right valve and one in the left. The single cusp of one valve fits tongue and groove fashion in the space between the two cusps of the other valve.

Variance in this arrangement constitutes reversal, e.g. two posterior laterals in the left valve and one in the right. The specimens studied in this investigation had a reversal rate of 12.1 percent and of the reversals, the posterior laterals were reversed 40.5 percent, the anterior laterals and cardinal on the same valve 41.0 percent, and complete reversal 18.4 percent.

The rate of reversal for populations of *S. striatinum* from the two drainage systems was not constant but varied from 0 to 19 percent. The posterior lateral reversal was predominant in the Muskingum system; in the Scioto system each type of reversal was predominant in at least one population.

THE MOLLUSCAN SEA GRASS COMMUNITIES IN BISCAYNE BAY. Donald R. Moore, University of Miami.

(Abstract)

The sea grass, *Thalassia testudinum*, is found in shallow marine waters throughout most of the West Indian region. It is the home of countless numbers of animals which include many mollusks. Since October, 1960, the Institute of Marine Science of the University of Miami has maintained two stations in Biscayne Bay where the *Thalassia* communities have been sampled monthly. These samples have been taken with a push net and with a 1/10 meter bottom sampler.

The station on the mainland side of the bay, where physical conditions are more rigorous, has produced only a few species of mollusks, but some of these are present in vast numbers. The most abundant mollusk, *Caecum pulchellum*, was present in numbers exceeding 13,000 per square meter in one bottom sample. There was a considerable difference in the faunal composition of the samples taken by the two types of collecting gear. *Bittium varium* was the most abundant gastropod taken in the push net. The 1/10 meter sampler showed that two bottom dwelling gastropods, *Caecum pulchellum* and *Rissoina chesneli*, were more numerous, but were seldom high enough on the grass blades to be picked up by the push net. For *Caecum pulchellum*, the bottom sampler to push net ratio was a thousand to one.

The station on the seaward side of the bay is much more stable in regard to salinity and temperature, and the mollusk community is represented by a much larger number of genera and species. No species is present in large numbers, and there are many more kinds of predatory gastropods.

ORIGIN OF THE MOLLUSCAN FAUNA OF FLORIDA. William J. Clench, Museum of Comparative Zoology, Cambridge, Massachusetts.

A CENTURY OF CHANGE IN THE NAIAD POPULATION. David H. Stansbery, Ohio State University, Columbus, Ohio.

(Abstract)

An attempt has been made to summarize the changes which have occurred in the naiad fauna of central Ohio during the last century. The area concerned is the entire Scioto River Drainage above Circleville, Ohio. Data have been obtained from the published writings of Say (1819), Conrad

(1836), Sullivant (1838), Kirtland (1838), Higgins (1858), Sterki (1907), Price (1940) and from collections of subfossil shells, recent shells and living specimens made during the period 1955–1961. The term subfossil is used here to indicate the old, weathered, shells of naiads which have apparently been dead for a long time. Many such specimens have been found "in situ" in stream banks overlain by several feet of formed soil or in the gravel debris of stream flood washouts. Such collection sites as these indicate an age of hundreds or perhaps thousands of years. In the absence of fresh specimens, subfossil records are interpreted as evidence of the previous existence of a species at or near the collecting site.

The Higgins paper (1858) is used as a base of reference in this report since he limited his catalogue to those species in "the vicinity of Columbus" and since our own collections have been largely limited to this same area. The downstream boundary of Circleville is probably somewhat beyond the area considered by Higgins. This is indicated by the fact that the eight species we have been able to add to Higgins' list are mainly downstream forms. These have been found either as subfossils at or near Circleville or as recent specimens in the lower reaches of downstream tributaries.

Only one record in the Higgins' list seems to be in error. His record of *Unio subrostratus* Say as "very common" apparently represents the presence of the superficially similar *Villosa iris* (Lea, 1829). The latter is a species common throughout the area and is not listed by Higgins.

Higgins described the naiad fauna of 1858 as follows:

> "Gentlemen who collected the shells of this vicinity in early times, found many species in great abundance which have at this day totally disappeared or are represented by occasional straggling specimens, and all species with but few exceptions, have gradually decreased in numbers . . ."

It thus appears that the extirpation of our naiad fauna had commenced some time before the advent of large amounts of domestic and industrial stream pollutants. The factors responsible for this early found decrease are not known. Trautman in his *Fishes of Ohio* (1956) reviews stream conditions during the 1801–1850 period and cites sawdust, brewery and slaughter-house wastes as the principle pollutants of the time. Siltation either was not a problem then or at least was not recognized as such. Since nearly all the species which have become extirpated from the area considered have been riffle forms, it seems probable that the factor or factors responsible are in some way related to riffles. Whatever the cause of the disappearance of 15 species from the entire study area, it seems certain that the complete absence of naiades from the Scioto River between Columbus and Circleville must be due to the past action of domestic and industrial pollutants from Columbus.

Tabular Summary of Faunal Changes

Total Number of Forms Recorded for Upper Scioto River Drainage	=	52
Extirpated forms recorded as subfossils only	=	4
Total Number of Forms Recorded by Pioneer Naturalists before 1858	=	48
Extirpated forms noted as absent in 1858 by Higgins	=	6
Total Number of Forms Recorded as Living in 1858 by Higgins	=	42
Extirpated forms becoming absent since 1858	=	5

Total Number of Forms Recorded by Living or Fresh Shells Today	**= 37**
Forms represented today by 1 or 2 living specimens, a few fresh shells only or a single relict population	**= 13**
Total Number of Species Represented Today by at Least 2 Living Populations	**= 24**

(As he concluded, Dr. Stansbery supplied his audience with checklists of the species under discussion.)

With this paper the afternoon session was ended, as was the academic portion of the meeting. Came a hurried exodus to the hotel, and at 5:45 the buses were boarded once again, this time to transport the group, now finery bedecked, to the Columbia Country Club in Chevy Chase, Maryland. The occasion was the annual dinner and again the local committee had chosen wisely. The setting was most attractive, the social hour erased the cares of the day and the banquet of Maryland fried chicken (naturally!) was delicious.

The place cards were especially admired. Upon simple white cards, adorned each with a shining *Cypraea*, guests found his or her name inscribed in elegant shaded penmanship reminiscent of the 1800's. The calligraphist was Mrs. Lawrence F. Imhoff, a member of the National Capital Shell Club and whose talents are often in demand by the White House on occasion of state dinners.

Following dinner, President Pulley arose to introduce those at the head table, then called the roll of the thirty local shell clubs, most of which are affiliated with the AMU. He invited members to stand as their club was called; many were members of two or more clubs. Indeed, Rose and John Burch bobbed up and down like two corks!

Last to be called was the National Capital Shell Club whose members had been responsible for the great success of the meeting. The standing ovation accorded these hard-working people was spontaneous and sincere.

President Pulley then introduced his successor, Dr. William K. Emerson, handing over the gavel with the admonition to use it without stint. Dr. Emerson promised to cherish it until it shall be time to call the 1962 meeting to order. He invited all present to attend that meeting, wherever and whenever it may be held.

While this had been going on the tables were being cleared and a motion picture projector set up. Dr. Pulley (Past President now) explained that with the cooperation of the U. S. Navy and the Houston Underwater Club he had been able to conduct an expedition to the "Flower Garden Banks" located 125 miles off Galveston, Texas, and in 60–90 feet of water. Here was found a beautiful typical West Indian coral reef with more than 15 species of reef-building corals and all the fishes, mollusks, and other sea life so characteristic of the tropics.

Although earlier investigators had collected dead and worn coral specimens from the flanks of these banks, they did not believe that corals could now live so far north in the Gulf. These specimens had been regarded as fossils, and the nearest living shallow water coral reef was thought to be off Cabo Rojo near Tampico, Mexico.

The presence of this thriving coral reef off Galveston must be explained by the moderating influence of 125 miles of sea water on the cold north winds of winter that often sweep across Texas and out into the Gulf. At any rate,

the films shown by Dr. Pulle
where the temperature must
or so that is tolerated by the
mother ship, divers in action
and instructive and enjoyed

Brief remarks by Mr. Vine
the greetings of the members
known to his audience since
group in 1960. He also aske
of his Cuban colleagues in the

The field trip on Friday mo
cars for the 45 mile trip to Sca
Miocene fossils which stud th
the true collectors descended
those washed up at tide line
and perhaps a bit of gossip

Greatly sought after but fo
quadricostata Say which had a
the information that it was th
fific literature. However, bot
were abundant as were several

An afternoon shower brou
Washington was the final eve

ATTENDED 1

Dr. R. Tucker Abbott, Pl
Dr. J. Frances Allen, W.
Miss Letha S. Allen, Balt
Lester E. Allen, Yarmou
Miss Katherine M. Ander
Mrs. Norma Ashbery, Bu
Capt. and Mrs. Carl L. As
Herbert D. Athearn, Clev
Chris Baillie, Ottawa, Ont
Dr. and Mrs. Horace B. F
Dr. Paul F. Basch, Empor
Theodore Bernier, Washi
Mr. and Mrs. Alger P. Bl
Mrs. H. M. Bixby, Bolton
Allen Brimmer, Bethesda
James Broadus, Mobile,
Dr. John Bayard Burch,
Mr. and Mrs. John Q. Bu
Mrs. Thomas A. Burch, S
Miss Ruth Cahoon, Scran