

BIOLOGIST

CHAPTER, EMORY UNIVERSITY

...ship of Dr. Woolford B. Baker, Mr. ...ncey G. Goodchild, the Pi Chapter ...ctivated after three years of inacti-

...ry 1958, the following were initiated

- Bernhard Paul Meinhardt
- Diane M. Oakerson
- Robert A. Pedigo
- Barbara Ann Powell
- Lynn Raulerson
- Jack B. Sartain
- Elbert W. Schmitt, Jr.
- Henry Kenneth Walker
- William Michael Watterson
- David J. Cotter

...ving officers were elected: Pres., ...e Pres., Henry Kenneth Walker, Box ...n, Biology Dept.; (Editor) Corr. Sec., ...6; Treas., William W. Brooks, III, ...; Dr. Anthony C. Clement, Biology ...; Dr. W. B. Baker, Biology Dept.

...bert Platt of the Biology Dept. pre- ... "Graduate Schools and A Career in

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3 PRESIDENCY OF THE OF WISCONSIN

...nouncement that Dr. Conrad A. ... President of the University of Wis- ...his happy event marks the third pres- ...who has been active in the affairs of ...his predecessors in office, Dr. E. B. ...are all Zeta men. Phi Sigma is ...he record of these presidents in bio-

THE EFFECTS OF THIRTY YEARS OF "PROGRESS" ON THE HURON RIVER IN MICHIGAN

by Henry van der Schalie

In 1930, as a student in graduate work at the University of Michigan, it was possible for me to make a survey of the ecology and distribution of the fresh-water mussels of the Huron River\*, an attractive stream that flows through Ann Arbor. In that period, a little over a generation ago, it was quite evident that social and industrial developments would bring about so many changes that the fresh-water fauna would suffer considerably. Even at that time there were power dams at Flat Rock, French Landing, above Rawsonville, Ypsilanti, Geddes below Ann Arbor, Argo at Ann Arbor and Barton above the city. Not only were such dams obstacles to fish migration but they also brought about such drastic changes in the ecology of many of the species that inhabited the lower reaches of the river as to alter the original fauna completely. With the exception of the dam at Milford, the river above Ann Arbor was otherwise relatively free of major installations developed by humans. While originally it was thought advisable to plan another survey of the fauna in the river to understand better the changes that came about with time, several unexpected developments damaged the fauna to such an extent as to make the undertaking almost futile and somewhat unrewarding. While this stream is only another example of the kinds of changes that are taking place, it would be timely to indicate some of the known developments that affected this stream during the past thirty years.

In the late thirties, E. B. Williamson, while collecting dragon flies, came across a large pile of mussel shells along the banks of the Huron near the Delhi rapids. He called it to my attention so I took occasion to look into the situation. It seems that some venturesome people decided they would collect the mussels to obtain the pearls they produced. It was interesting to find that the species they took were mainly the pink warty-back, *Cyclonaias tuberculata* Raf. That mussel has a very extensive interdental plate and is often so heavily parasitized with flukes as to yield a high production of pearls. Unfortunately, the nacreous shell of that species is inferior both because it is not lustrous but dull and also because it tends to have an undesirable bluish color. It was clear that several tons of mussels had been sacrificed to obtain a small quantity of very inferior pearls. The whole operation was

\*The Naiad Fauna of the Huron River, in Southeastern Michigan. Univ. Mich. Mus. Zool., Misc. Pub. 40: 1-83, 1938.

wasteful but in view of the developments that will be cited later it was evident that this damage was minor in terms of the events that followed. Others have had ideas about becoming rich by recovering pearls from mussels. While the possibility is there, those so bent are usually not able to perform the tasks involved in such an undertaking; they certainly are unaware that it took Mr. Mikimoto a lifetime to produce pearls artificially in Japan.

The Huron, like many other streams in Michigan, was reasonably productive until about the time of the second World War. Most of us were so busy with war work that we hardly realized what was happening in the out-of-doors. The rapidity of the change was impressed on me when at a staff lunch in the Zoology Department I was asked where the Natural History class could best see a good bed of mussels. It was suggested to the instructor that if he would take his class to the shoals and rapids at Delhi, about 6 miles above Ann Arbor, he could show the class a fine bed of mussels and that at that station there would not only be many individuals but the shoals would yield 15 species representing 12 genera. It was somewhat surprising to learn at the next staff lunch a week later that none of the class was able to find a single mussel! Evidently something drastic has taken place.

During the war many tons of old rags were used for wiping machines in the Detroit area. These greasy clothes were loaded on trucks and taken to a laundry at Dexter about two miles above Delhi on the river. In the process of the laundering, the sewage disposal plant at Dexter carried about as much effluent in one day as it usually carried in a month. As a consequence, the wastes from the laundry might just as well have been dumped into the river directly. That single plant in its operation for a couple of years during the war practically wiped out all of the mussels and the aquatic operculates in the Huron River below Dexter. Another development in that same stretch of river bears comment. The Huron River, together with the Clinton River (to the north), has for many years been considered a park area and has been under the jurisdiction of Huron-Clinton Park Authority. Yet, some time after the last war a large automotive-parts factory was built right on the river and in the heart of this parkway at Scio about 2 miles below Dexter. The justification for the presence of that commercial plant in the middle of a so-called recreational area has, as yet, never been explained.

It is clear from the foregoing that the Huron River from Dexter to its mouth (a distance by river of about 60 miles) is hardly, even to a small degree, anything like the productive stream it was formerly. What of its condition farther upstream? In 1944, while gas rationing was still in effect, it was my good fortune to be permitted to collect in southern Michigan and in much of the Huron drainage to obtain Amnicolid snails which were to be tested by Dr. Stunkard and his students as possible carriers of the Oriental Blood Fluke (*Schistosoma japonicum*). Dogs which had been loaned to the Armed Forces in the Orient were being returned to their owners in the states and some of them had been infected; also, soldiers were returning who had been exposed to

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schistosomiasis in the Philippines. However, this program of supplying possible intermediate host snails permitted survey work which would otherwise not have been possible. I shall never forget the day I visited some shoals in the Huron below Milford. In spite of all my efforts I just could not find the mollusks that used to be there. As I came up out of the river I found an older woman on a bridge waiting while two of her youngsters were swimming. I explained that I used to get a wealth of shells from the river but was disappointed to find they were not there any more. It was then that I learned that a war factory at Milford had grossly polluted that area and for a year or two no one could swim in the river! Some time later when I tried to find Pleurocerids in the lake-like expanses of the river many miles below Milford it was evident that the bottom fauna of the stream had been irreparably ruined for long distances below Milford. Since that time the stream has become more sanitary, perhaps in part due to the development of a very large park and swimming facility built when a large pond was created by a dam near the junction of M-16 (the Detroit-Lansing road) with the river. This region is called Kent Lake and serves as a retreat during the summer months for thousands of people from the Detroit area.

Within a generation of time this local river has changed from a very productive stream with many natural resources to one that is mediocre at best.\* Most of the original fauna has been altered and only certain tolerant forms have survived. This development is unfortunate because when we know the original fauna of such a river it is possible to learn something about former stream confluences and the relations of these rivers to one another in the early post-glacial stages of development.\*\* It is also discouraging when such changes take place in the vicinity of an institution provided with facilities for the study of a wide variety of biological fields. For example, Dr. George R. LaRue once stated that just one mollusk species in the river, *Goniobasis livescens* Menke, yielded enough varieties of cercariae to keep all of his students working on life histories for the rest of their lives. As an operculate, gill-breathing mollusk, that snail is now difficult to find in the river. In this connection, it has been of interest to note the shifts that have taken place ecologically. Many pleurocerids, such as *Goniobasis livescens*, live on gravel and rocks in the stream. After the river had been badly polluted, the rocks and bottom became covered with a thick, slimy algal film and the snails that formerly lived on clean rocks in clear water disappeared. But there is an

\*The late H. J. Van Cleave published an excellent article: "Man Meddles with Nature" (Scientific Monthly, 40: 339-348, 1935) indicating some of the harmful effects of meddling.

\*\*The Value of Mussel Distribution in Tracing Stream Confluence. Mich. Acad. Sci. Arts & Letters, 30: 373, 1944.

"ersatz" mollusk fauna which is represented by aquatic pulmonates such as the pollution tolerant *Physa* and *Helisoma*. While they were formerly not common in the river they are now almost everywhere in slow-moving waters.

These observations regarding some of the changes in this particular river are perhaps not as drastic as some alterations in many other streams. The late Bernard DeVoto (Harpers, 1955: 16) in an article with the title, "Hell's Half Acre, Mass.," has treated the subject of changes that come about through urbanization, etc. He has expressed this process nicely in the following statement:

"Go anywhere you choose. See the suburbs and shopping centers spreading into the fields. See expressways carving up open areas whose loveliness and quiet are indispensable and are also ended forever. Pick up any newspaper and read what is happening everywhere. For everywhere natural areas, semi-natural areas, and wholesomely disregarded areas in a partially natural state, are being obliterated. The growth of towns, cities, and industries is swallowing them up. No end to this process can be imagined, and it is irreversible."

In conclusion, it may be added that those who have had the experience of working in regions that have been unscarred and are relatively well supplied with their original fauna and flora are indeed fortunate. While it is important to understand the mechanism of evolution as it is revealed through studies with the standard laboratory animals, the tests of its full meaning and significance can only be valid when those principles can be applied to the myriad of animals and plants in nature.

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#### DR. ORCUTT NAMED HEAD OF BIOLOGY AT V.P.I.

Dr. Frederic S. Orcutt, professor of bacteriology at Virginia Tech, was named acting head of the biology department in a statement issued jointly by L. B. Dietrick, dean of agriculture, and Dr. G. Burke Johnston, dean of applied science and business administration. The department has work in both schools.

The appointment of Dr. Orcutt as acting head became effective Feb. 1. Dr. Orcutt joined the Virginia Tech staff in 1936. He has B.S., M.S., and Ph.D. degrees from the University of Wisconsin. In Phi Sigma, Dr. Orcutt is the Executive Secretary-Treasurer of The National Organization.