

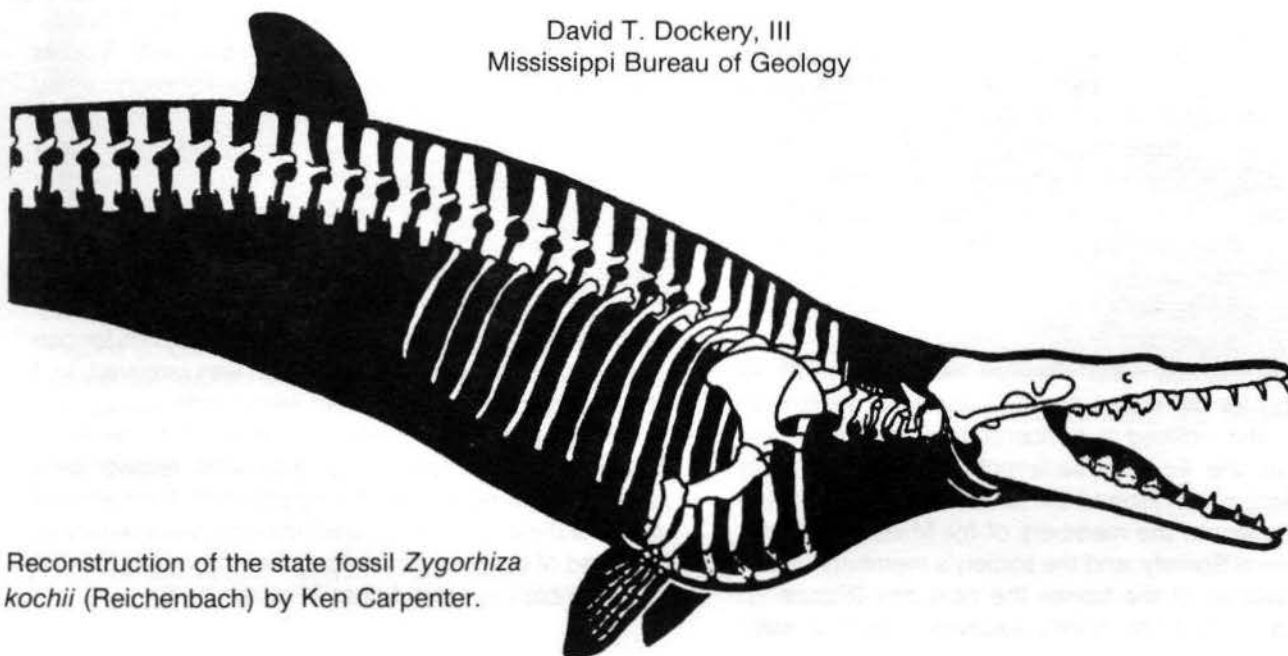
“...AND THE BONES CAME TOGETHER, BONE TO HIS BONE.” Ezekiel 37:7

THE MAKING OF A STATE FOSSIL

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and

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Reconstruction of the state fossil *Zygorhiza kochii* (Reichenbach) by Ken Carpenter.



Figure 1. Excavation of *Zygorhiza kochii* bones from the bed of Thompson Creek by members of the Mississippi Gem and Mineral Society.

A nearly complete skeleton of the Late Eocene (40 million years) archaeocete whale, *Zygorhiza kochii* (Reichenbach), was excavated by the Mississippi Gem and Mineral Society in June 1971. This specimen is probably the most complete and best preserved archaeocete whale found to date. Its discovery generated public interest in the fossil whale as well as Mississippi's geologic past, and motivated the passage of Senate Concurrent Resolution no. 557 (see *Mississippi Geology*, v. 3, no. 3, p. 13) designating "the prehistoric whale as the official fossil of the State of Mississippi." To mount the whale skeleton for public display, fund drives were made, including foot races and donations from schools. Today the skeleton is restored and prominently mounted in a life-like diving posture from the back wall of the Mississippi Museum of Natural Science. The following is a brief pictorial narrative of the history of the State's fossil from the time of its discovery to its present placement in the Mississippi Museum of Natural Science.

The *Zygorhiza* specimen was discovered by Mrs. Dorothy Shaefer on June 31, 1971, in the bed of Thompson Creek near Tinsley, Mississippi. While searching for petrified wood and agates in the stream gravels, she noticed a concentration of large fossil bones in the Eocene sediments (Moodys Branch Formation) which formed the stream bed. She reported her discovery to the members of the Mississippi Gem and Mineral Society, and the society's members began an excavation of the bones the next day (Figure 1). Included among the bones excavated were a well-

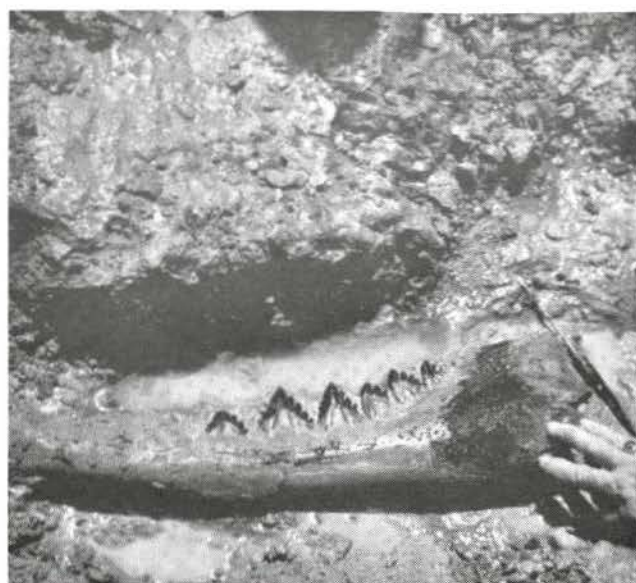


Figure 2. Excavation of the left mandible from the clayey sand of the Moodys Branch Formation.

preserved skull and two mandibles (Figure 2).

The initial preparation of the skeleton was begun by Leslie Pitts, and involved freeing the bones from the encasing rock. This process was later completed by Kenneth Carpenter with the use of a miniature jackhammer called a Gravermeister (Figure 3). Damaged bones were repaired using molding plaster painted to match the color of the bone (Figure 4).

Missing parts, such as the flippers, were reconstructed using hardware cloth overlain with plaster or papier-mache (Figures 5-6). These reconstructed bones were also painted to resemble the fossil bones.

Light-weight fiberglass replicas of the skull and jaws were prepared. Two molds were made for each part by first placing a clay partition around the bones which became the seam, then layers of latex rubber were applied (Figure 7). After the latex had cured, a plaster back called a mother mold was made to keep the latex form from distorting when the casts were made. This mold was constructed in several sections for the skull to allow removal of the cast when finished (Figure 8). Upon completion of the latex and plaster molds for one half of the specimen, the clay seam was removed, and the molds for the second half were made.

After the mother molds and latex molds were removed from the specimens, they were reassembled and layers of reinforced fiberglass resin were applied to make the casts. When cured, the casts were removed, trimmed of excess plastic along the seams, and painted to resemble the fossil bones (Figures 9-10).



Figure 3. Ken Carpenter removing bones from a block of indurated sediments.

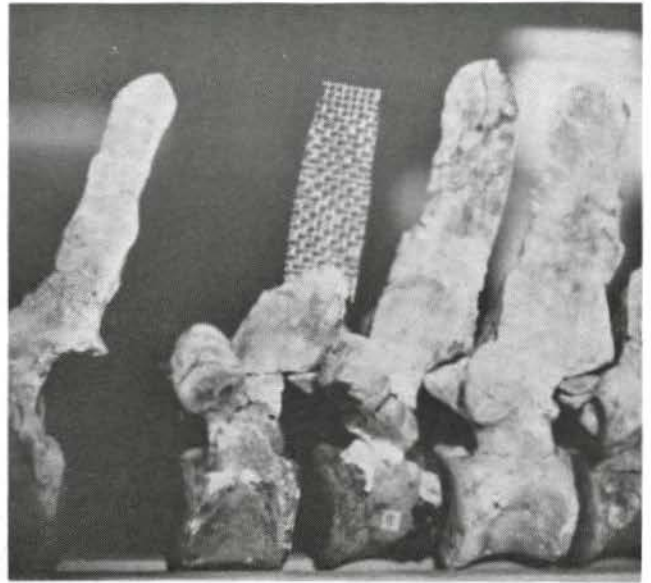


Figure 4. Reconstruction of a partially complete vertebra using plaster over steel mesh.



Figure 5. Construction of the missing flipper bones based on observations of specimens from various museums.

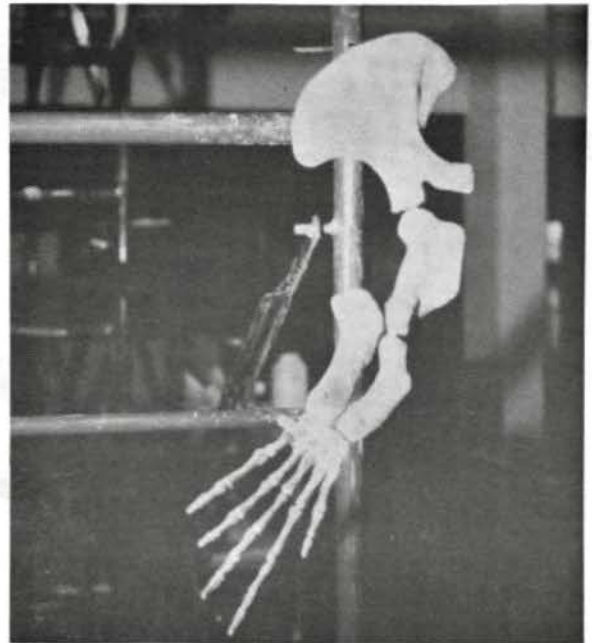


Figure 6. The newly constructed left flipper before mounting.



Figure 7. Applying layers of latex rubber to the dorsal side of the skull to form the upper mold.

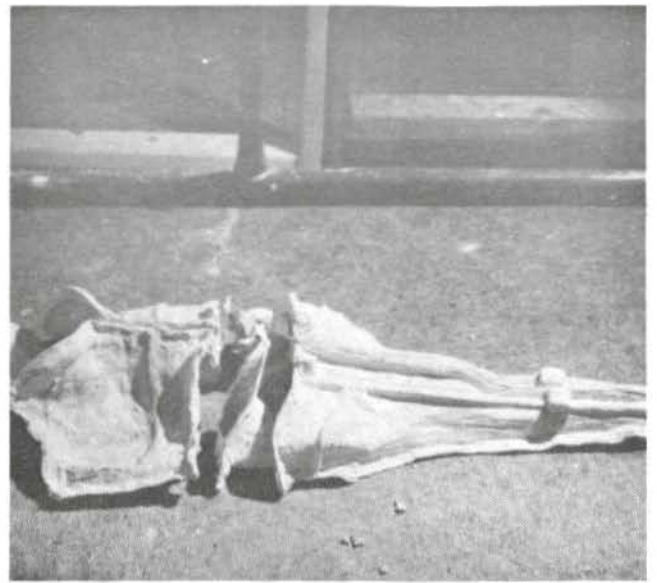


Figure 8. The disassembled plaster mother mold for the dorsal half of the skull.



Figure 9. Eleanor Daly trimming excess fiberglass from the seam of the ventral cast of the skull.



Figure 10. Joining the dorsal and ventral casts of the skull along the seams.



Figure 11. Ken Carpenter drilling a vertebra for mounting.

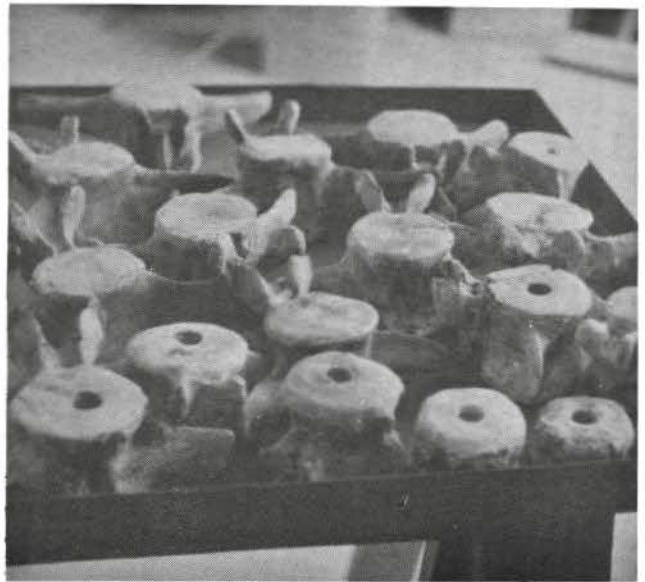


Figure 12. Drilled and undrilled vertebrae.

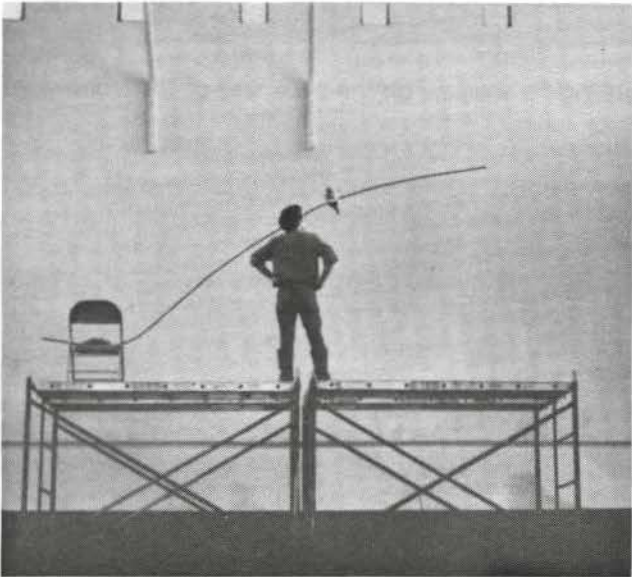


Figure 13. Placement of the first vertebra on the steel rod which will support the vertebral column.

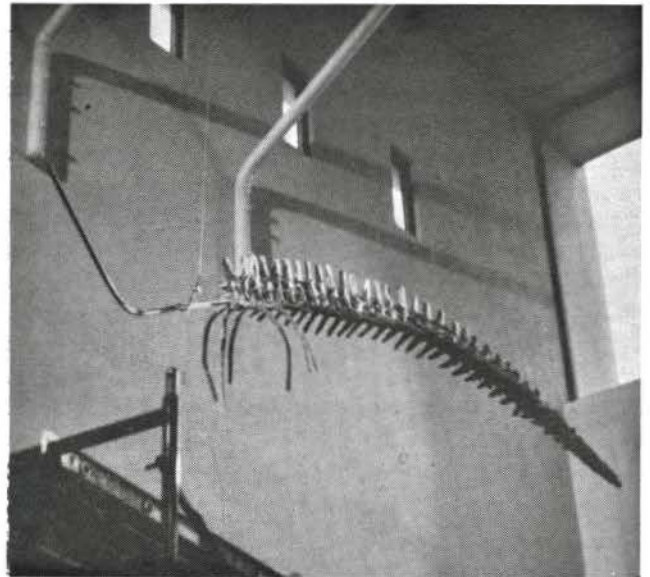


Figure 14. Partially completed mount with vertebrae added up to the lower rib cage.

A steel pipe was bent to the desired shape of the vertebral column and suspended by cables. Holes were drilled through the center of the vertebrae and each strung onto the pipe (Figures 11-14). The ribs, flippers, and skull with attached jaws were attached to the vertebral column, completing the mount (Figures 15-16). The original skull and lower jaws were placed in a display case below the mount.

At the dedication ceremony, the completed mount was transferred to the Mississippi Museum of Natural Science by the Mississippi Gem and Mineral Society. Governor William Winter accepted the fossil whale on behalf of the State of Mississippi as its state fossil.

ACKNOWLEDGMENTS: The photographs in figures 1-14 are copies from slides provided by Sue Pitts (Figures 1-2) and Eleanor Daly (Figures 3-14).

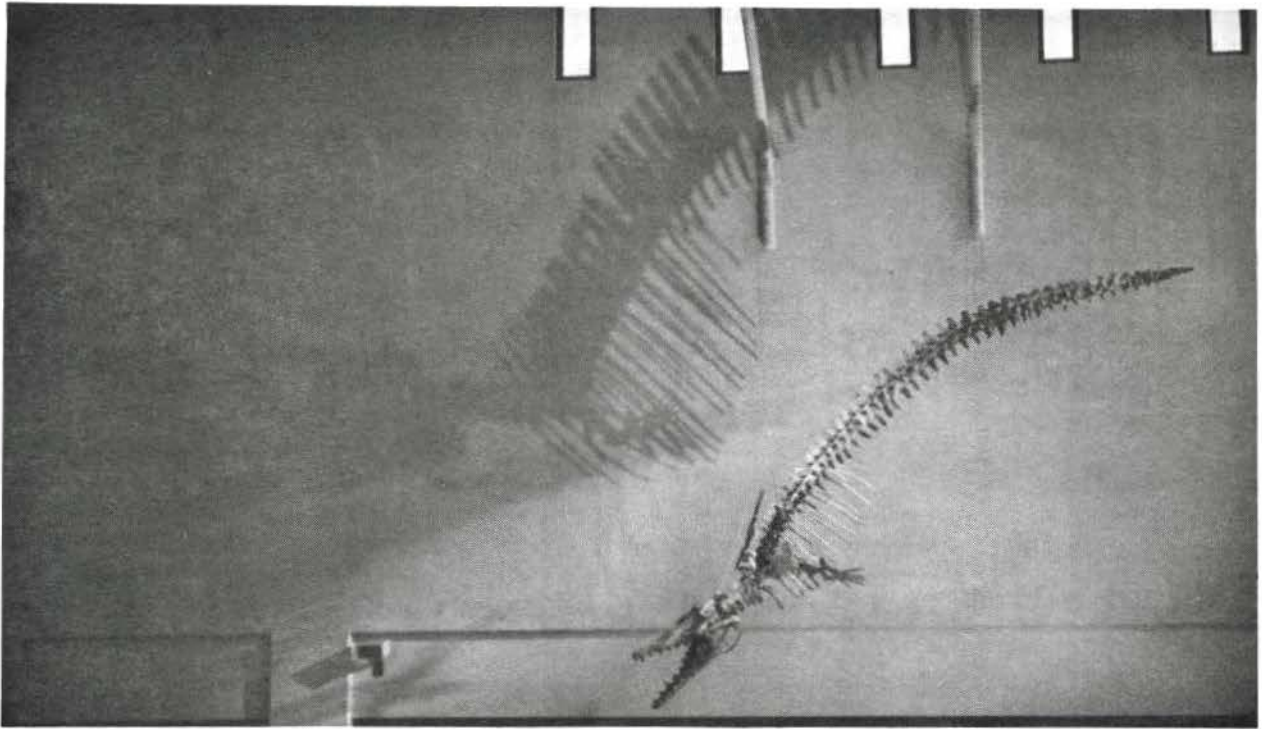


Figure 15. The complete skeletal mount as it now hangs, casting its shadow on the back wall of the Mississippi Museum of Natural Science.

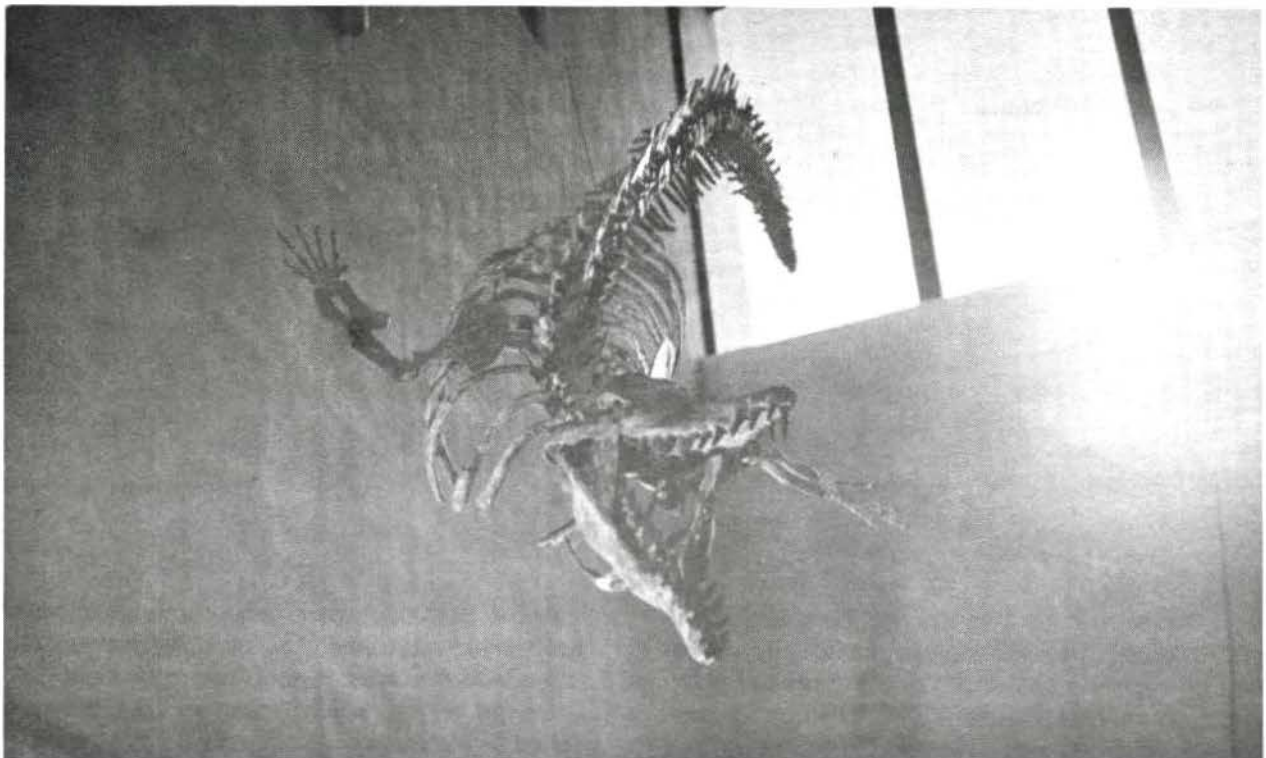


Figure 16. View of the mount from below as the whale appears to dive toward the observer.

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compiled by
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Mississippi Bureau of Geology

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The Contents list names each of the items in each issue, whether a full article, a news note, a notice of a new publication, an oil and gas production table, a calendar of events, a review, or an obituary. The Author Index is an alphabetical listing of authors, including junior authors, of articles and other items for which an author's name was printed. The Title Index is an alphabetical listing of article titles; it can be used to locate an article or subject of interest. The numbers at the end of each entry in the author and title indexes give the volume, number, and page numbers for that article. For example: 1(2), 1-3 signifies Volume 1, Number 2, pages 1 through 3.

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The editors of *Mississippi Geology* invite contributions of short articles pertaining to the geology, paleontology, and mineral resources of Mississippi. Preference is given to technical articles, overview articles, and general articles of wide appeal to geologists, non-specialists, and the interested lay public.

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Articles submitted to *Mississippi Geology* may include an abstract, introduction, previous investigations, methods, discussion, conclusions, acknowledgments, and references cited. Article length should be approximately 1500 to 2500 words; brevity and conciseness are stressed. Those papers having less than 1500 words need not include an abstract.

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April 7-9, 1986 - SEPM Short Course: "Platform Margin and Deep Water Carbonates," Calgary, Alberta.

May 8-9, 1986 - SEPM Short Course: "Relationship of Organic Matter and Mineral Diagenesis," Houston, Texas.

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November 6-7, 1986 - SEPM Short Course: "Modern and Ancient Deep Sea Fan Sedimentation," Houston, Texas.

"Shall I tell you what knowledge is? It is to know both what one knows and what one does not know."

Confucius

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