

THE STREPOMATIDAE OF THE FALLS OF THE OHIO. BY R. ELLSWORTH CALLE.

[ABSTRACT.]

This paper lists the various forms of the several genera which occur at this locality. Notes on habits and abundance, on synonymy and geographic distribution are included. The species found number only ten nominal ones, and of these several are synonyms. There are bibliographic references to original descriptions and to published figures.

The ten species found, are distributed unequally, among four genera.

The conditions at the falls of the Ohio are well suited to this form of molluscan life, and they may be summed up in terms of the rich development of the several species in the matter of number and perfection of form. The locality is one of optimum conditions for the development of strepomatid life.

THE SWAMPS OF FRANKLIN COUNTY. BY M. H. STROOPS.

To one entering Franklin County by rail, he gains the impression that he is far distant from a swamp. On either side of the White Water River are high hills, which overlook the river valley. At times the train seems to be rushing into one of the hills, when it suddenly glides around the side, leaving the traveler to gaze at the side of the hill, which rises abruptly to a height of three hundred feet.

This river valley owes its origin to the glacial period. In this section of the State the drift extends south into Kentucky. It is doubtful whether the ice extended farther south than this point. The melting of the vast quantity of ice formed a mighty river that rushed to the south and cut out the White Water valley. The present White Water River was the main channel of the glacial river for southeastern Indiana. This river wore through the rocks to a depth of over five hundred feet. Although the present hills are only from three hundred to four hundred feet high. The valley has been filled with drift to the depth of about one hundred and fifty to one hundred and seventy-five feet at Brookville. On either side of the valley, after ascending the hills, the county is comparatively level in places, except close to the tributaries of the river. Some parts of the county are very level and can only be cultivated because of artificial drainage.

In the northeastern part of Franklin County was the swampy region. The early settlers in this county ignored that section, they settled the river valley and hills before any one had the courage to even try the highest portions of the swampy region at that time, what is now Bath Township, and the wealthiest township in

Franklin County was the home of the beaver, bullfrogs of immense size croaked through the early spring months with nothing to disturb their music except the quack of the wild duck and the squall of the goose. Bath Township is on the divide between the White Water and Miami river systems. Part of the land is drained by the Miami and part by the White Water river. The swamps were caused by large quantities of ice being left on the land to slowly melt, as it melted the water was carried off to the east, south and west, while a great part of their debris was left on the ground which partially buried the ice, this ice slowly melted and left large ponds of water all over the township.

As the soil carried down by the ice was an impervious clay, the water could not very easily escape except by evaporation, when the snows and rains of winter came they were again filled to overflowing.

They varied in size from a quarter of an acre to a hundred or more acres. As the settlers became more and more numerous they were pushed nearer and nearer the wet lands, as it was impossible to raise anything on this wet land the settler began to devise means to carry off this surplus water. He succeeded until there are only two or three swamps that have not yielded to his labor. Throughout the wooded portion of the township are low places which collect the spring rains and hold the water far into the summer, but only one large swamp remains, that is known as the "big swamp." It is about a mile long and one-fourth of a mile wide at its greatest width. It is now covered with a tangled growth of vines, willows and soft maples. It was formerly covered with a coarse grass which grew four or five feet high. Each year the farmers plow a little closer to it or put in a new tile ditch so that they are gradually reclaiming some of the best farming land in the county. This swamp in the spring of the year is a miniature lake, after a heavy rain the water is often four feet deep in places. It abounds in thousands of frogs that can be heard on any mild day in winter. Around the edges chimney crawfish rear their chimneys in great numbers. Wild ducks only occasionally visit it, but snipe are common.

This swamp was formerly the home of the beaver. To have an abundant supply of water he built a dam at each end of the swamp. As they exist to-day, they are about seventy to eighty feet in length and four to five feet high. These beavers knew how to economise their labor, because they built their dam at the point where it would require the least work. The water runs out of this swamp in two directions. It is the source of Big Cedar creek that empties into the White Water, and the source of Sand creek which finds its way to the Miami river. When it was the home of the beaver, the water was probably ten feet deep. An open ditch at the south dam is ten feet below the surface; add to this

the height of the dam as it now exists, and it is thirteen feet from the bottom of the ditch to the top of the dam.

The land that has been reclaimed from the swamp is a black vegetable mould that is very productive. Several wells have been made in the reclaimed land that furnish a strong flow of sulphur water, at a depth of four to six feet, out of a pure white sand. The soil is very porous, where it seems perfectly dry, water will soon fill your tracks, and the furrows made by the plow fill with water by the time the farmer can make a second round.

In traveling along the roads the existence of former swamps are very plainly seen. The soil is a grayish or white clay. The decayed vegetable matter in the swamps made a black soil which contrasts strongly with the white clay. Some farms are, however, all black soil. The amount of this soil always determines the value of the land.

The big swamp of late years has completely dried during the long continued droughts, as to the surface appearances, but a stick stuck in the soft loose soil comes out wet, and the hole soon fills with water. The old settlers say that numerous fish could be taken from it during the spring months, when there was plenty of water, and that a tall coarse grass covered it entire during the summer. In the fall, when the grass was dead, it was often fired, when it would burn for weeks at a time, burning great holes in the ground about the edges of the swamp. This swamp is undoubtedly of glacial origin, and formerly extended over more or less of Bath Township. It has been the home of the beaver. It is underlaid with pure white sand and furnishes abundance of sulphur water. Man has labored for seventy years to redeem it, and has almost conquered, making the wilderness blossom as the rose.

WATER CULTURE METHODS WITH INDIGENOUS PLANTS. BY D. T. MACDOUGAL.

During the course of some extended experiments relative to the general nature and functions of the tuberous formations on the roots of *Isopyrum* it was found impossible to secure a normal development of this hardy plant in pots with customary greenhouse temperature. An examination of the habit of the plant reveals the fact that it starts into active growth at the close of the winter season, when the soil is scarcely above the freezing point, and by the aid of a few days of warm sunshine accomplishes its yearly growth, during a period when the difference between the soil and air temperature is greatest. The amount of such difference between the soil of a northern hillside and the air in April and May, the growing period of the plant, is very great in this latitude, 45° . With such facts in hand