

*The*

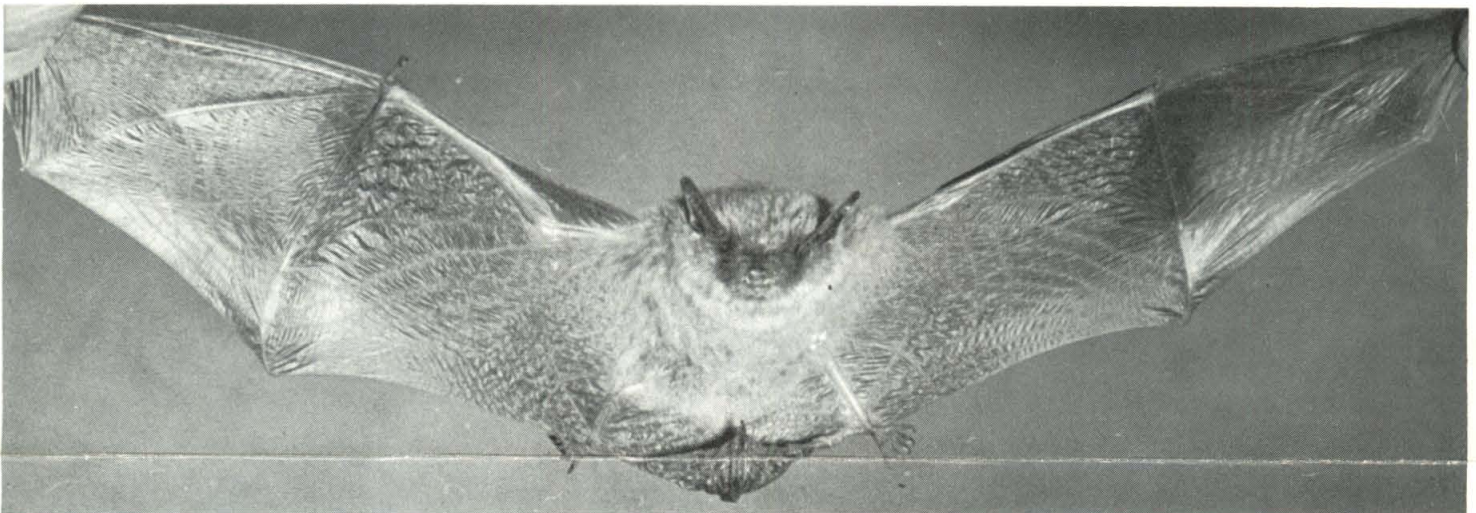
# *Young Naturalist*

VOL. 7 — NO. 8

PUBLISHED BY THE FEDERATION OF ONTARIO NATURALISTS

OCTOBER, 1965

*Gordon  
MacKenzie*



The Little Brown Bat is the most common species of bat found in Ontario. Large numbers of these flying mammals are sometimes found in old buildings, attics, caves, and even in abandoned wells and cisterns.

## *Bats - Mammals That Fly*

Bats are fairly common in most parts of southern and central Ontario in the summer, but most people know little about them. These small animals hide in caves, attics, and other dark places in the daytime, and venture forth only under cover of darkness. This habit has caused people to let their imaginations run wild and, as a result, all sorts of misconceptions have been dreamed up about bats.

Although bats can fly, they are not birds. Like such animals as mice, rabbits, bears, and dogs, bats are mammals. They have hair, teeth, four feet, and other characteristics that easily separate them from birds. Their wings and their ability to fly might make them seem similar to birds.

However, if you compare the wing of a bat and the wing of a bird, you will readily see that they are very different.

The wing of a bat is actually a specialized front leg, in which the toes have grown long. A skin extends between the toes and stretches to the body. A similar membrane connects the tail and the hind legs.

In some parts of the world there are bats that feed on fruits, flowers, nectar, fish, and even blood from other animals. All Ontario bats, however, are insect-eaters. The insects are located in flight by a kind of radar. As the bat flies about, it makes squeaks that are so high-pitched that the human ear cannot detect them. The bat's ear picks up the echoes of the

squeaks as they bounce back from flying insects. By this means, the bat can locate the insects, even though it may not be able to see them with its eyes. The bat also uses its "radar" to detect obstructions and avoid collisions.

The bats that live in Ontario usually pass the winter in a deep sleep known as hibernation. In caves, mine shafts, and similar cool, damp locations, the bats rest from September until May. During this period they do not feed, and they move about very little. They become cold and drowsy, their hearts beat very slowly, and their breathing almost stops. Their only source of

*See BATS — page 4*

# OIL IN SOUTH WESTERN ONTARIO

## Part II—What Is Oil?



Imperial Oil Photo

An oil rig can be seen in the background of this picture. Many of these old rigs are still used to pump oil. This one is near Oil Springs, Ontario.

Crude oil or petroleum, which is so useful to man, is one of the most complicated compounds known that occurs naturally. Curiously enough, although man has learned how to use petroleum, he has not yet been able to find out just how nature "put it together". As a result, he is unable to produce it artificially.

The complexity of petroleum, or crude oil, is even more intriguing when we consider the fact that, basically, all petroleums are made up of two elements — carbon and hydrogen. Sulphur, nitrogen, and oxygen also occur with the carbon and hydrogen, but never individually make up more than five per cent by weight of any crude oil.

Carbon and hydrogen combine in a great number of ways to form a large number of compounds, and no two crude oils are really exactly the same chemically. A few years ago it was stated that it would take longer to do a complete chemical analysis of a crude

oil from a given field than to produce all the oil out of that field.

Some of the chemical compounds and some of the properties of crude oil have parallels in chemical substances associated with living organisms. It is therefore believed that petroleum or crude oil is of organic origin, that is, it is derived from either plants or animals that lived in the geological past. If oil is of organic origin, where and from what organisms was it formed?

To answer these questions let us look at where oil is found today. About 99.9% of all crude oil is produced from marine sedimentary rocks, that is, from rocks that have consolidated from sediments that accumulated on old sea floors. Therefore, we must look to the sea for the original materials from which oil is derived.

With this information, it is at first tempting to think that crude oil might be derived from whales, particularly in view of the fact that whales are hunted

for the oil they contain. However, whales are not sufficiently numerous, nor have they been in existence long enough, to account for all the billions of gallons of oil that geologists know have been formed throughout geological time. Some oils are many hundreds of million years old, in fact much older than all known whales. No, the answer is not in the larger animals, but in the opposite direction, namely, the microscopic animals that inhabit the oceans, and particularly the upper parts of the ocean, where they form the *plankton*.

These animals live in the top few yards of the ocean but upon death some sink to the bottom and become buried on the ocean floors in the sediments. Plankton are numerous. It is estimated that about twelve million tons of new organic material are produced annually within this community. If only a few per cent of the plankton do become buried, this quantity would be sufficient to account for all the crude oil that has been, and will yet be, produced throughout the world.

The chemical processes involved in the transformation are complex and still not understood completely, but it is believed that a minimum of 10,000 years is required for the process. It is further believed that the process takes place in muds, that is, sediments that eventually become shale. This is interesting, because oil is not found in shale, but rather in sandstones and carbonate rocks—limestones and dolomites—that are derived from sandstones and carbonate oozes. Therefore, if oil is formed in mud, it must have migrated into the sandstones and carbonate rocks, since it is in the latter that oil accumulates in commercial quantities.

The crude oil in a field has a chemical history that may extend many hundreds of million years back into geological time. It also has a history of migration before it finds its final resting place in an oil field. Here the geologist seeks it out, and petroleum engineers produce it so that this product of bygone life can be of use to mankind today.

WALTER M. TOVELL

# How to Form a Junior Nature Club-Part I

Would you like to form a junior nature club in your area? If so, the following suggestions may be helpful.



## Getting Started

Ask adult naturalists for help. Their knowledge and experience is invaluable both in organizing the club and in leading activities. Find out if there is a senior nature club in your area by writing to the Federation of Ontario Naturalists, 1262 Don Mills Road, Don Mills, Ontario. They will be pleased to supply the names and addresses of the officers of such club, so that you can get in touch with them. If there is no local senior club, there are probably active F.O.N. members

living near you who may be interested in the idea of forming a Junior club. Their names can also be obtained by writing to the F.O.N. office. Still another source of help could be the natural science teacher in your school.



## Building Membership

The next step is to determine who is interested in joining your club. Tell all your friends about it and ask your school teacher to make an announcement to other classes. A notice could be placed in the local newspaper asking all interested boys and girls between the ages of eight and sixteen to attend your first organizational meeting. Probably the best time to start a

club is in the fall, so that the club year and school year will be about the same. Most nature clubs do not hold any meetings during the holiday months of July and August.

How many members are needed to form a club? There is no minimum number, but it would be best to aim for at least twenty-five. What about annual dues? Keep them as low as possible, preferably no more than one dollar, then everyone can afford to join.



## Electing Officers

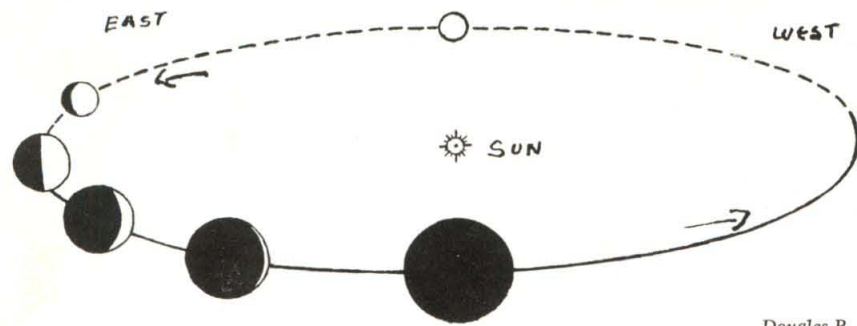
The club should be supervised by at least two adult leaders (Director, Assis-

See *CLUB* — page 4



*Ontario Department of Lands and Forests*

These members of a junior nature club are on their way to a woodlot meeting in the Lake Huron District. The boys and girls asked an official of the Department of Lands and Forests to accompany them on their day's outing.



Douglas P. Hube

The sketch shows that the planet Venus has phases, like those of the moon.

## Look for Venus in November

Shortly after sunset during the months of November and December, a very bright "star" will be seen low in the southwestern sky. This is the mysterious planet Venus. Next to the Moon, it is Earth's nearest neighbour in space. In size, Venus is almost a twin of the Earth. It has a diameter of 7,700 miles, whereas the diameter of the Earth is 7,927 miles. Venus completes one trip around the sun in 225 days at an average distance from it of sixty-seven million miles.

Despite the fact that Venus comes closer to us than does any other planet, we know almost nothing of its surface conditions. This is because of a thick layer of cloud that completely blankets the planet. The question of the period

of rotation of Venus was not answered until 1963 when astronomers in Puerto Rico bounced a radar signal off the planet. They found that the length of the Venusian day is equal to 245 Earth days, and that the planet rotates backwards! Only one other planet, Uranus, behaves in this peculiar fashion.

The Mariner II spacecraft sent to Venus in 1963 indicated that the temperature at the planet's surface is almost 600°F. Some astronomers have questioned this result. Perhaps we will never be certain of the answers to the mysteries of this strange planet until an actual landing is made on its surface.

DOUGLAS P. HUBE

### BATS — from page 1

energy is the thick layer of fat that they have built up during the preceding summer.

Most of the bats that spend the summer in Ontario probably migrate to New England, Ohio, Kentucky and beyond, to hibernate. As many as 5,000 Little Brown Bats have been found hibernating in a cave near Port Arthur. Smaller numbers are found in caves and old mine shafts in the Bruce Peninsula, and in eastern Ontario. However, on the whole, there do not seem to be many places suitable for hibernating bats in this province.

The most common species of bat in Ontario is the Little Brown Bat. It is

the one most often found in numbers in old buildings, attics, and similar locations. The Big Brown Bat is also common, but it is more likely to be found in one's or two's. This is the species that is occasionally seen flying about in churches and other buildings in winter.

At least seven other kinds of bats have been found in Ontario. However, little study has been made of bats in this province, and there is a good chance that an interested person will find some additional species.

Although they are insect-eaters, bats are probably not of much economic importance in Canada. In some parts

### CLUB — from page 3

of the world, where they are much more abundant, they gather in caves, and their droppings accumulate in large enough amounts to provide a source of fertilizer. Elsewhere, the fruit-eating and blood-sucking kinds may be a nuisance.

But in Ontario, bats hardly ever cause more than a slight nuisance if they take up residence in an attic, or between the walls of a building. Here their squeakings, and the disagreeable odour of their droppings may become objectionable. If necessary, bats can usually be discouraged by putting a few handfuls of moth balls or moth crystals in places where they are found.

tant Director, etc.), although a good deal of the program should be conducted by the juniors themselves. An executive committee should be elected from among the older, responsible members.

The officers and their duties might be as follows:

President—presides at all meetings and helps the adult leaders arrange the programs of the club;

Vice-president—replaces the president in his absence and is available for special assignments;

Secretary—keeps the membership records and mails out the notices of all meetings;

Treasurer — collects membership dues and looks after other financial matters, under the direction of one of the adult leaders.

The number of adult leaders required will depend on the size of the club. If it is divided into age or interest groups, a leader will be needed for each group.

The arranging of meetings and special projects will be discussed in Part II, the concluding article of this series. Look for it in the November issue of *The Young Naturalist*.

D. E. BURTON

J. KEITH REYNOLDS

THE YOUNG NATURALIST is published ten times a year by the Federation of Ontario Naturalists for the Young Naturalists Club. Reprinting of text only is permitted provided credit is given to *The Young Naturalist*. Editor: Donald Young; Chairman of Committee: R. V. Whelan.

SUBSCRIPTION (one year) to *The Young Naturalist* and membership in The Young Naturalists Club may be obtained by sending your name, address, and a cheque or money order for \$1.00 payable to the Federation of Ontario Naturalists, 1262 Don Mills Road, Don Mills, Ontario.