If you’ve ever watched many westerns on television, you know it’s easy to tell who the villain is—the cattle rustler. The good guys were the ones watching the cattle. But picture this scene: the watchman spends a tense and sleepless night, one jittery eye always watching for the thief, the other on the livestock. Not that the livestock were going too far—unlike cattle, the animals he was guarding would never wander off on their own.

The scene was played out time and time again, not on the range, but on the waters of the Chesapeake Bay and its tributaries, where hired watchmen guarded priceless oyster beds, the mother lodes of Maryland’s waterways, the harvest that men inspired their own “range wars”—the oyster wars of the Chesapeake Bay.

The Maryland oyster trade came into its own during the nineteenth century. During the early part of that century, Connecticut was the center of the oyster industry, with Maryland only producing about 500,000 bushels a year. But the New England oyster beds were quickly depleted by dredgers, who then turned their greedy eyes on Maryland, with its seemingly endless supply of succulent oysters. New England dredge boats started to come to the Chesapeake Bay, where they took oysters to transplant in their own waters. In 1810, Virginia passed a law to prohibit this, and Maryland followed suit in 1820. But there was no turning back the clock. The Maryland oyster had been discovered, as gold would soon be discovered in California. And the resulting oyster rush would change the sleepy Easter Shore and parts of tidewater Southern Maryland forever, just as the gold rush had changed the old West.

By 1872, Crisfield was Maryland’s oyster trading center. Over 600 vessels sailed out of Crisfield. All a man needed to go out in a vessel was courage, strength, endurance, brains, and the willingness to sweat and to freeze in pursuit of that jewel of the Chesapeake Bay—the Maryland oyster.

Suddenly, there were tremendous opportunities on the Bay—fortunes to be made, and men willing to do almost anything to make them. Crisfield became a boom town in the best tradition of the Wild West. There was even a large boxing ring in the middle of a local saloon where Smith Islanders slugged it out with watermen from Virginia, symbolic of a conflict that took place on a much larger scale. Not only did Virginians fight Marylanders, but dredgers battled tongers, oyster pirates battled the legally licensed watermen, and the dedicated men of the Maryland oyster navy went after any oysterman who was breaking the law.

A figure who was not as well known but who was also caught up in the fray was the oyster watchman. It normally takes three years to grow a large size oyster. And a waterman, or oyster farmer, isn’t going to invest three years in an oyster bed only to see someone

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REMEMBER THE VOLUNTEER DINNER, JANUARY 12, 1988
COMMON FOSSIL BONY FISH REMAINS
By George Charles Fonger

The Calvert formation (middle Miocene) of Maryland and Virginia is well known for its fossil remains, the most common of which are a wide variety of shells, numerous shark specimens (primarily teeth), marine mammals, reptiles, and birds. Little attention has been directed toward the bony fish fauna, however, probably because most bony fish remains are fragmentary, small, relatively fragile, and often poorly preserved.

Bony fish remains are usually discovered on exposures of the Calvert formation outcrops located along the western shore of the Chesapeake Bay and the banks of the lower Potomac River in Maryland and Virginia. Skeletal finds often include isolated units: individual vertebrae or backbone segments; defensive projections, such as pectoral spines of catfish, drumfish, or other larger fish; isolated dentaries; premaxillary bones (the lower jaw and two bones of the upper jaw); shed teeth; or hypural fans, which are uniquely modified tail vertebrae.

Conditions leading to preservation of a fragile fish fossil depend on numerous biological, chemical, and mechanical processes, the most important being the rate of decomposition and the specific type of bacteria (aerobic or anaerobic) involved. Aerobic bacteria utilize oxygen and therefore decompose the remains at a rapid rate. A fish carcass can be carried away or partially destroyed when exposed under aerobic conditions to surface air, to such possible scavengers as birds or mammals, and to the elements. Conversely, anaerobic bacteria require no atmospheric oxygen and decompose fish remains at a slower rate. Ideal conditions for anaerobic preservation exist when a specimen is rapidly buried within silt, sand, mud, or clay; when little or no prior scavenging has occurred; and when decomposition has progressed at a slow but steady pace. Other favorable conditions leading to preservation must include some mineralization. Leaching from the organic acids produced during both biological and nonbiological processes impedes preservation.

When fossil fish remains are found in situ, often only a small part of the cranium or spinal column is exposed. The fish is removed intact in a block of clay and sand matrix. The block in excised so that only the clay and sand far away from the bone are disturbed. The process of cleaning a fish fossil is slow, since the bones may be brittle, fragile, and hollow. After dental picks are used to remove the clay and sand matrix, the skeleton is treated with a chemical hardener to prevent further deterioration. Often, however, the specimen is too fragile to be removed completely from the surrounding matrix.

The historical compilation of fossil bony fish remains from the Calvert formation or its equivalents includes identification of specimens based on shed teeth. In the middle 1800s Joseph Leidy described a tooth assigned to *Sphyraena speicosa* from the Kirkwood formation of New Jersey; this fossil barracuda is also common in the lower Calvert formation of Maryland. Also in the middle 1800s, Edward Drinker Cope described shed teeth from an extinct drumfish, *Pogonias multidentatus*. The buttonlike teeth and isolated jaw fragments of *P. multidentatus* are commonly found along the Miocene exposures of Maryland and Virginia. During the 1930s, Lynn and Melland described a fossil catfish found at Plum Point, Maryland. From the 1960s onward, remains of the tautog, billfish, and ocean sunfish were described, as well as otoliths (“ear stones”).

Identification of fossil fish remains found along the Calvert formation is challenging detective work. Attempts to identify specimens can be frustrating because of the lack of systematic data; such data are limited to very few conclusive studies of the cranial and postcranial skeletons of modern fish. Those interested in identifications should first find a good text that describes a fish skeleton in detail, then learn the different structures common to the construction of the fish’s cranium and its postcranial elements. Information is available from a variety of sources: the collection of recent fish skeletons on display at the Smithsonian’s National Museum of Natural History provides an excellent overview of the major fish families, and good university libraries contain texts on comparative anatomy and maintain collections of journal articles and monographs devoted to vertebrate paleontology. Anyone visiting the museum will find useful materials for consultation in the museum library.

In attempting to identify fossil remains, one must determine the structure of the specimen and its potential placement in the fish. The most common specimens, such as teeth, upper and lower jaws, and other fragments comprising the skull, are easily placed into context when a diagram of the basic bony fish is examined. Consider the morphology when examining specific structures. Are the teeth pointed for tearing flesh, or are they buttonlike and modified for crushing? Are the vertebrae small, or are they over...
CMM MOVES AHEAD TO COMPLETE THE NEW EXHIBITION BUILDING

During the past two months there has been noticeable progress with the new exhibition building. Visitors to the museum since September have been able to follow the post-and-beam construction that will characterize the new building. Large Douglas fir posts from the West Coast have been erected, with almost equally heavy beams between them to support the floors and roof. This work is proceeding slowly since cutting and fitting of the various elements is very critical and must be done on the job site. At press time, approximately the north half—including the auditorium—of the structural framing has been completed, but without the roof installed yet. Work will proceed next to the south half of the building. Succeeding steps will include the installation of the roof decking and covering, the application of the red cedar board-and-batten siding (over the masonry blocks that are presently visible), completion of the parking area and sidewalks, and finishing with doors, windows, and decking between the building and the present boat basin.

The most significant development, however, has been the awarding of the contract for the interior work. As reported in earlier issues of the Bugeye Times, funds available when the building was first bid in the summer of 1986 were not sufficient to cover the entire cost of construction. For the new fiscal year both the Calvert County government and the state of Maryland approved additional funds sufficient to complete the structure. In early fall this final construction phase was bid. From that action a contract has been signed with the present contractor, the Davis Corporation of La Plata, to complete construction. Having a single contractor will simplify the meshing of the two construction phases and will, it is hoped, speed the completion of the work, now expected in the late summer of 1988.

EXHIBITS FOR THE NEW BUILDING

As we look back over the past few years, we can see how far we've come. The major efforts of the museum's Board of Governors and Development Office during that time have been directed toward obtaining the funds needed to construct the exhibition building and to complete the Challenge Grant from the National Endowment for the Humanities, the latter grant to be used for the renovation of the present museum exhibition building. With both of these objectives now accomplished, the board and staff have turned their efforts toward the next challenge: raising funds for the design and installation of the major exhibits in the new exhibition building.

There will be three major exhibit areas: the large maritime history hall, a small paleontology hall, and the estuarium with seventeen aquarium exhibits and an otter tank. Based on planning to date, it is anticipated that these major exhibit areas will open on the following schedule: maritime history in late summer 1990, as part of the museum's twentieth anniversary celebration; the estuarium in 1991; and the paleontology hall in 1992. Immediately available when the new building opens will be the 200-seat auditorium, a new and expanded museum store, the new Society Room for members, and a new Learning Center (see the separate articles on these two facilities). Temporary exhibits will display our collections until the major exhibition areas are completed.

A good start has been made in obtaining the funding for exhibits and for the educational programs in the new building. In late 1985 the
museum applied for and received a planning grant of $33,668 from NEH to plan the maritime exhibit. Working with a group of distinguished consultants, the museum’s director and the curators of maritime history and exhibits, Paula Johnson and Bette Bumgarner, created a design for the Maritime History Hall. A further grant request has been submitted to NEH to fund a major portion of the fabrication of this exhibit. Similarly, funds will be requested to design and create the other two exhibit areas. Fortunately, we have in hand commitments for some funds to cover a portion of these exhibits, and further requests will be made to both governmental and private funding agencies.

Additionally, as part of its development efforts, the museum last month applied for and was awarded a grant of $45,000 from the Marpat Foundation of Washington, D.C., to equip and support a new Learning Center in the new building, as reported in a separate article.

Our past successes could not have happened without continuing commitment of CMS members and other friends of the museum. As we face the challenge of completing our funding of exhibits for the new building, we know your support will be there to enable us to continue our progress.

The Calvert Marine Museum has been fortunate in its development during its seventeen years of existence. With its basic support from the Calvert County government, augmented by funds from a wide range of other organizations and individuals, it is well established as an institution preserving and displaying the natural and cultural marine resources of Southern Maryland that were—and still are—in danger of loss through neglect. Attracting 50,000 visitors and students annually, it clearly serves an important purpose for the region, both culturally and economically. Your association with the museum is indicative of your support of these objectives.

LEARNING CENTER FUNDED FOR NEW EXHIBITION BUILDING

When the new exhibition building opens next fall, CMS members and visitors will be able to experience a hands-on discovery room similar to the one at the Smithsonian Institution, thanks to the Marpat Foundation of Washington, D.C. The discovery room will be the nucleus of the Calvert Marine Museum’s new Learning Center being funded by a Marpat Foundation $45,000 grant, and is intended to encourage visitors to investigate and discover the estuarine wonders of the natural and social history of the region.

Within the discovery room, activity centers will provide visitors a place to work, as well as books, materials, equipment, labeled specimens, and artifacts (such as marine fossils, mounted fish, and boatbuilding tools) which can be actively examined and studied. Visitors will also be able to perform simple chemical and biological tests for a better understanding of water quality and scientific sampling techniques.

In addition to the discovery room, the Learning Center will include classroom and workshop areas, as well as an office for the curator of education. The discovery room itself will be adjacent to the lobby and auditorium in the new building, with an internal stairway to a mezzanine loft over part of the room that will provide an additional and distinctly separate space for other activities. A walkway from the mezzanine loft will connect with the classroom and workshop areas and the curator’s office on the same level.

For the first time in its history the museum will have the physical space within which to create specific learning activities on an on-going basis. With funding for the equipment and materials needed to set up this Learning Center—thanks to the Marpat Foundation—the museum will have made a giant step toward realizing its full potential as an educational institution. It is anticipated that the discovery room, as the state-of-the-art in museum education, will be a primary and continuing attraction for students and visitors.
SOCIETY MEMBERS TO ENJOY THEIR OWN SPACE IN NEW EXHIBIT BUILDING

Commanding the second floor (third level) of the museum's new exhibition building, the Calvert Marine Society Room will provide members and prospective members with comfortable chairs, coffee, reading material, and a relaxing atmosphere. Decorated with ship models, paintings, and other memorabilia from the museum's collections, this area will offer beautiful views of the Patuxent River, Thomas Johnson Bridge, Drum Point Lighthouse, Back Creek, and the museum's boat basin. A balcony at the front of the building will heighten the view and prestige of this area.

In this area the museum will also proudly display its awards, recognitions for significant contributions, and ledgers in which are maintained the names of honored givers. The room will lend itself ideally to special meetings and social events. Located adjacent to the society's room will be the development and membership offices, a kitchenette, and a restroom. Staff will be on hand to assist in making the room a comfortable retreat and experience for members.

SELECTED RECENT ACQUISITIONS

CMM has received historic seafood cans (oyster, crab, and herring roe) from the Maryland Department of Health and Mental Hygiene and from the Independent Can Company of Baltimore, some of the latter through the efforts of Joseph C. Lore, Jr. In addition, Francis Buehler has loaned the museum his extensive collection of such cans.

The late Mary Harrison donated a map of Southern Maryland showing the proposed route of the Drum Point Railroad Line. Noted marine artist, John MacLeod, donated two framed prints, one of the "Pride of Baltimore Passing Cedar Point" and the other of the "Schooner Alexandria at Smith Point."

Robert Burgess loaned us broadsides and posters of the SS Bay Belle schedule for excursions from Baltimore to Solomons. Kate Curtis loaned a snuff box engraved "Commodore Hull." It is reputed that Isaac Hull, famous for his command of the Constitution, left the snuff box while staying at The Plains Plantation, along the Patuxent River in St. Mary's County during the War of 1812.

Fifteen additional paintings have been donated by the late C. Leslie Oursler. This brings together twenty-six paintings by Oursler, believed to be the largest public holding of this Maryland marine painter.

Mrs. Lloyd H. Stevens loaned a bugeye half model from the James T. Marsh shipyard. Marsh was Mrs. Stevens great-grandfather. A model of an unidentified yacht built at the M.M. Davis and Son shipyard has been donated by LeRoy "Pepper" Langley. It is believed that this model was commissioned by the yacht's designer to show the buyer how the yacht would appear when built.

Alton Kersey, former owner of the J. C. Lore Oyster House, has donated the patent deed from the state of Maryland for the "new land" created by filling a small area at the north end of The Narrows with shucked oyster shells from the Lore plant. The museum's oyster house building is now located on this land.

Alton Kersey presents original patent deed for Lore Oyster House to CMM's Layne Bergin. CMM Photo by Paula Johnson
The Watch  Continued from page 1

else harvest the oysters. The owner of the oyster beds would hire an oyster watchman to guard against the “oyster rustlers.” This practice was more common on Virginia’s James River than it was here in Maryland. But there is one spot in Maryland, in Calvert County, on the Patuxent River, where the oyster watchman practiced his trade.

The owner of some oyster beds in the river had bought that small tract—some half acre or so—just so he could station his hired oyster watchman there to guard his oyster bars. I knew it was Broom family land. My father, Goodman Goldstein, and Mr. George D. Turner, bought that land years ago. It turned out that the land was surrounded by what is now the Jefferson Patterson Park and Museum property. I was happy to donate my interest in the land to the Maryland Historical Trust for the Jefferson Patterson Park. George D. Turner’s heirs, Dr. Thomas B. Turner and Mrs. Virginia Somervell, weren’t even aware that they owned any interest in the land. But Judge Perry Bowen, Jr., contacted them about it and convinced them to donate their interest, too.

Now that unique parcel of land and part of Maryland’s past—the oyster watchman and watch station—will be part of the outstanding Jefferson Patterson Park and Museum. I hope that we can keep that story and that memory alive there, so that all Marylanders can learn about the era when men went to war—over oysters.

Editor’s Note: Mr. Goldstein is, of course, the Maryland State Comptroller and a native—and resident—of Calvert County. His report of the oyster watchman has sparked an interest at the museum in this interesting aspect of the area’s maritime history. The museum’s curator of maritime history, Paula Johnson, has talked with Clarence Sewell of Broomes Island who remembers the watchman’s shack from his youth. The museum would be interested in any other reports—and, particularly, any photographs—of oyster watchmen or similar activities along the Patuxent River or elsewhere in our area.

YEAR-END APPEAL UPDATE

As of mid-December, some 250 members have donated over $10,000 to the Year-End Appeal. Thanks to all who have donated! This amount is ahead of the $8,700 donated at this same time last year, but short of the goal of $15,000 for this year. We still hope to achieve this year’s goal.

The museum has been able to acquire important items for its collections (including the archives and library), has enhanced its exhibits, and has done much-needed conservation work during the past three years because of the generous support for the Year-End Appeal. HELP US CONTINUE THIS GOOD WORK.

Give as generously as you can to this "special fund" that helps keep the Calvert Marine Museum a center of enrichment and enjoyment—especially now that the completion of the new exhibition building is in sight, providing new opportunities for display of the museum’s collections. The Year-End Appeal will close on February 15. Once again the Year-End Appeal Givers’ Roster will appear in the spring issue of the Bugeye Times. Join those who have already given and help CMM reach its new goal.
COMMON FOSSIL BONY FISH REMAINS

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one-half inch or larger? Does the dentary or maxillary bone have a single set of alveoli (tooth sockets), or are the alveoli arranged in rows or a different pattern? Is the spine barbed? Does the spine have minute bony serrations, or is it entirely smooth?

If a tooth has a smooth blade with prominent enamel edges and no serrations, and is triangular in shape and flattened, it may be identified as a wahoo mackerel (Acanthocybium solanderi). If a tooth has small serrations (visible with a magnifying glass) and is triangular, it may be identified as a barracuda (Sphyraena). If a tooth is not serrated, has numerous lines running down the blade, and is conical at the base, it can be assigned to the mackerel group, genus Cybium. If a tooth is conical at the base, lacks serrations, and tapers toward the middle, it can be assigned to the cuttlefish (Trichiurus). If a tooth is conical and comes to an extreme point at the tip, it belongs to the goosefish or monkfish (Lophius). A tooth that is conical at the base and is rather oblong to the tip, with very fine lines running from the base to the tip of the blade, can be identified as the red drum (Sciaenops). The dentary of this genus can be identified by the alternating alveoli. Other forms less confusing to identify include the buttonlike teeth of the black drum (Pogonias multidentatus). A beaklike structure often mistaken for a turtle jaw is assigned to the ocean sunfish (Ranzania). These specimens do not have teeth, but rather have modified, hardened enamel on the outer surface of the cutting edge. If a large, flattened, snoutlike specimen is not marine mammal in origin, is rounded near the base, contains two small opening, and has fine markings running up and down its length, it can be assigned to the fossil billfish Istiophorus. Hypural fans of bony fish may also be found.

A unique bottom-dwelling fish, Chilomycterus, commonly known as the spiny puffer, porcupinefish, and burrfish, is known only from isolated dental pavements and has modified, flat, layered teeth that were used for crushing shellfish and other bottom-dwelling organisms. The diagrams with this article will assist in the identification of fossil fish remains to the genus level.

As newly acquired fossil fish specimens are recovered from the Calvert formation, new insights into the faunal diversity will be studied. This article provides a basic method for identifying some of the more common forms found in the particular group of sediments of the Southern Maryland area.

Editor's Note: Sandy Roberts has relinquished her usual space for "Fossil Facts" so that Mr. Fonger's article could appear. Mr. Fonger is a graduate of St. Mary's College and has been a collector of fossil fish remains for some fifteen years. He is a member of the Calvert Marine Society and the Fossil Club, and also a research associate of the museum.
VOLUNTEER SPOT LIGHT
Lois Miller, Clerical Volunteer

The purpose of this feature is to acknowledge special efforts of individual volunteers and to sometimes shine a light on less conspicuous members of our volunteer staff. Lois Miller fulfills both these requirements.

Lois has been a CMM volunteer since 1983, after completing a career with the U.S. Census Bureau. "I liked the museum. I was living down here, retired, and thought it would be a good thing to do." Working first with secretary/office manager Alice Viverette on membership needs (before there was a staff position), Lois has quickly "folded and labeled" her way to the position of most valuable clerical volunteer. "There's no one else who can get these mailings out the way Lois can. I can't keep up with her!" says membership coordinator, Deann Lesemann. Coming in whenever needed, Lois makes short work of renewal letters, invitations, and Buggey Times mailings, alone or in concert with our other clerical volunteers. Recently she put in five hours at home preparing over 2,000 remittance envelopes for the Year-End Appeal mailing.

With this kind of commitment, word has spread to other members of the CMM staff. Robert Hurry, photograph cataloger, has nothing but praise for Lois' organizational help in his department. "She's great. She really is good. I'm amazed at how much she's gotten accomplished," he says. Credit should also be given to Lois Miller for the design of the new time sheet forms for volunteer coordinator, Layne Bergin.

When not busy at the museum, Lois enjoys travel, needlework, crossword puzzles, and reading at her Drum Point home which she shares with Maggie, her springer spaniel. She also spends time entertaining company and weekend visitors at their "summer headquarters."

According to Lois, volunteering at CMM is pleasant work with little chance of a poor performance rating because, she says, "they want you back." She would advise others to give volunteering a try and to put in some hours, either behind-the-scenes, as Lois prefers, or in any other of the volunteer categories. "It's like giving a big cash donation," she says.

Questions or information regarding the volunteer program may be directed to Layne Bergin, Volunteer/Events Coordinator.

“A Solomons Christmas”

Celebration of the holiday season is fast becoming a notable event in Solomons, with the entire community—especially the Solomons Island Merchants—involved. The museum continued its celebration of the season with the yule party for members and with special decorations in the lobby and in the Drum Point Lighthouse. Particularly appreciated was the support of members who donated refreshments for the yule party, who helped with the decorations, assisted with the hayride, provided music, and generally helped assure that the events moved smoothly. A new feature this year was the appearance of Santa Claus at the J. C. Lore Oyster House—in the person of Skip Zahniser.

Anna Weems Ewalt and Mr. and Mrs. Phillip Lines provided a Christmas tree and other decorations for the Drum Point Lighthouse, while Mrs. Linda McGilvery decorated the tree in the museum lobby. Front door decorations were provided by Mrs. Ellen Zahniser.

DATES TO REMEMBER:
Friday, January 8, Volunteer Training with Dave Bohaska and the fossil slide program.
Tuesday, January 12, Volunteer Dinner at the Solomons Island Yacht Club for all volunteers and guests. Watch for your invitation.