to the rising chorus of other Peepers in the woods. It then sets out immediately for its breeding grounds in the ponds and swamps nearby.

The male is the only one to peep during the spring breeding season, with the female remaining silent waiting to be attracted by the singing of a male Peeper.

The call of the Spring Peeper is most interesting for it is hard to believe that such a tiny creature can make such a loud noise. A special voice sac helps him to sing loudly.

He takes a breath of air and then

closes his mouth and nostrils immediately so that no air can escape. He then forces this air into his vocal sac blowing it up like a balloon. When fully blown up the vocal sac is almost as large as the Spring Peeper's own body. He is able to make the air travel backwards and forwards between the vocal sac and his lungs. In moving between the two places the air passes over the vocal cords causing them to vibrate and make the peeping sound.

### Breeding Season of the Peeper

After the male Spring Peeper has attracted a mate with its loud call, the female then starts to lay its eggs. To give you an idea of their actual size, we have drawn the eggs exactly as they appear.

The female Spring Peeper lays about a thousand of these eggs in a pond or swamp. It is almost impossible to find them because she lays them singly in different places.

When the eggs hatch after a month and a half or more, the tadpole goes through the usual stages of growth experienced by frogs.

### The Vanishing Spring Peeper

After the breeding season, the Spring Peeper is quite scarce and very hard to find. It seems that as soon as they have bred they retreat to the privacy of the woods from which they came after their winter sleep. So, if you want to find the fascinating Spring Peepers, April is probably the best month.

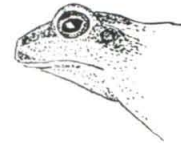
BARRY GRIFFITHS

1MM.

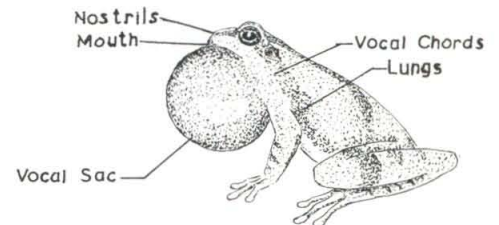
Each separate egg of the Spring Peeper measures about one millimeter across.



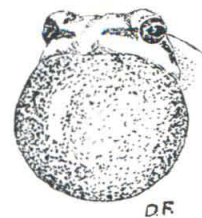
An enlarged picture of one egg is shown.



The Peeper takes a breath of air and then closes his mouth and nostrils immediately so that none of the air can escape.



After the Spring Peeper has gulped a mouthful of air he forces it into his vocal sac, blowing it up like a balloon.



Here is a head-on view of the vocal sac.

# Club News



The Hamilton Junior Naturalists' Club has been holding regular monthly meetings an hour before the scheduled meetings of the senior club. In December, the Club enjoyed an illustrated talk by Mr. W. A. T. Gilmour, and in January plans were made for the year ahead. In addition to the indoor meetings, field trips have been taking place twice a month.

In the province of Quebec, junior naturalists are organized into 'Cercles des Jeunes Naturalists', with head-

quarters in Montreal. Their publication, *Le Naturaliste*, contains articles on nature study, accounts of the experiences of members and ideas for projects. There is also a monthly news bulletin, keeping members up-to-date on the activities of other circles. One of the groups, the C.J.N. Les Pic-Dorés, of Rock Forest, near Sherbrooke, met fifty-six times between April, 1967, and April, 1968. Can any Ontario club equal that record?

BARBARA WILKINS

## Jupiter — A Giant Roams the Sky

In late evening of the next few months, look to the south-east in the constellation Virgo for a bright object, the planet Jupiter. Jupiter is an easy planet to come to know; observations of it can be most interesting.

Jupiter moves in a nearly circular orbit once about the Sun in 11.86 years at an average distance of 484 million miles. It moves one constellation eastward along the zodiac each year, com-

pleting one circuit in 12 years. This year it is found in Virgo; next year it moves to Libra. With the apparent westward shift of the constellations (Young Naturalist, February 69), Jupiter will appear farther west each night and on March 21 will be due south at midnight. It is then said to be in opposition; that is, on the opposite side of the Earth from the Sun. At this time, Jupiter is in the process of describing a loop among

the stars, moving first westward in retrograde or reverse motion, then eastward in direct motion. You should be able to detect this motion yourself.

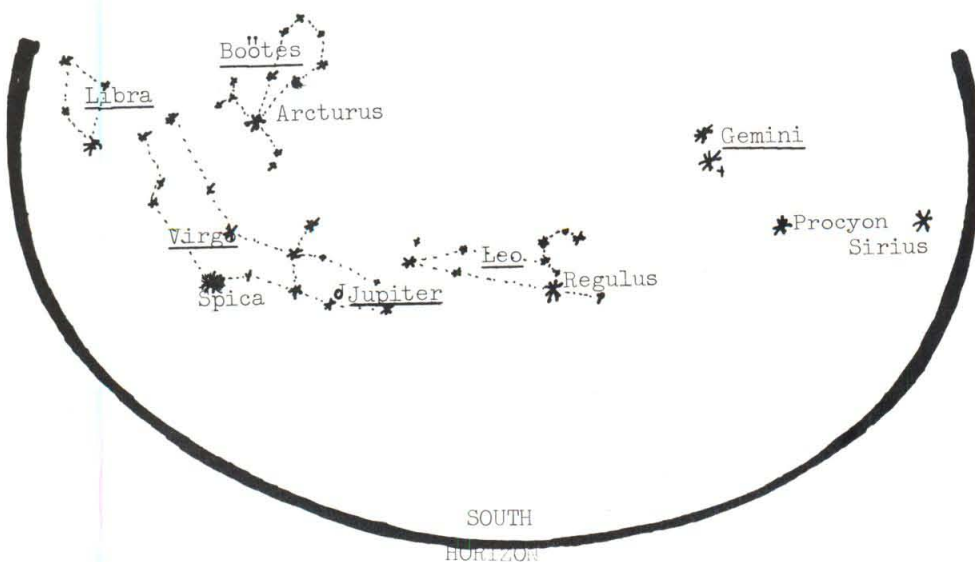
You can study the motion of Jupiter by simply marking its position on a star chart from week to week or by timing the passage of Jupiter and some reference stars. With an accurate clock note the difference in time between the appearance or disappearance of Jupiter and some nearby stars behind some landmark. Repeat at one-week intervals. The difference indicates the motion of Jupiter: an increase indicates eastward motion, a decrease westward.

Jupiter is well worth looking at in a small telescope or firmly mounted binoculars. You will observe it has a large disc for Jupiter's diameter is 88,700 miles, the largest of all the planets. What you actually see is the top of its atmosphere, a tremendous quantity of hydrogen, helium, methane, and ammonia at temperatures of  $-220$  degrees F. You may see bands in the atmosphere. The weight of the atmosphere is so great it turns the gases at the lower levels to solids.

The second thing you will notice is a string of faint companions in a line through Jupiter's centre. These are the Galilean satellites, the four brightest of Jupiter's 12 moons. Even a few hours of observing will show their motion. They pass in front of Jupiter (transit) behind the planet (occultation), into its shadow (eclipse). You might even detect a satellite shadow on the disc. If you want to observe them accurately consult the Observers Handbook of the Royal Astronomical Society of Canada.

The planet Jupiter has many strange properties such as magnetic fields, radio emission, odd moons, and shape. Any general astronomy book is a good starting point if you wish to learn more. Meanwhile your observations will give you insights into the beauty and fascination of the "Giant Planet".

THOMAS CLARKE





CANADIAN

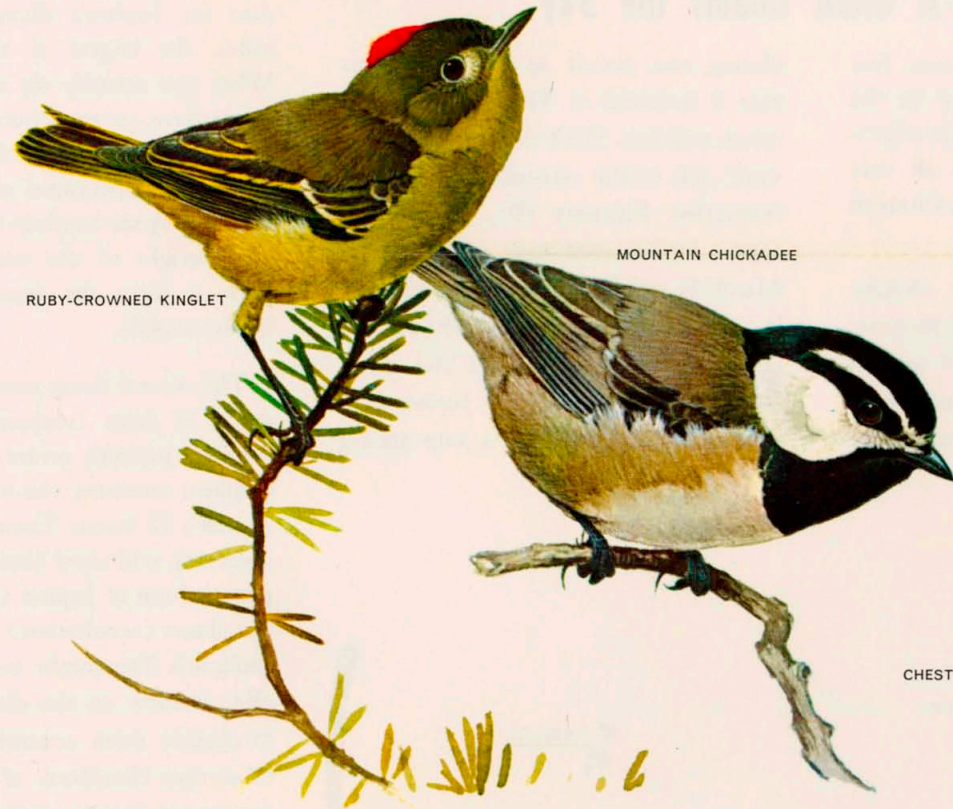
# Chickadees

## Nuthatches and others

These birds are not all related, but they do have things in common. They live extensively on insects; they are often seen in wintertime; most of them can be attracted to suet at feeding stations. The active, acrobatic feeding habits of chickadees are well known. The creeper circles tree trunks, always starting near the bottom and working upward; nuthatches proceed downward, head first. The kinglets are our smallest birds except for humming birds; like the creeper, they occur in almost all forest regions in Canada.

Only the male RUBY-CROWNED KINGLET sports the scarlet head patch, and normally you can't see it. When the bird is excited he raises his feathers, exposing the brilliant crown. The MOUNTAIN CHICKADEE is rather like the familiar black-capped chickadee, but with a white line over the eye. It is confined to the mountain forests of Alberta and British Columbia.

The BROWN CREEPER is the only member of its family in North America. In spring it has a thin, sweet song. The PYGMY NUTHATCH, smallest of its kind in Canada, is found in western pine forests. Largest is the WHITE-BREASTED NUTHATCH, which lives across the southern portions of the country. The RED-BREASTED NUTHATCH favors the northern evergreen forest. Its nasal voice has been compared to the tooting of a little tin horn. Probably the best known of these birds is the BLACK-CAPPED CHICKADEE which is found pretty well everywhere in forested Canada. The name "chickadee" accurately describes its voice. The song of the brown-capped BOREAL CHICKADEE is much hoarser and more wheezing, though there is a definite family resemblance. It sticks to the northern and mountain spruce forests. More colorful than its relatives is the CHESTNUT-BACKED CHICKADEE of the Pacific coastal forests. The active little GOLDEN-CROWNED KINGLET is sometimes hard to see in the top of a big evergreen, but its thin three-part "see-see-see" note is easily recognized.



RUBY-CROWNED KINGLET

MOUNTAIN CHICKADEE



BLACK-CAPPED CHICKADEE

CHESTNUT-BACKED CHICKADEE



BROWN CREEPER

PYGMY NUTHATCH

WHITE-BREASTED NUTHATCH

RED-BREASTED NUTHATCH

BOREAL CHICKADEE

GOLDEN-CROWNED KINGLET

J.F. LANDSLOWNE





## How Snow Affects Arctic Bird Migration

I have spent the past two summers observing northern birds near Eskimo Point in the Northwest Territories. Our camp is about 175 miles north of the tree-line on the west shore of Hudson Bay.

One of the most striking phenomena is the annual spring return of the birds. While this is true of any area, it is particularly interesting in the Arctic because the birds must arrive as early as possible in order to begin nesting and take advantage of the short Arctic summer. However, if they arrive too early the land will still be locked in ice and snow. A delicate timing is required.

The following observations from the spring of 1968 will illustrate how various birds have solved the problem of timing their spring arrival on the breeding grounds.

When I arrived on May 11, the study area was completely covered by two to three feet of snow with a hard icy crust. There are of course no trees in the area so no potential food was available to birds at this point. I was surprised, then, to find a single male Snow Bunting in the area on the 11th and 12th. It was the only bird seen on either day. It is doubtful if this bird could have survived as it was back too early.

No birds were seen on May 13.

The first Herring Gulls arrived back on May 14. Gulls can return earlier than most species because they apparently find enough food along the edge of the ice on Hudson Bay. The gulls move inland as soon as bare spots appear and begin nesting before most of the snow has gone, returning to the coast to feed.

On May 16 the first Rock Ptarmigan began passing through the area in small numbers. A small bare spot of ground had opened at the base of an esker two miles from camp and the ptarmigan concentrated here, feeding on seeds and buds of dwarf birch and willow. Because they are vegetarians, ptarmigan can survive with only a small percentage of the land being snow-free. The main flight of the more common Wil-

low Ptarmigan began arriving on May 19. Several hundred males moved through, some stopping off to establish breeding territories in anticipation of the females which return about ten days later.

May 19 saw the first and largest flight of Sandhill Cranes. Nearly a thousand passed over in small flocks. These poorly known birds feed on anything, animal or vegetable, and can apparently survive on the limited food available to them.

A single Peregrine appeared on May 20. This falcon need only wait for the ptarmigan to return north and it can then return and find a readily available food supply.

Of all the Arctic birds, the geese are perhaps most finely adapted to the arrival of spring in the north. The main goose flight in the study area consists of over 50,000 Blue Geese (including Snow Geese), several thousand Canada Geese, a few hundred White-fronted Geese, and a handful of Ross' Geese. These geese arrive on the breeding grounds in the best physical condition of their lives. This excellent condition enables them to survive and initiate nests, with little or no food for the first two weeks. The geese thus have a built-in mechanism allowing them to survive a moderately late spring. The system is not fool-proof as was seen this year. The first geese arrived in the period May 24-26 with an estimated 4,000 being present. At this point there was still no open water and only a small percentage of bare ground. The weather was mild and the thaw was beginning in earnest. However, the period May 27-29 turned very cold and windy and the thaw stopped completely. The geese began moving back south so that late on May 29 virtually none remained in the area. They returned again on June 4-6 when the thaw was again progressing. Geese, then, have two mechanisms to protect against adverse conditions. They arrive in excellent physical condition, and they are such strong fliers that



The First Herring Gulls arrived at Eskimo Point in the North West Territories on May 14, 1968.

they can, if necessary, retreat a few hundred miles when the season is abnormally late.

The remaining migrants can be divided into two groups. The first group consists of the water birds such as Arctic and Red-throated Loons, Common and King Eiders, Oldsquaws, Greater Scaup, Arctic Terns, Northern and Red Phalaropes. These birds spend their time after arrival feeding in Hudson Bay and move inland only after the thaw is well advanced. The bulk of the remaining birds are typical shorebirds. They arrive in early June when even in the latest springs the water areas are open. The shorebirds are specially adapted to the short arctic summer by having a very compressed breeding cycle; they can thus make up for the time lost by their necessarily late arrival.

The foregoing has been a scanty description of the spring migration of Arctic birds but it has, I hope, illustrated that this is a precarious moment in the life-cycle of these fascinating birds.

ROLPH A. DAVIS

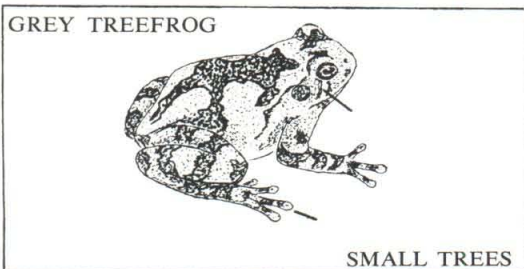
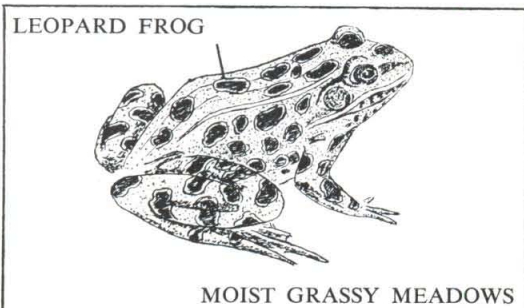
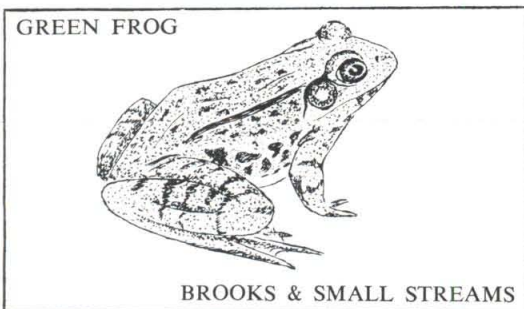
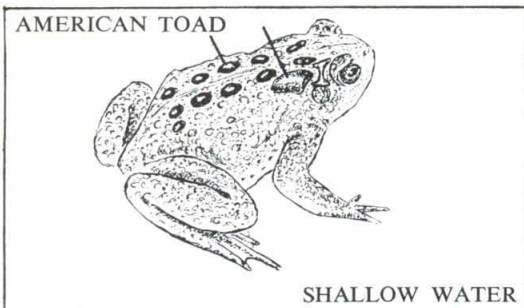
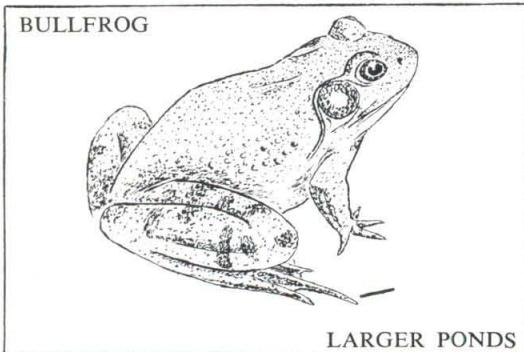


The White-tailed Ptarmigan shown is smaller than the Rock Ptarmigan that is mentioned in the story.



**THIS MONTH:** focus on

**FROGS  
TOADS**



With the early days of spring, our ponds and streams echo with the songs of frogs and toads as they awaken from their winter rest. Did you know that frogs and toads are amphibians, that is, they spend part of their life in water and on land. The word "amphibious" is based upon a Greek word meaning "double life," hence they are well named. What other characteristics can you learn about amphibians?

Did you know that frogs and toads rely on their EYES to warn them of the approach of their enemies or of their food? . . . that they use their legs like propellers to move themselves through the water? . . . that some species lay huge masses of jelly-like eggs in the water? . . . that frogs and toads are found throughout the world except where the ground remains frozen all year? . . . that they are meat eaters?

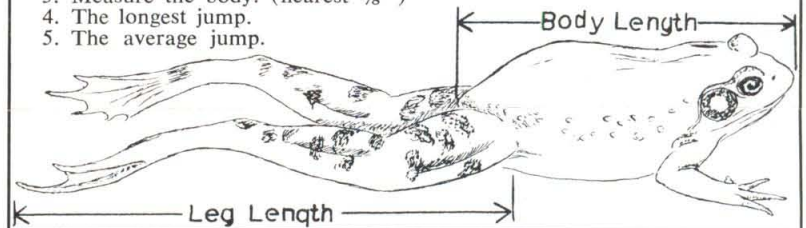
**ACTIVITY PROJECTS**

Less is known about amphibians than about many other groups of animals. We hope that you will participate in these projects and that you will provide us with information about some of the frogs and toads living in your area. The results will be published in a later issue of the *Young Naturalist*.

**ACTIVITY PROJECT #1  
BULLFROGS**

Catch as many specimens as you can. Handle them with care and release them where you caught them after you do the following:

1. Weigh them. (nearest 1/2 ounce)
2. Measure the hind legs. (nearest 1/8")
3. Measure the body. (nearest 1/8")
4. The longest jump.
5. The average jump.



**ACTIVITY PROJECT #2**

**EGGS OF FROGS AND TOADS. HOW LONG DOES IT TAKE FOR THE EGGS TO HATCH?**

If you want to observe them in the classroom, they should be placed in an aquarium or glass container. Follow these hints:

1. Eggs need room to hatch so don't crowd too many into a small container.
2. Change the water every three days.
3. Don't let the eggs freeze.
4. The eggs near the surface should be barely covered with water.

**WHO AM I?**



I am small with long legs. I like to climb trees and sing early in the spring. My colour helps to hide me from my enemies.

The first three young naturalists to correctly identify me and send their answer to the F.O.N. Office will receive for their school resource centre **A Field Guide to Reptiles and Amphibians**. Be sure to include names and address of your school. PLEASE MAIL ALL REPLIES AND RESULTS To: Mr. B. GRIFFITHS, c/o Federation of Ontario Naturalists, 1262 Don Mills Rd., Don Mills, Ontario.

**EDITOR'S NOTE:** This continuing series is designed to provide information and activity ideas for teachers who want to encourage their pupils to become actively involved in nature study as an exciting feature of their outdoor education program. Text by Barry Griffiths and Gerald McKeating, sketches by Don Foxall.



# WOODLORE

## FOR THE NATURALIST

John Macfie

### *Old Ice Might Let You Down*

Ice is a floating raft of crystalized water. The transparent ice of early winter is resilient and strong, its crystals bound firmly together. One inch of it will bear the weight of a man, and thickness tends to be uniform and hence trustworthy over an entire body of water. But be highly suspicious of spring ice!

In old, snow and slush-covered ice the bond is breaking down. The raft is rotten. Furthermore, unseen currents, upwelling springs and water-warming bogs have

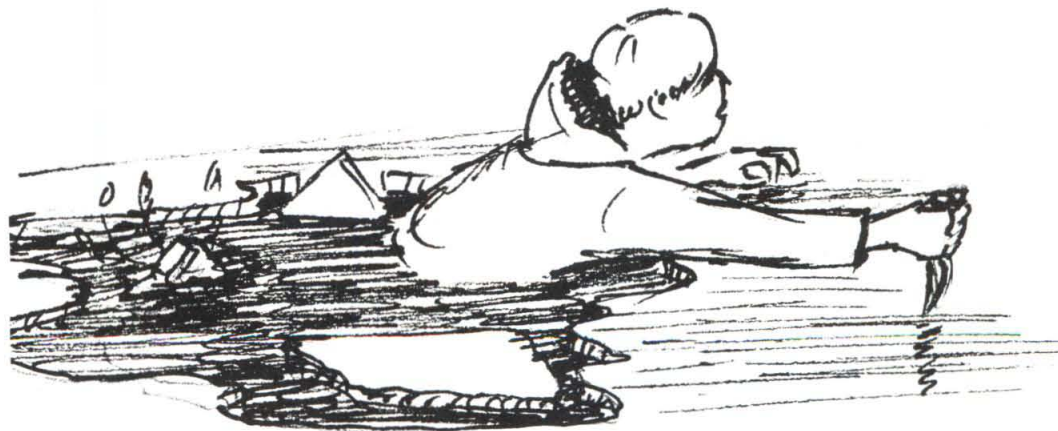
been gnawing away here and there at the under-surface for months, while an insulating blanket of snow prevented frost from penetrating to repair the erosion. It all looks the same from above, but spring ice thickness may vary from one foot to a mere crust in a matter of yards, especially on rivers and boggy ponds.

So the best course is to simply avoid the ice of late winter. If you must walk on it, do as the trappers do. Test the ice frequently with an axe, and carry a strong light twelve-foot pole grasped at the middle and held horizontally. Keep your distance from companions. You may plunge through but the pole, which draws on the bearing capacity of a broad area of ice, will not. If you break through, heave yourself out over the pole and roll away from the hole. Worm your way back to shore, pressing the pole flat against the ice as much of the time as possible.

The best way to rescue a companion who falls through ice and can't get out

is to slither out toward him on your belly, pushing the longest pole (or ladder, etc.) that you can find. Or throw him a rope weighted with a stick if such is at hand.

If you are alone and fall through ice without a safety pole, let's hope you have a knife in your pocket or on your belt. You can remain afloat by holding onto the edge of even the most fragile ice until cold numbs you, but if the ice isn't crusted on top to provide a hand grip it is difficult or impossible to haul yourself out. A knife, even a pen knife jabbed into the slippery ice as far ahead as you can reach will supply all the purchase you need. If you want to be really prepared, carry a spike or a screwdriver. Ease, don't hurl, your weight towards the knife, at the same time swimming with your feet. If the ledge of ice gives way, try again until you sense you have enough leverage in your elbows to roll out on top—and keep rolling. But hang on to that precious knife.



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