



than a dozen pieces, the largest of which indicated a tree trunk more than fifty-six inches in circumference and three feet long. This piece is shown in the photograph. The slab standing upright in the photograph shows the remarkable preservation of the wood fibre and has been tentatively identified by Professor R. B. Thompson of the University of Toronto, as a species of *Callixylon*, while the large piece appears similar to *Prototaxites logani* from Gaspé described by J. W. Dawson in his reports on the *Fossil Plants of the Devonian* Part I, 1871, and Part II, 1882.

Professor Hart, Head of the Department of Botany at the University of Western Ontario, has undertaken a complete microscopical examination of all this wood to complete its determination.

The most interesting feature of these finds, for the geologist, is the silicification of all the wood found along the axis of the anticline in the shales, while less than a mile westwards the wood has been changed into coal. The structural features of the shales must be the explanation. During the arching of the anticline sufficient fracturing occurred to allow the circulation of silica-bearing water which also would be heated probably. Such conditions would bring about the speedy silicification of the wood. Only one piece shows even incipient decay before silicification took place.

About three-quarters of a mile east of the anticline in the shales, is another anticline in the Ipperwash limestone and along its axis numerous flinty concretions occur. These two anticlines seem to represent the most northerly extension of the Cincinnati arch which is known to extend across Lake Erie into Ontario, and, as such, would be an adequate explanation of the silicification of the wood buried in the shales. There is no indication that these trees grew in place. The general appearance of the pieces indicates trunks that drifted into the shales, and there became buried.

Scarcity of fossils in these shale beds makes their age somewhat problematical. Of the fossils, the large fish bones (*Dinichthys*) indicate Late Middle, or Early Upper Devonian. Dr. E. M. Kindle has correlated the Kettle Point shales with the Huron Black shales of Ohio. Clinton R. Stauffer in the *Devonian of South Western Ontario*, (Memoir 43 Geol. Surv. Canada) has discussed rather fully the stratigraphic position of the Kettle Point Shales, showing that they lie directly above the Ipperwash dolomite (Delaware) of the Hamilton formation. At the top of the Kettle Point shales occur some thin layers of yellowish green sands similar to those at the base of the Chemung and this may be taken as the logical disconformity separating the Middle Devonian from the Upper.

THE LEECHES OF LAKE NIPISSING

By J. PERCY MOORE



IN A BIOLOGICAL survey of Lake Nipissing, Ontario, extending over the summers from 1929 to 1934, Mr. J. P. Oughton and his associates accumulated

a fairly large and representative collection of leeches from both shore collecting and dredging. These were sent to me for determination by Mr. Oughton and Superintendent LePan of the Royal

Ontario Museum of Zoology. While the collection contains nothing new, the depth records are of interest and it is also of value to place the determinations on record as a contribution to the geographical distribution of leeches in Canada and for comparison with the leech-fauna of other Canadian lakes. The full list of stations and data is not given as it is expected that Mr. Oughton will do this in his forthcoming report.

Of the 16 species listed herein 11 only were actually taken in Lake Nipissing, the remaining 5 in nearby small lakes and rivers. This compares with 14 species recorded from Lake Nipigon (Moore 1924), 17 from Georgian Bay (Ryerson 1915), 3 from Lake Simcoe (Rawson 1928), 9 from Jasper Park lakes (Bere 1929), 15 from Lake Erie (Moore, 1906) and 17 from various localities in southern Canada (Moore 1922). The total number of Canadian species recorded in all of these papers is 25.

GLOSSIPHONIDAE

GLOSSIPHONIA COMPLANATA (Linn.)

This usually abundant and widely distributed species is represented by only three specimens from Lake Nipissing and one from the Memorial Park at Huntsville, in a rivulet. Of the former one came from a marsh at the mouth of Bass Creek, one from Sturgeon River in 12 feet and one dredged between Blueberry Island and Franks Bay in 99 feet of water on a bottom of soft mud. As commonly happens they were associated with *H. stagnalis*, another species of similarly wide distribution, and with *E. punctata*. On all of those from the lake the dark paramedian stripes are faintly developed.

GLOSSIPHONIA FUSCA Castle

Somewhat surprisingly only a single example of the typical variety was taken with *H. stagnalis* among stones in water 1 foot deep in Perch Lake. This species is generally common in cold, clear water.

HELOBDELLA STAGNALIS (Linn.)

One of the commonest leeches in warm, shallow waters and found in Lake Nipissing at Franks Bay, Goose Island, Bass Creek and in Perch Lake and Don River near Toronto, associated with *G. complanata*, *G. fusca*, *E. punctata* and *H. grandis*. Usually on stones in water 1-3 feet deep. Also dredged at the following stations: IV D3, near mouth of Franks Bay, 63 feet; IV D5, same, 93 feet; VI D4, between Franks Bay and Blueberry Island, 99 feet; XII D4, near Blueberry Island, 69 feet; IX D5, mouth of Campbells Bay, 64 feet; XII D1, same, 63 feet, all with bottom of soft mud. Only one, taken

July 4, 1930, in 63 feet, bears young. The occurrence of this species at the greater depths is unusual. All of the numerous examples from Lake Nipissing are small and most of them have the nuchal plate little developed.

HELOBDELLA NEPHELOIDEA (Graf)

One specimen dredged from South Bay (XXIII D1, depth 3 feet) and three from Manitou Island (LII D1, depth 51 feet) constitute the representation of this species.

PLACOBDELLA PARASITICA (Say)

Five lots, with one exception single specimens, taken from the exterior of snapping turtles or free-living in shallow water, in one case with *P. rugosa*, from Bass Creek, Sand Creek and Franks Bay.

PLACOBDELLA RUGOSA (Verrill)

This is another shallow water species usually found free-living attached to the under side of stones, floating wood, etc., and appears to be common, although all but two lots are single specimens. Taken alone or with *P. parasitica*, *E. punctata* or *H. grandis* in Perch Lake, South Bay, Franks Bay and Bass Creek. One taken at South Bay, July 25, 1930, bears many young.

PLACOBDELLA PICTA (Verrill)

A single typical example measuring in contraction 6.3 x 4.2mm was taken attached to a *M. decora* in a small muskeg lake near Lake Nipissing on July 15, 1934, by P. E. T. Fry.

PLACOBDELLA MONTIFERA Moore

This also represented by a small example 7 x 2.8mm. taken by Mr. Oughton on August 7, 1930 attached to a stick close to shore in Perch Lake. Commonly it attacks frogs, toads and mussels.

ICHTHYOBDELLIDAE

PISCICOLA PUNCTATA Verrill

Taken in considerable numbers principally as an ectoparasite of *Stezostedion vitreum*, along with "fish lice" and trematodes to a recorded depth of 45 feet at Franks Bay, Blueberry Island and West Bay.

ERPOBDELLIDAE

ERPOBDELLA PUNCTATA (Leidy)

An abundant species in shallow water from 6 inches to 3 feet deep, associated with *H. stagnalis*, *P. rugosa* and *Dina parva* at Goose Island, West Bay, Bass Creek, South Bay, Franks Bay and also in the Don River at Toronto. Also an immature one 5mm. long and somewhat doubtfully determined was dredged with *G. complanata* in Sturgeon River about one mile above the lake in 12 feet of water on a bottom of sand and mud, and an egg-pouch probably of this species

with *H. stagnalis* near Blueberry Island on a soft mud bottom at a depth of 69 feet. One example from Goose Island has both the male and female orifices shifted caudad one-half annulus to the middle of XII *a*2 and XII *b*6 respectively.

DINA PARVA Moore

Apparently quite common in very shallow water under rocks along shore with *H. stagnalis*, *E. punctata* and *H. grandis*, especially in and near Franks Bay and on Goose Island. None were in the dredgings from deep water. Pigment spots generally are totally lacking. On one specimen the gonopores are separated by three instead of the usual three-and-one-half annuli.

DINA FERVIDA (Verrill)

Taken sparingly at only two stations: Goose Island July 22, 1930, depth 3 feet, and Franks Bay August 30, 1934, 6 inches, on stones.

DINA MICROSTOMA Moore

The sole record of this species is two specimens from Trout Lake, near North Bay, collected by F. E. J. Fry, July 9, 1932.

HIRUDIDAE

MACROBDELLA DECORA (Say) Verrill

This species was not found in Lake Nipissing itself but two in Perch Lake, August 3, 1933, and two in a small muskeg lake on July 15, 1934. With the latter was a *Placobdella picta*. Only

one measuring 70 x 16. x 4.3mm. was sufficiently mature to have the copulatory glands fully developed. All are very dark coloured, nearly black above, and, while the median series of red spots is conspicuous, the lateral black spots are absent, or at least invisible.

HAEMOPIS MARMORATIS (Say)

Found only on Iron Island, July 20, 1929. Nine very dark, heavily blotched specimens of medium size along with one *H. grandis*.

HAEMOPIS GRANDIS (Verrill)

Probably very common as the species is represented by fifteen bottles, most of which however, contain a single specimen only, though one lot consists of sixteen. With the exception of one taken from a pickerel brought up in a gill net from a depth of 25 feet near Goose Island, all were taken in shallow water along shore. The localities are Franks Bay, Iron Island, South Bay, and Mattagami River, Kapuskasing, collected by R. V. Whelan. The living colour of the latter was noted as green. With the exception of several which exhibit moderate blotching, the specimens are very sparsely spotted, some almost immaculate. Usually the gonopores are in the typical positions in the furrows XI *b*5--*b*6 and XII *b*5--*b*6 but a few show a tendency for them, especially the female, to shift slightly into the following annulus (*b*6). Recorded as feeding on *Physa*.

LIFE HISTORY NOTES AND GROWTH STUDIES ON THE LITTLE BROWN BAT, *Myotis lucifugus lucifugus*

By J. R. DYMOND



THE OCCURRENCE of a colony of Little Brown Bats, *Myotis lucifugus lucifugus* (Le Conte), in the attic of an old house used as a temporary laboratory by the Fisheries Research Laboratory, Department of Biology, University of Toronto, afforded opportunity for making the following observations. The house was located on Lake Nipissing at Franks Bay, near the point where the French River leaves the lake. It was within ten yards of the water.

In most of the seven summers, 1929-1935, during which the old house was used as laboratory and living quarters the colony consisted of a hundred or more bats. During the summer of 1934, one hundred and two were collected and a number, perhaps twenty, remained at the end of the season. During the day most of the bats composing this colony clustered in the gable close to the chimney with which the cook

stove was connected. In 1934 Mr. D. A. MacLulich found bats at the laboratory on April 17th. How long they had been there was not known.

In July, 1934, when the colony was first studied carefully, all the adults present were females. The late Prof. B. A. Bensley in a paper read before the Brodie Club reported that of 31 bats of the same species which he captured on July 8, 1927, at McGregor Bay, Manitoulin District, Ontario, all of the 19 adults were females. The latter colony, which had established itself only that year in the building from which they were collected, consisted of not more than forty individuals. In 1935 Mr. F. E. J. Fry found two adult males in the Franks Bay colony. Observations made during the summers of 1931, 1932 and 1933 support the idea that this colony consisted almost entirely of females.



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